LEVERAGING FACILITIES FOR INSTITUTIONAL SUCCESS

PART 2

APPA
LEADERSHIP IN EDUCATIONAL FACILITIES

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Section IV: Facilities' contributions to institutional goals

Using facilities to advance institutional priorities

Facilities are more than the stage on which higher education performs. The entire built environment plays a role—often a greater role than members of the academic community realize.

Both facilities themselves and the facilities operation can help institutions achieve their goals and reach optimal outcomes.

Student success: Facilities create environments that support learning and enable new teaching methods. Faculty and students pay little attention to classroom space—until it stops working. In fact, sophisticated facilities planning and design can help institutions improve student engagement by supporting evolving teaching methods, including flipped classrooms and problem-based learning. Rooms that allow for the instructor to move around the room easily and enable quick rearrangement of desks to form small groups encourage the teaching styles shown to be most successful for today's students. Planners and architects are looking for cost-effective ways to transform old-fashioned, theater-style lecture halls into spaces that can adapt along with the pedagogy.

High rates of recruitment and retention: The campus plays a major role in creating positive impressions and building student engagement. When alumni tell stories of their college or university years, they often mention the places—the quad, the cafeteria, the dorm—that shaped their memories. The significance of these places begins the first time students visit an institution; in a survey by APPA of more than 16,000 students at 46 institutions, 50 percent of respondents agreed with the statement, "When I first saw the campus, I knew this was the right college for me." Two-thirds of respondents claimed the overall quality of campus facilities and the attractiveness of the campus were either "very important" or "essential," and nearly a third of respondents rejected a particular college or university because it lacked facilities they considered important. The campus—the actual, physical campus—is critical to the student experience, and successful institutions will find investment here pays off.

Data Point:
Recruiting and the campus
Sending a message

"We must understand that campus landscapes are a medium of communication. The landscape is continually sending messages to students, faculty, and staff; is it saying what you want it to?"

—Phil Waite, associate professor of landscape architecture and environmental planning, Utah State University, "Campus Landscaping: Impact on Recruitment and Retention," Society for College and University Planning Webinar, May 7, 2014.

Affordable tuition and fees: Efficient facilities operations can significantly reduce costs for the institution. Best practices in facilities management can increase the overall operating efficiency of the institution, especially when total cost of ownership is adopted as a policy. Total Cost of Ownership (TCO) considers not just up-front costs of buildings and systems but also long-term costs to operate, maintain, upgrade, and replace them. Typically, institutions track these expenses separately, dividing them between capital improvement, maintenance, and recapitalization funds, a practice that costs the institution more over time. TCO provides a data-driven approach that helps colleges and universities

Data Point:

Optimal outcomes for higher education	Actual outcomes today	Barriers to success	Strategies for bridging the gap	Facilities' contributions to success
Student success	Inconsistent educational outcomes	Inflexible and entrenched teaching methods	Increase emphasis on student success	Facilities create environments that support learning and enable new teaching methods
		Underprepared students		
		Changing demographics		
High rates of recruiting and retention	Poor recruitment and retention	Ineffective retention strategies		The campus plays a major role in creating positive impressions and building student engagement
Affordable tuition and fees	Limited access and lack of affordability	The arms race	Improve affordability	Efficient facilities operations can significantly reduce costs for the institution
		Aversion to risk		
Financially sustainable business plan	Unsustainable funding model	Declining resources		
		Rising costs		
Responsible use of space and other resources	Poor use of space and other resources	Outdated space policies	Allocate resources based on institutional priorities	Effective space management makes the most of the institution's single-greatest sunk cost
			Increase reliance on data and business analytics to support decisions	
Clear mission and focus	Lack of focus and unclear mission	Unclear, unaligned mission	Focus on the mission of the institution	Strategic master planning enables the built environment to support the institution's mission
		Changing expectations		
Environmentally sustainable campus	Failure to prioritize environmental sustainability	Multiple challenges and issues distracting from sustainability efforts	Prioritize environmental sustainability	The campus is the single-greatest opportunity for improving institutional sustainability

understand and manage their facilities investments while providing a model for sustainable business operations to the entire institution.

Responsible use of space and other resources: Effective space management makes the most of the institution's single-greatest sunk cost. Colleges and universities are increasingly recognizing the value of their space—and how space has, until now, been squandered. Institutions that fail to responsibly manage their space spend more to operate and maintain their facilities and pour more into new construction. Best practices for space management include aligning space management to the mission of the institution; changing the culture of space so it is perceived as a valuable and shared resource; developing effective policies, processes, and organizational structures to manage space; and implementing a space inventory system to understand resources and identify needs.

Clear mission and focus: Strategic facilities planning enables the built environment to support the institution's mission. Facilities need to be aligned with the mission of the college or university through a strategic facilities master plan. Plans include assessment of current facilities and their use along with an analysis of trends facing the campus. (For example, is enrollment expected to rise or decline? By how much?) Then planners engage with the college or university's mission and translate general statements into concrete plans for buildings and grounds. For example, an institution focused on teaching and learning might invest in technology-equipped classrooms. A school capitalizing on its reputation as a tight-knit community and seeking to improve student engagement might build new residence halls. A campus seeking to improve recruiting could strive to improve the first impression the campus makes on visitors. Creative thinking can identify smart ways to fulfill the institution's goal in brick and mortar.

Data Point:
Smart space management

Aligning space metrics with capital improvement funding

The University System of Georgia (USG) recently completed a major project to create a common data set of space metrics for use across the entire 31-campus system. The project was motivated by "the belief that improved efficiency in space use represents a significant strategic advantage to the system" and "because of dissatisfaction with traditional space use approaches which have had limited success in helpfully informing either master planning activity or capital allocations."

Better data for capital improvement planning was a major priority of the project. The new system seeks to allow for better comparison of space utilization and productivity between USG institutions, identify deficiencies that could be corrected with reallocation or repurposing of space, determine which capital improvement projects are most necessary, and establish priorities among projects that receive funding.

Among the metrics developed were the classroom metric, which measures classroom size and utilization and identifies both empty seats in a classroom and times when the room itself is vacant. Two other critical metrics are the office metric, which compares employee counts to office station counts, and the social/study metric, which measures the contribution of "soft" spaces such as reading and study rooms, lounges, computer labs, and tutoring rooms.

USG believes the new approach will enable the institution to get more out of their space. The authors of the report describe the program as "the first step towards a better physical environment for learning and research in the state . . . [that] makes a vital contribution to the future of higher education in Georgia."

—Final Report: USG Space Utilization Initiative, July 2013.

Data Point:

Issue	Current attitude/ approach	Problems with this attitude/approach	Transformation needed	Desired educational outcomes
Facilities operating costs	A never-ending burden on the institution, and a growing liability.	Goal becomes minimizing operating costs, not optimizing facilities operations	Investments in maintenance and operations are seen as vital to the mission	• Affordable tuition and fees • Financially sustainable business plan
Facility renewal	Continued deferral. a growing liability	Leads to an ever-increasing spiral of costs. Diminishes the value of facility investments	Reduction in the renewal backlog. Eliminate redundant facilities and adopt of alternative funding mechanisms	• Student success. • High rates of recruiting and retention • Responsible use of space and other resources
Life-cycle costs and total cost of ownership (TCO)	Costs of buildings and systems only considered up-front	Facilities and systems are costly to operate and maintain	Life-cycle costing and TCO implemented for every capital investment decision	• Affordable tuition and fees • Financially sustainable business plan • Responsible use of space and other resources
Space	Cost of space to the institution is unknown to users; space is controlled by departments and programs	Inefficient use of space—some space is wasted and underutilized while other space is over capacity	Space is managed as an institutional asset. Costs are communicated and sometimes shared. Value of investments in space are maximized	• Responsible use of space and other resources • Affordable tuition and fees. • Financially sustainable business plan
Outsourcing	In-house staffing is preferred for almost all operations	Rising labor costs; limited labor pool; aging workforce; distraction of attention from primary mission	Services and operations are outsourced when another organization may be able to do the job better for less	• Clear mission and focus • Affordable tuition and fees. • Financially sustainable business plan
Technology	Focused on instruction and research; lack of investment in operational analytics	Lack of automation of business processes, increasing administrative burden; lack of data for decision making	Data is tracked and analyzed by business analytics systems. Systems are integrated and widely accessible	• Affordable tuition and fees • Financially sustainable business plan
Financial management system	Legacy systems are hard to access; primarily useful for audit record	Limited information available to administrators to manage budgets and control costs	An integrated financial system that allows for better forecasting and management	• Affordable tuition and fees • Financially sustainable business plan • Responsible use of space and other resources

Environmentally sustainable campus: The campus provides the single-greatest opportunity for improving institutional sustainability. The college or university campus generates up to 90 percent of an institution's carbon footprint. Institutions will only become truly sustainable when their built environments are sustainable. Colleges and universities have made enormous strides in sustainability. Leadership in Energy & Environmental Design (LEED) certification is now routine for new buildings, and Green Globes and other programs are being used as well. Higher education energy consumption dropped at an average rate of almost 14 percent between 2008 and 2012. However, challenges remain, especially for existing buildings, which cost far more to operate and maintain than newer buildings. Facilities departments with a strong commitment to sustainable design and operations must continue to explore creative ways to conserve energy, recycle materials, and cut carbon emissions.

Transforming the facilities organization to meet institutional goals

For the built environment to significantly advance the goals of colleges and universities, both the institution and the facilities organization will need to change their thinking. Facilities must be seen in a more strategic light.

Campus leaders must see that the facilities organization is engaged with the institution's mission and goals. Senior facilities officers must be included in top-level discussions of trends, issues, and challenges facing the campus, and their ideas and suggestions must be welcomed. At the same time, the facilities organization needs to take its role seriously. It needs to broaden its vision and increase its visibility within the institution.

Transformation is necessary in the following operational areas to allow facilities to make the greatest possible contribution to the mission of its institution.

Data Point:
Facilities and institutional costs

The high price of old buildings

Older buildings may add charm to a college campus, but they also add costs. According to one, a facilities consulting firm, for buildings between 25 and 50 years old, work orders average $2.35 per square foot, nearly double the $1.40 per square foot for buildings under ten years old. (For buildings older than 50, the cost is $2.20 per square foot.) Maintenance backlogs are also higher for older buildings: $110 backlog per gross square foot for buildings between 25 and 50 years old and $160 for buildings older than 50. The backlog for buildings ten years old or less is $20.

Rutgers University plans to demolish numerous old and inefficient buildings and is targeting small structures, which are often disproportionately expensive to heat and cool. The university will remove about 120,000 square feet scattered among old houses, buildings, and trailers and replace them with a new, 175,000-square-foot building that will include new classrooms. The move will save the institution $1.6 million per year in maintenance, custodial services, and energy costs.

"The biggest cost savings at colleges and universities today is in reducing their footprint," says Antonio Calcado, vice president of facilities and capital planning at Rutgers. "Especially at larger colleges and universities, the footprint has just gotten so large, and it costs so much per square foot to just maintain that space."

—*Excerpted from Scott Carlson, "Less is More: Campus Officials Trim Square Feet to Cut Costs,"* The Chronicle of Higher Education, *March 10, 2014.*

Section V: Facilities' strategies for improving institutional outcomes

How the critical issues were identified

The premise of the Thought Leaders symposium is that facilities leaders have much to contribute to the major challenges facing higher education. Five top issues were identified by participants on leveraging campus facility assets to achieve institutional goals. Also identified were critical questions for institutional dialogue. The questions are the heart of the exercise: They are intended to guide facilities managers and university leaders in the discussions at their own institutions. A major goal of the Thought Leaders Series is to help individual colleges and universities assess where they stand and help them develop strategies for the future.

1. Understand how facilities affect student success and employ best practices for student recruitment and retention.

The issue: Facilities organizations can significantly contribute to student success through better use of buildings and grounds.

Strategies for success:

Facilities influence student success more than most administrators realize. Leading institutions recognize the value of the built environment in attracting, retaining, and teaching students; they invest in making their campus more student-friendly.

The first step is to identify the goals and shortcomings of the institution. Where are students best being served? Where are they faltering? Is recruitment down or up? What about retention? Is the college or university shifting its teaching methods? Are problem-based classrooms and team learning replacing traditional lectures?

Answering these questions can point facilities departments in the right direction to improve student success. For example, a community college might identify retention as a problem. Research shows that increasing student engagement on campus can help improve retention. Facilities can help increase engagement by expanding the number of casual spaces for student interaction, such as lobbies, lounges, and courtyards. The institution can create warm, welcoming places with good seating, lots of light, and Wi-Fi. (Don't forget to add extra electrical outlets; students are often looking for workspaces where they can also charge laptops or phones.) Investing in casual spaces can be a critical step in increasing student interaction and engagement.

Facilities organizations should also identify aspects of the campus that detract from the mission and goals. Consider the message different facilities are sending. Is a crowded, run-down residence hall sending the signal, "We don't care about your experience here?" Are classrooms with outdated instructional systems diluting the institution's image as a leader in advanced technology?

Finally, organizations need to communicate the value of facilities to the rest of the institution. Many constituencies don't appreciate how much facilities can accomplish. Consider conducting a quick survey with potential students after campus visits asking their impression of the buildings and grounds, or survey students in a variety of different classrooms about their experience. (Could you partner with a statistics, communications, or architecture class to develop and administer the survey, making it a learning experience?) Develop usage metrics that are tied to institutional goals and show how you're targeting these priorities.

Data Point:

Optimal outcomes for higher education	Actual outcomes today	Barriers to success	Strategies for bridging the gap	Facilities contributions to success	Facilities strategies for improving institutional outcomes
Student success	Inconsistent educational outcomes	Inflexible and entrenched teaching methods	Increase emphasis on student success	Facilities create environments that support learning and enable new teaching methods	Understand how facilities affect student success and employ best practices for student recruitment and retention
		Underprepared students			
		Changing demographics			
High rates of recruiting and retention	Poor recruitment and retention	Ineffective retention strategies		The campus plays a major role in creating positive impressions and building student engagement	
Affordable tuition and fees	Limited access and lack of affordability	The arms race	Improve affordability	Efficient facilities operations can significantly reduce costs for the institution	Use total cost of ownership as a guiding principle for all facilities decisions
		Aversion to risk			
Financially sustainable business plan	Unsustainable funding model	Declining resources			
		Rising costs			
Responsible use of space and other resources	Poor use of space and other resources	Outdated space policies	Allocate resources based on institutional priorities	Smart space management makes the most of the institution's single-greatest sunk cost	Make better use of campus space
			Increase reliance on data and business analytics to support decisions		Expand data collection and analysis to cut costs and increase efficiency
Clear mission and focus	Lack of focus and unclear mission	Unclear, unaligned mission	Focus on the mission of the institution	Strategic master planning enables the built environ-ment to support the institution's mission	Use the campus as a classroom to expand awareness of sustainability and facilities best practices
		Changing expectations			
Environmentally sustainable campus	Failure to prioritize environmental sustainability	Multiple challenges and issues distracting from sustainability efforts	Prioritize environmental sustainability	The campus provides the single-greatest opportunity for improving institutional sustainability	

Questions for institutional dialogue:

■ What elements of the built environment contribute to students selecting this institution? To continuing through graduation? To learning and succeeding?

■ Does the facilities department have a mechanism (such as facilities master planning) for aligning institutional trends, mission, and goals with the built environment? Is this process effective?

■ Which specific campus goals can be best supported by facilities? Where can facilities make the most cost-effective investments to further these goals?

■ Which facilities or aspects of the facilities operation are detracting from institutional goals?

■ What metrics can you put in place to better measure the role of facilities? How can you better communi-cate the value of the built environment? What sort of data would influence senior administrators to back investment in facilities strategies to advance the goals of the college or university?

Data Point:
Student success through classroom design

Design considerations for effective learning spaces

■ **Design learning spaces around people.** Keep the focus on the interaction between students and teachers. Don't let technology dictate classroom design.

■ **Support multiple types of learning activities.** Design the classroom to support discussion, experiential learning, and project-based activities as well as traditional lectures.

■ **Make space flexible.** Allow spaces to be quickly reconfigured, and design the space to be easily renovated as new technology and pedagogy changes.

■ **Design for comfort and functionality.** Allow plenty of surface space for laptops and storage space for backpacks and bags. Use windows to bring in natural light, but make it easy to block the light for on-screen presentations.

—*Adapted from Diana Oblinger, "Leading the Transition from Classrooms to Learning Spaces," An NLII White Paper, National Learning Infrastructure Initiative and EDUCAUSE, October 2004.*

2. Use total cost of ownership as a guiding principle for all facilities decisions.

The issue: Employing TCO enables facilities to make the smartest investments in buildings and systems.

Strategies for success:

Discussion about the costs of facilities is usually divided into the same two categories that show up on balance sheets: initial construction costs and maintenance and operations costs. What's missing is an understanding that the two costs are related. In fact, facilities can cost twice as much to maintain and renew as they do to build. TCO takes this fundamental fact into account by calculating and communicating the lifetime costs of a facility.

TCO also promotes wise spending that will maximize the value of the investment. The cheapest air conditioning system may look good on the capital improvements budget, but if it costs twice as much to operate, it's not a source of savings. The same goes for the low-cost industrial carpeting that has to be replaced three times more often than its slightly more expensive rival. TCO provides a mechanism for weighing up-front and long-term costs.

Implementing TCO requires commitment from senior administrators and even state support for public institutions. Budgeting policies and procedures must be adapted to allow TCO to work properly. Campuses need to examine what changes would be necessary at their institution to employ TCO. What stands in the way of implementing the process? What sort of support will be needed and from whom? How can the facilities organization achieve buy-in?

TCO has significant sustainability implications and can help institutions maximize their investments in green buildings and systems. Generally, sustainable

building practices incorporate some form of TCO, but applying rigorous life-cycle cost analysis can help ensure new high efficiency systems don't have hidden maintenance or replacement costs that will diminish their impact.

Finally, TCO supports hard decisions, like the choice to demolish rather than maintain outdated buildings. Institutions can end up devoting a major portion of their budget to old facilities that aren't worth maintaining. Sometimes, buildings cost more to operate—usually barely limping along—than they would cost to tear down and build anew. Pouring money into a failing building is a classic case of throwing good money after bad and an example of ways institutions sabotage themselves.

Questions for institutional dialogue:

- What benefits would TCO offer the institution? Can the facilities organization make a business case for this strategy? Are there examples on campus where TCO would have made a difference in long-term costs?

- Does the institution currently track the life-cycle costs of buildings and systems? Are there measures in place to align capital spending with maintenance and renewal?

- What processes and policies would need to change to implement TCO? Who is responsible for those processes and policies? Who would you need to convince that change is necessary?

- What sort of data would be needed to implement TCO? Is that data available today? What would be necessary to start collecting, distributing, and analyzing that data?

- Do sustainability initiatives on campus include aspects of TCO? How could facilities and sustainability staff combine efforts to make TCO effective for both units?

- Is the institution spending too much maintaining outdated or unneeded buildings? How can you make the case for replacement or demolition?

Data Point:
Facilities and institutional costs
The high price of old buildings

"TCO is the best tool for [colleges and universities] to use to reduce overall maintenance costs and capital costs. It will help them to make better decisions about overall asset management. In general, higher ed over-maintains buildings. You could have replaced them three times for what you were spending to maintain them."

—*Doug Christensen, president of Christensen Facilities Group, LLC, quoted in Apryl Motley, "The Total Package,"* Business Officer Magazine, *November 1, 2013.*

3. Make better use of campus space.

The issue: Colleges and universities can cut costs and improve efficiency by maximizing the use of their space.

Strategies for success:

Underutilized space is a wasted resource, and any classroom or lab that sits vacant for half a normal class day is wasted. Colleges and universities should be finding every opportunity to maximize the use of resources, and that means taking seriously the problem of space.

At the heart of the issue is the question, "Who controls space?" Traditionally, individual departments or programs controlled how space was allocated and assigned. They were under no obligation to share space with other units and fought hard to keep what was "theirs" even if they no longer needed it. Many decisions were made automatically, so departments assigned large offices to senior faculty members, even if those faculty had joint appointments and ended up with multiple offices. Space was free, as far as departments were concerned. Light, heat, and plumbing for these spaces didn't come out of their budgets, so it didn't matter if the room sat vacant year-round—it wasn't costing them anything.

Colleges and universities are starting to renegotiate space with departments and programs. Recognizing that space is a shared resource, they seek to schedule classes

and assign offices fairly across the entire institution. On some campuses, the institution, not the department, now controls space, and decisions are made by a central space planning office. Other colleges and universities keep some space, or some level of control, at the department level, but have policies that prevent the most wasteful space practices.

Scheduling, for example, presents many opportunities for improvement. Keeping all departments on the same block schedule and spreading courses throughout the day allows the institution to maximize its classroom usage. (While traditional students prefer classes in the middle of day, nontraditional students often welcome early morning, late afternoon, evening, or even weekend classes that give them more flexibility with work schedules, so intensive scheduling can pay off in terms of student satisfaction as well.) Campuses are also seeking to expand summer and mini-term courses that get students into the classrooms year-round. Air conditioning a classroom building so that a handful of faculty can use their offices is not a responsible use of the institution's resources.

A critical step for most institutions is the development of a space inventory system that can be used in scheduling, asset assessment and management, and data tracking. Campuses need to understand exactly how much space they have, what condition it's in, and how it's being used. They also need to understand how much different spaces cost. A chemistry lab is more expensive to run than a history classroom. Some colleges and universities have begun tracking energy use down to the individual office and charging departments for the space they use. Even without going this far, departments need to understand that space costs the university money—it's not a free resource—and that it should be managed responsibly.

Questions for institutional dialogue:

- How is space controlled and allocated on campus? How would you describe the general attitude toward space? Is it tightly held—even hoarded—or shared as a general resource?

- How does space allocation align with the mission of the institution?
- How is instructional space currently allocated? How efficiently is this space used? What policy changes would be necessary to increase space utilization? Who should be in charge of assigning class spaces and times? What should guide their decision making?
- How is space measured today? For what purpose? Is the space inventory up-to-date and reliable? How could the system be improved to provide for better tracking, projections, and planning?
- How do we track the cost of space? Do departments know how much their space costs? What technical improvements would be necessary to generate this

Data Point:
Space utilization

Making the most of classroom space

"To make more efficient, cost-effective use of space, institutions are developing strategies to spread out the times that classes are offered during day and evening hours, and to increase the teaching week by scheduling more Friday classes. Conflict can occur, though, between administration and faculty, which traditionally decides both when they want to teach and in what room. Questions regarding governance are being raised with most schools determining that class schedules are not related to academic freedom and should fall within the domain of department chairs and the administration.

"Schools are using a variety of tactics to encourage departments to offer classes during a wider time frame before resorting to taking over class scheduling. Scheduling has implications beyond facilities usage; there are academic ramifications, too. Students are often unable to get the courses they need to graduate because too many of them are offered at the same times. Other strategies to reduce pressure on facilities during peak times include offering more classes online and/or hybrids."

—Lucie Lapovsky, "The Higher Education Business Model: Innovation and Financial Sustainability," TIAA-CREF Institute, November 2013.

data? How could it be better communicated? Would the institution support a system that charges departments for their space?

■ How can we incentivize better use of space?

4. Expand data collection and analysis to cut costs and increase efficiency.

The issue: By increasing the amount of data they collect and providing new tools to analyze that data, institutions can strengthen their decision-making processes.

Strategies for success:

Business analytics has enormous potential for institutions seeking to make their operational decisions more data-driven. Higher education has lagged behind other industries in adopting business intelligence systems, but well-designed analytics systems have the potential to help institutions measure progress on strategic and tactical goals, support decision making, provide rapid feedback on ongoing efforts, and validate or discredit assumptions.

Colleges and universities can target the following goals with business intelligence systems:

■ **Clarify costs and their drivers.** Integrated systems can make clear how colleges and universities are spending their money and identify areas for improvement.

■ **Provide insight.** Analytics systems can help institutions meet their mission and address such goals as increasing retention and improving learning outcomes.

■ **Share knowledge.** Data should be widely available across organizational units, along with tools to understand that data.

According to a recent report by EDUCAUSE and NACUBO, institutions should keep the following in mind when implementing business intelligence:

■ **Get all senior leaders onboard.** Without the support of the president, senior leadership team, and governing board, business intelligence efforts will struggle to get off the ground.

■ **Capture incremental improvements while pursuing transformative opportunities.** Even if the goal is institution-wide change, it makes sense to start small and celebrate successes along the way to build support and gain experience.

■ **Be realistic.** Understand what business intelligence and other systems are actually capable of accomplishing—as well as what is required for success. These systems require significant commitments of time and staff before they save the institution a single dime. Benefits often take the form of cost avoidance rather than direct financial savings; they're more likely to lead to rebalancing of institutional resources rather than a pool of capital. Finally, change is hard, and increasing access to data doesn't affect or address entrenched attitudes or beliefs.

■ **Address processes before systems.** Business intelligence systems can't magically solve any problem they encounter. Institutions need to refine their processes first, then find the systems that will support them.

Facilities are among the operational units seeing a real benefit from business intelligence systems for tracking materials, maintenance costs, energy use, and other metrics. New systems provide facilities staff with interactive dashboards that present critical information in charts, meters, and graphs and allow users to drill down to analyze data. When combined with modern building information modeling and smart buildings, staff have powerful tools to manage facilities operations.

Questions for institutional dialogue:

■ What operational data is the institution already collecting? Who is responsible for this data? Where is it stored?

■ Which processes and operations would benefit most from greater data accessibility and analysis? What sort of questions do you need answered?

■ What is standing in the way of the adoption of business analytics systems? Cost? The accessibility and quality of data? The culture of the institution? How can these barriers be addressed and overcome?

■ What data is currently available to the facilities organization? Is this data accessible and understandable? Is data from multiple sources integrated to provide a big picture?

■ What would the advantages and costs be of investing in a data analytics system for the facilities organization?

5. Use the campus as a classroom to expand awareness of sustainability and facilities best practices.

The issue: Facilities organizations can develop innovative ways to use the built environment as a teaching tool and directly involve students with sustainability and efficiency efforts.

Strategies for success:

Facilities staff typically have only limited interaction with students, and most students have no idea what goes into keeping the campus running. Yet facilities play an important role in the educational experience, and a peek behind the curtain at facilities operations can give students greater insight into issues of sustainability and energy use and raise awareness of facilities throughout the institution.

Treating the campus as a classroom means revealing what is usually hidden. Systems such as photovoltaic panels, green roofs, and constructed wetlands benefit from this approach; out in the open, they are a constant reminder to the campus of the sustainability priorities of the institution. Schools have also revealed mechanical systems normally invisible behind walls or exposed water pipes running through buildings to highlight high-efficiency air conditioning or gray water treatment systems. Creative, well-designed signs should accompany these visible green systems to explain their purpose and results. In fact, signage can play a role during construction as well; construction fences can be covered with signs explaining the elements of the new design and how they will benefit the campus.

Smart building systems can also be exhibited to students, faculty, and visitors on kiosks in building lobbies. Real-time displays of energy and water use, for example, serve as constant reminders that how people use buildings has an effect.

Other institutions have found success bringing students into facilities or sustainability offices as interns. Students benefit from real-world experience in the trenches of a campus and are exposed to a variety of po-

tential careers. Facilities organizations benefit by promoting their field as a career choice and gain insight into student perspectives. At West Virginia University, for example, interns in the Office of Sustainability work on the office website, organize campus events, and participate in studies such as waste audits and public transportation use. Many of the interns plan a career in sustainability.

Expanding the campus as a classroom is an effort that can start small—adding an educational component to the design of a LEED-certified building, for example, or hiring a single intern. To broaden the project, facilities organizations need to form partnerships with faculty. Seek out faculty interested in real-world ways to teach sustainability concepts and work together to develop courses or programs that combine the physical reality of the campus with the academic rigor appropriate to a college or university.

Data Point:
The campus as classroom

The building as a living laboratory

The term "living lab" is thrown around a lot in sustainability, but few buildings take the idea more seriously than the Centre for Interactive Research on Sustainability (CIRS) at the University of British Columbia (UBC). The building is not only a LEED Platinum structure, it is designed to be "net positive" by returning surplus energy to the grid and removing emissions from the atmosphere.

The entire structure operates as a lab where researchers can study users' interactions with the facility to improve performance and maximize the health, happiness, and productivity of inhabitants. Researchers housed in the building include faculty from applied science, psychology, geography, forestry, and business, as well as the UBC Sustainability Initiative. Ongoing research at CIRS includes studies of the thermal and acoustical properties of windows, thermal-slab monitoring, life-cycle costing, and the psychology of recycling. Already, more than a dozen academic papers have been published on work at the building, which opened in 2011.

Questions for institutional dialogue:

- How can the institution make the infrastructure—especially the green infrastructure—of the campus more visible to students, faculty, and staff?
- Where could well-designed signs explain operations going on behind the scenes?
- Does the campus have building information data that could be displayed to students in certain buildings? How can you use this data to influence the use of the building and promote awareness?
- Do the facilities or sustainability operation currently hire student interns? What would it take to make this happen? (Is funding available? What's the process for advertising and hiring interns? Who would supervise the interns?) What jobs could interns do that would both help the department and give students real-world experience?
- How can facilities partner with faculty? Can you identify faculty members who would be interested in teaming up on educational projects and academic courses?

CONCLUSION: Embracing and advancing the need for change

It is critically important to recognize the remarkable reforms and innovative efforts that are occurring right now at numerous colleges and universities. Furthermore, we would be remiss if we did not emphasize the diversity of institutions, the variability of their challenges, and the range of examples of creative responses to address these problems for which one size does not and will not ever fit all. Understanding institutional context and culture is a precursor to deriving very different solutions with very different performance levels to achieve successful student outcomes.

Nonetheless, we must embrace the need for change and the challenge of change today. To quote David Ward, emeritus chancellor of the University of Wisconsin Madison, "The real problem of change is the inability to scale change from segmented and disparate efforts to institutional strategies. Secondly, to assume that all changes will mesh with and serve all kinds of institutions is illogical." This does not negate at all the need to face these challenges, but instead to recognize the varying starting points or conditions that we have to change.

We are indeed experiencing a new normal, an environment of rapid change where it's all about less. Yet, as resources have dwindled, expectations have grown. And, although the gap between the optimum and achieved institutional outcomes continues to beleaguer many senior administrators, change is possible and innovation is indeed occurring at a number of our colleges and universities. In fact, some institutions do have effective space management programs, focused mission statements, aligned institutional priorities, data-driven decision-making procedures, and sustainable budget models. The question is why the rest of us don't, and what we can do about it.

Therefore, much of this monograph has focused on strategies to help those institutions bridge the gap between the optimal goals and their current reality to continue tackling the most persistent higher education challenges:

- Inconsistent educational outcomes,
- Poor recruitment and retention efforts,
- Limited access and lack of affordability,
- Unsustainable, cumbersome funding models,
- Entrenched teaching methods,
- Ineffective space management policies,
- Unclear institutional mission,
- Aversion to risk, and
- Lack of environmental sustainability priorities.

By leveraging facility assets and operations to maximum potential, the facilities department and staff can assist their colleges and universities in achieving desired goals and help bridge that gap. Indeed, this places even more pressure on facilities organizations to maximize their contribution to the core goals of the institution to achieve optimal outcomes. This will require a deliberate, albeit strategic focus on these approaches:

- Contributing to student success,
- Using total cost of ownership principles,
- Maximizing space management,
- Expanding data analytics systems, and
- Involving the campus community in sustainability and energy efficiency.

In this way, colleges and universities will be better able to leverage their facilities investment for the maximum return to the institution and focus on their mission of educating students and advancing knowledge.

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