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Shifting Goals,
Managing Expectations

Mentoring within APPA

Annual Salary Study:
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LEADING THROUGH CHANGE

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LEADING THROUGH CHANGE



20 Shifting Goals, Managing Expectations

By Mark Crawford

Disruptive change is coming to educational facilities management. Administration has increasing demands and expectations for staying current and improving both operational and student performance, with fewer resources. With the huge pressure to control costs, decisions must be made on how to update or build facilities that will stay relevant and utilized.

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Facilities Research

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Theodore J. Weidner, Ph.D., P.E., CEFM, AIA

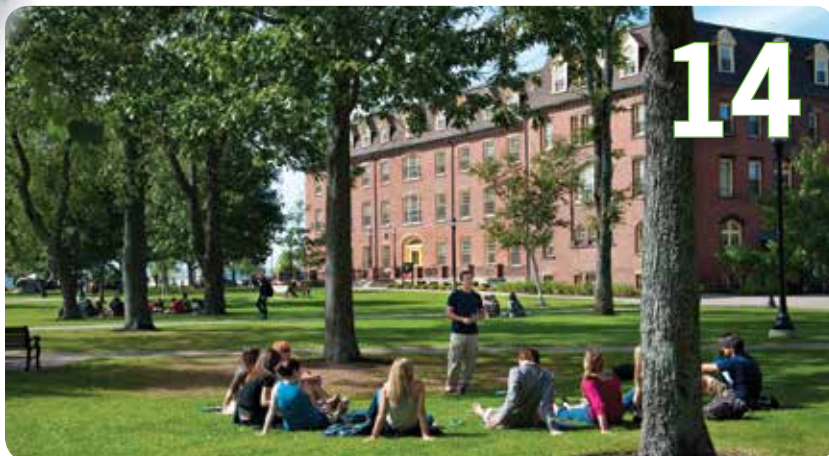
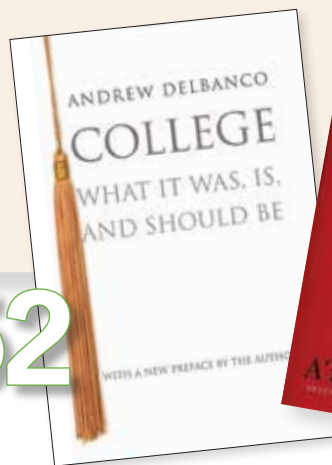
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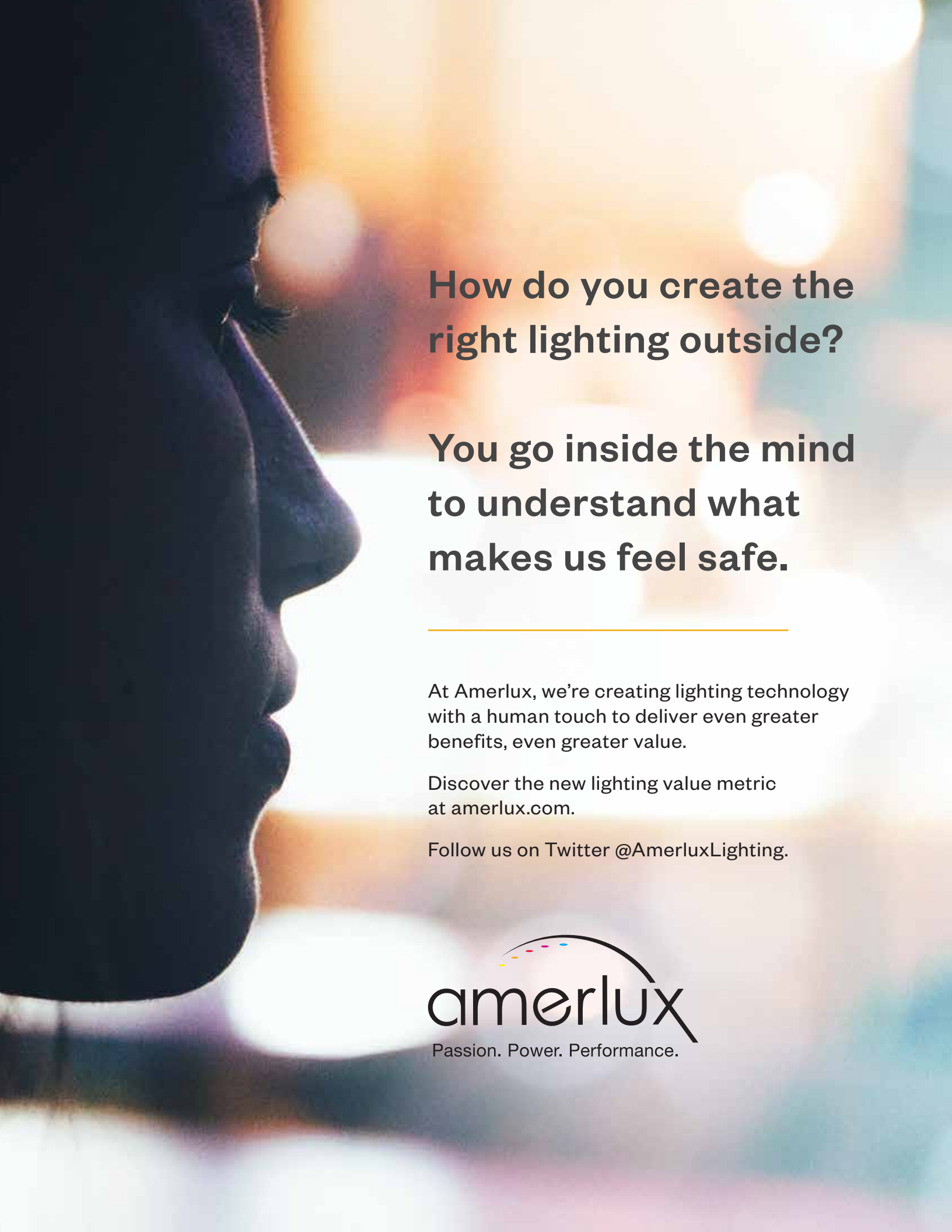


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EMORY'S ERIC GREGORY WINS 2015 REX DILLOW AWARD FOR OUTSTANDING ARTICLE

As APPA moves into its

second century as the go-to resource for educational facilities professionals, we are pleased to announce the winner of APPA's annual Rex Dillow Award for Outstanding Article in *Facilities Manager* magazine. The 2015 recipient is Eric Gregory, commissioning manager & sustainable performance program manager for Emory University, Atlanta, Georgia. In addition, Eric serves as an APPA representative to the committee currently preparing the third edition of the APPA/Building Commissioning Association co-publication of *The Building Commissioning Handbook*.

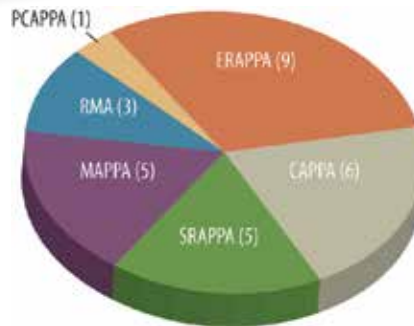
Eric's winning article, "Commissioning and Emory's Sustainable Performance Program," was published in the January/February 2015 issue. In it, Eric describes how he submitted a business case to his institution for a "new, proactive, energy-based operations program" that in its first year of funding uncovered 78 operating inefficiencies with an estimated cost avoidance price tag of \$250,000. Emory's Sustainable Performance Program has grown and continues to audit systems and programs for improved cost efficiencies and energy savings.

The article was selected by the members of APPA's Information and Research Committee from seven eligible articles published in the six issues of *Facilities Manager* within the past year. This is the first Rex Dillow Award selected following the passing of its namesake earlier this year. Many congratulations to Eric Gregory on receiving this award.

In reviewing the recipients of the Rex Dillow Award since its inception in 1987, we found the following breakdown by regional winners (*see pie chart above*).


Other tidbits include:

- There have been 28 separate



authors over 29 years of the award's history.

- 1 author has won 4 times (Bill Daigneau); 1 has won 3 times (Walter Simpson); and 2 have won twice each (Harvey Kaiser and the team of Don Guckert & Jeri King).
- All 6 winning articles from CAPPA are from University of Texas institutions
- 7 of the 28 winning authors are women
- 1 of the 28 authors was from Canada

For more information on the Rex Dillow Award criteria, eligibility, and to read past winning articles, go to www.appa.org/membershipawards and click on the Rex Dillow tab. 

Coming in Sept/Oct 2015

- Profile of President Peter Strazdas
- Highlighting the Award for Excellence & the Newest APPA Fellow
- APPA 2015 Conference Highlights
- 2015 Thought Leaders Report, Part 1

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About APPA

APPA promotes leadership in educational facilities for professionals seeking to build their careers, transform their institutions, and elevate the value and recognition of facilities in education. Founded in 1914, APPA provides members the opportunity to explore trends, issues, and best practices in educational facilities through research, publications, professional development, and credentialing. Formerly the Association of Physical Plant Administrators, APPA is the association of choice for more than 13,000 educational facilities professionals at more than 1,500 learning institutions throughout the United States, Canada, and abroad. For more information, visit us at www.appa.org.

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facilities digest

By Anita Dosik

APPA AWARD WINNERS 2015

2015 AWARD FOR EXCELLENCE

- **Weber State University**

2015 SUSTAINABILITY AWARD

- **San Diego Community College District**
- **Slippery Rock University**

2015 EFFECTIVE AND INNOVATIVE PRACTICES AWARD

- **University of California San Francisco**
"Promoting Water Conservation in Research Laboratories"
- **University of Colorado Boulder**
"Labor, Trades, and Crafts Trainee Program"
- **University of Texas Austin**
"Surplus Property Retail Store or S.M.A.R.T. Store – Surplus Management Asset Recovery Team Store"
- **Western Michigan University**
"Building Information Modeling for Skilled Trades"

2015 MERITORIOUS SERVICE AWARD

- **David W. Gray** (SRAPPA)
- **Anthony (Tony) Guerrero**, University of Washington Bothell (PCAPPA)
- **Jeri Ripley King**, University of Iowa (MAPPA)

2015 PACESETTER AWARD

- **Richard (Rick) Battistoni**, Saint Michael's College (ERAPPA)
- **James Harrod**, University of Wisconsin Hospital & Clinics (MAPPA)
- **David Hatch**, North Carolina State University (SRAPPA)
- **Chris Kopach**, University of Arizona (RMA)
- **Lisa Potter**, University of Colorado Boulder (RMA)
- **James (Jay) Williams Jr.**, Virginia Military Institute (SRAPPA)
- **David Woodson**, University of British Columbia (PCAPPA)

2015 FELLOW AWARD

- **Glenn Smith**, Bryn Mawr College (ERAPPA)

2015 REX DILLOW AWARD

- **Eric Gregory**, Emory University

2016 AWARD NOMINATIONS AND APPLICATIONS DUE NOVEMBER 30, 2015!

Nominations and applications are now being taken for APPA's 2016 institutional and individual awards:

- Award for Excellence
- Sustainability Award
- Effective and Innovative Practices Award
- APPA Fellow
- Meritorious Service Award
- Pacesetter Award

Awards nominations submitted after November 30, 2015 will be held and considered in the 2016 award cycle.

To find out details and particulars about each award, visit <http://www.appa.org/membershipawards/index.cfm> or contact Christina Hills at christina@appa.org.

WELCOME BayAPPA AND ILAPPA!

Join APPA in welcoming its latest state and local chapters:

- San Francisco Bay area chapter or **BayAPPA**
- Illinois APPA or **ILAPPA**

You'll be hearing more about these new chapters upcoming meetings, conferences, seminars, and other activities on the APPA website!

The list of active APPA chapters can be viewed at <http://appa.org/regions/chapters.cfm>. To submit your chapter information, please e-mail APPA's webmaster with your chapter contact, e-mail, and URL if available at karen@appa.org.





WESTERN SPECIALTY CONTRACTORS

Owned and operated by third generation family members, Western celebrated its 100th Anniversary on May 16 at the historic St. Louis Union Station in Downtown St. Louis. To mark the occasion, Western, a long-time APPA Business Partner member, unveiled its new name, logo, and tagline to the nation. Today, Western and its 30+ branches and member companies, which had been doing business under their original names (Western Waterproofing Company, Brisk Waterproofing, Peoria Roofing, Western Facades and Harry S. Peterson Co.), will be known as Western Specialty Contractors — *Confidence Through Performance*.

Although the company's name and logo may have modified, its dedication to quality service has remained as constant as when the company was founded 100 years ago:

"Good People, working hard together to service our customers' interests, add up to continuing success."

—Co-founders Ben Many and George Bishop Sr.



PROFESSIONAL GROUNDS MANAGEMENT SOCIETY LOOKING FOR BEST LANDSCAPES

The Professional Grounds Management Society (PGMS) is now accepting entries for its acclaimed Green Star Awards Program. This exclusive program brings national recognition to grounds management programs, managers, and crews responsible for landscapes that exhibit a high degree of excellence in certain areas including sustainability practices and policies, turf management, landscape design, and more. This awards program honors "the best of the best" in landscapes and grounds management.

In an effort to be more green and sustainable, the online system for submitting an application is completely paperless and easy to use. Applicants can submit their entire application and PowerPoint with one click of the mouse. An official online entry form for this year's contest and other details can be found at <http://pgms.org/pgms-green-star-awards/>. The deadline is July 31, 2015.

EVENTS

APPA EVENTS

Aug 3, 2015 Emerging Professionals (EP) Summit, *Chicago, IL*

Aug 3, 2015 Senior Facilities Officers (SFO) Summit, *Chicago, IL*

Aug 4-6, 2015 APPA 2015 Conference and Exposition, *Chicago, IL*

Sep 13-17, 2015 APPA U: Institute for Facilities Management and Leadership Academy, *Scottsdale, AZ*

Oct 19-22, 2015 ACUHO-I/APPA Housing Facilities Conference, *St. Petersburg Beach, FL*

Dec 6-9, 2015 Women's Leadership Institute, *Amelia Island, FL*

REGION/CHAPTER EVENTS

Sep 8-11, 2015 RMA 2015 Conference, *Big Sky, MT*

Sep 19-23, 2015 MAPPA 2015 Conference, *Milwaukee, WI*

Oct 4-7, 2015 ERAPPA 2015 Conference, *Providence, RI*

Oct 9-15, 2015 PCAPPA 2015 Conference, *Portland, OR*

Oct 10-13, 2015 SRAPPA 2015 Conference, *Baton Rouge, LA*

Oct 11-14, 2015 CAPP 2015 Conference, *Manhattan, KS*

For more information or to submit your organization's event, visit www.appa.org/calendar.

WESTERN MICHIGAN UNIVERSITY WINS AWARD

Western Michigan University was granted a 4-star Landscape Management and Operations Accreditation as awarded by the Professional Grounds Management Society (PGMS). This news is especially exciting to APPA as our President-Elect, Peter Strazdas, is the Associate Vice President of Facilities Management at Western Michigan University.



APPA'S EDUCATIONAL OPPORTUNITIES

APPA U:

APPA U combines APPA's Leadership Academy and the Institute for Facilities Management in one location twice a year. The next APPA U will take place in Orlando, Florida on September 7-11. For more information, please see the APPA website at <http://www.appa.org/training>.

September 7-11, 2015 Scottsdale, AZ

The Leadership Academy:

The purpose of the Leadership Academy is to enhance and further develop leadership throughout the educational enterprise. The Leadership Academy provides opportunities for professionals to increase their awareness of industry issues, to learn the skills necessary to handle today's changes, and to discover the leadership potential within each of us.

The Leadership Academy has been developed for, and focuses on, the educational institution's administrative professionals. These include: facilities staff, procurement agents, business/finance professionals, and auxiliary services professionals. The program is designed in tracks, with each track emphasizing a different perspective and type of leadership skill.

Upon completing the week-long session, students receive a certificate of completion designating their core area of study and 3.0 continuing education units (CEUs).

The Institute for Facilities Management:

The Institute is offered twice a year, and runs Sunday through Thursday evening. The Institute curriculum is composed of four core areas:

- General Administration & Management
- Maintenance & Operations
- Energy, Utilities & Environmental Stewardship
- Planning, Design & Construction

Institute students select one core area to be the focus of their classes for that week. Morning classes consist of required courses, centering on the core area selected. Afternoon classes will be electives chosen by the student and may be a combination from any of the four core areas.

Upon completing the week-long session, students receive a certificate of completion designating their core area of study and 3.0 continuing education units (CEUs).

For more information about APPA U, please contact Suzanne Healy at suzanne@appa.org.

DRIVE-IN WORKSHOPS:

The Drive-In Workshop is designed to support staff education needs at a time when resources are difficult to come by for employee technical training. This four-hour program is designed purposely to allow local professionals to drive in mid-morning for several short sessions, advance their understanding of the latest facilities technologies, network with peers, and get back to their work or home quickly and conveniently with little travel costs, if any.

For more information about APPA's Drive-In Workshops, please contact Corey Newman at corey@appa.org.

SUPERVISOR'S TOOLKIT: NUTS AND BOLTS OF FACILITIES SUPERVISION

The Supervisor's Toolkit has been specifically designed to meet the needs of the facilities management professional. It is a structured, open-ended, and pragmatic approach to developing supervisors. It is not so much a training program as a development process, designed to help supervisors realize both personal and professional growth. The program is designed for a full week of training.

September 20-23, 2015 MAPPA/Milwaukee, WI

September 21-24, 2015 College of San Mateo

September 21-25, 2015 Mississippi State University

October 10-13, 2015 PCAPPA/Portland, OR

For more information about APPA U and the Supervisor's Toolkit, please contact Corey Newman at corey@appa.org.



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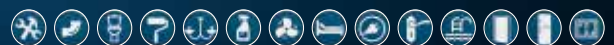
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Bricks & Clicks and the Future of Higher Education

Thought Leaders Symposium 2015

By E. Lander Medlin

In our most recent membership survey, the members emphasized (among other things) the challenges of leveraging and adapting new technologies, keeping up with future technological innovation, and ensuring a workforce prepared for future technologies. This is critically important, since facilities leaders actively manage the investment of more money than any other department on campus. The work is becoming increasingly technical and decreasingly human. A scary thought! So what is happening, and how do we make sense of it all?

DIALOGUE FOR THOUGHT LEADERS

To begin this dialogue, participants of the APPA 2015 Thought Leaders symposium, graciously sponsored by Jacobs, focused on the issues and challenges related to “Bricks & Clicks and the Future of Higher Education.” More than three dozen higher education leaders—including provosts, student affairs deans, business officers, faculty, consultants, association executives, and facilities professionals—participated in a facilitated discussion and work session to examine where we are, and what is coming concerning these two potentially conflictual worlds—physical and virtual—and their impact on the future of higher education.

REAL THREATS

First, a little context. There are real threats that put pressure and stress on

higher education institutions (and their facilities/organizations.) It is not surprising that **financial viability** is at the forefront. The fact is most states have not kept pace with the cost of doing business and, even worse, most institutions have not yet achieved pre-recession funding levels.

Demographic shifts will impact enrollments, in some geographic locations significantly. The mix of non-traditional students (more adult learners) alongside the learning styles of millennials will dictate necessary **pedagogical changes and support**. In addition, there is a significant shift in the makeup of the facilities workforce and better ways to bridge the four working generations.

Competition remains problematic—internally with the faculty “arms race,” and externally with for-profit education providers and other countries vying for students who previously came to the U.S. for their college education.

Student and faculty **demands and 24/7 expectations** continue to increase, putting extreme pressure on facilities and staff.

The rate and pace of **technological change** are both exponential and transformational. Information is doubling every nine months. Information learned within a major is already outdated upon graduation. Robot technology is doubling every eight months. China is 3D-printing houses! We’ve moved from the Mechan-

ical Age of the 19th century, the Information Age of the 20th century, to the Cyber-Physical Age of the 21st century.

BUILDINGS ARE CHANGING

Now let’s fold in what we are learning concerning the evolution of “**Bricks**”—the **physical environment**. With respect to **trends**, buildings are getting physically lighter (from a mass to membrane standpoint) with emerging failure thresholds, reduced life cycles, and the need for swing-space... hence, a more “demountable” campus. Buildings are increasing in technological complexity with networks of integrated systems, paralyzing amounts of data, conflicting demands, dictating silos of specialists; and more focus being drawn to Total Cost of Ownership...hence, a more holistic approach. Buildings are increasingly more compressed, in higher density, and consolidation is occurring across disciplines with layers of uses and spaces that are actually less standardized, more specialized...hence, leading to an “intelligent retraction.”

With respect to **uses**, buildings will need greater flexibility. Almost like we treat event space that is built and taken down as needed ultimately requiring an expanded back-of-house. Buildings will migrate to a collective ownership with a multiplicity of spontaneous owners and active stakeholders filled with intersections and hubs.

Buildings will be distributed in terms of demand for use much like a marketplace is with developers and tenants. This could indeed mark the decline of the departmental empire. An interesting concept in and of itself. In fact, space would be the new currency (at least for a time). It is truly an evolving notion of “The Campus.”

BIG DATA

Now onto “Clicks”—the virtual world. There are several game changers. First recognize that FREE bandwidth through Google fiber makes “big data” even bigger. Mark Valenti, a Thought Leaders subject matter expert, said, “In the last ten years, we have learned more about the human brain than in all the combined years of human existence.” We need to quickly move our thinking to mining big data for its business intelligence—like “Analytics-R-Us.” The future says our technology will be with us, meaning the “physical-ness” narrowing down to chips then almost zero.

For facilities professionals, the real game changer is the “Internet of things.” Envision that the first 20 years was about “people talking to people”... the second 20 years will be about “things talking to things.” This will have a huge impact on the building enterprise. It’s all about integration—leveraging buildings and systems—moving from dumb devices to inexpensive sensors to data insights we could not imagine before. This could certainly lead to real energy harvesting, where energy could become the more valuable currency.

It will indeed boil down to the need for a new skill set for both the IT and facilities professionals (e.g., from the CIO-Information, to CTO-Technology, to CDO-Data, to CAO-Algorithm). Indeed, the lines between IT and facilities will blur dramatically. The facilities professional must learn how to function in a multi-disciplinary world having technical, professional, and global competence. Hence, becoming the “Super Strategist” where he or she uses technology to achieve greater improvements.


Some jobs will simply disappear. For example, development is already underway on an MRI device that will be 1000 times smaller, 1000 times faster, and 1000 times cheaper. Therefore, no need for X-ray technicians. This can easily translate to the facilities professional’s skill sets. Yes, the lines are blurring between IT and facilities staff.

The stakes are high. For example, the CEO of LinkedIn was asked, “What is your biggest fear?” He said, “The competitor that has NOT YET entered the market!!” This type of disruption impacts all facets of industry. We’re no different. New skills and organizational structures are essential.

GETTING THE PICTURE

All of this continues to increase the demands on our facilities and our staffs. With aging building assets and utili-

ties infrastructure (average age greater than 45 years, and that doesn’t speak to the systems and component level), the pressure mounts and points to potential divestiture. More effective space management policies would certainly help. Yet, add the expanding staff workload, difficulty in hiring trades personnel now, and new skill sets, and we have...well, you get the picture!

Plan to read the full Thought Leaders monograph this September for much more detail and some targeted questions and strategies for your institution. 

Lander Medlin is APPA’s executive vice president; she can be reached at lander@appa.org.



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Leveraging Our Strategic Alliance Partnerships

By Randolph Hare



APPA's vision "to become a global partner in learning by fostering competency, collaboration, and credibility for the facilities profession" cannot be fully achieved without leveraging our strategic alliance between the Tertiary Education Facilities Management Association (TEFMA), the Association of University Directors of Estates (AUDE), and the Higher Education Facilities Management Association (HEFMA). Our vision statement commits APPA to fostering collaboration, and the critical issues facing educational institutions know no boundaries. To quote author and business consultant Ken Blanchard, "None of us is as smart as all of us."

A GLOBAL SCOPE

As we share information regarding facilities management operations and maintenance, construction practices, funding models, energy efficiency, and sustainability, we are in a better position to address the critical issues facing our institutions. Academic institutions are becoming much more global in their outreach. The recruitment of students and faculty is becoming more global in scope. Our academic institutions must prepare students for the global economy. So it's incumbent upon facilities departments to avoid a parochial outlook and to carefully align our mission to support the global outreach of our institutions.

TEFMA

To offer a personal perspective, I had the opportunity to represent APPA at the

TEFMA Conference in August 2013. The theme was *Trends, Traditions, and Technology*. Presentations at the conference focused on the student and staff experience, environment and sustainability, facilities and infrastructure, and policy and administration. Are these familiar sounding themes? There were also discussions about disaster preparedness as Christchurch, New Zealand had recently experienced a devastating earthquake. I also had the opportunity to discuss with the TEFMA Board the benefits of collaborating as members of the International Organization for Standardization (ISO) Technical Committee. Such joint efforts would bring added influence from

the educational sector in these ISO standardization activities. After the conference, I toured two university campuses in Brisbane and was absolutely amazed by cutting-edge mechanical systems, energy saving strategies, and other sustainable practices. I saw examples of best practices that could benefit North American educational institutions.

AUDE

The 2015 annual AUDE Conference featured presentations on *Effectiveness and Efficiency in UK Higher Education, Space and the Requirement for Change through Differing Perspectives, and Understanding Generation Z*. Again,



are these familiar sounding themes? It was reported at the conference that “The [higher education] sector has seen unprecedented political and economic change.” The major changes include the tripling of tuition fees in England, with expectations rising as a consequence; the reduction of income through inflation; and greater competition with universities in the area of student recruitment.

HEFMA

HEFMA is the third member of APPA's strategic alliance partnership and is composed of 19 higher education institutions in Southern Africa. HEFMA is committed to promoting “professional ideals and standards that would insure the best academic environment . . . to provide the best professional service for higher education for constant education, infor-

mation and resource creation.” Their website features articles on e-learning and the potential for digital technology to enhance education. Are these not also familiar themes? At the HEFMA 2014 annual conference, held at Nelson Mandela Metropolitan University, presentations focused on sustainability, university infrastructure development, crowdsourcing, and backlog maintenance. HEFMA has representation on a country-wide infrastructure monitoring and task team scheduled to function from 2014–2017, which will evaluate and make recommendations for infrastructure projects at various universities.

CONTINUED COLLABORATION

To thrive in our global village, collaboration is essential. APPA, TEFMA, AUDE, and HEFMA face common

challenges and have common agendas. We can share best practices rather than reinventing the wheel. We must continue to embrace a creative, diverse, and innovative culture. May we continue to commit ourselves to fully leveraging our strategic alliance partnership.

The whole is greater than the sum of its parts. Each association has unique characteristics and strengths. All of these added together become something greater than each individual association. As Japanese author Ryunosuke Satoro stated, “Individually, we are one drop. Together, we are an ocean.” ☞

Randolph Hare is director of maintenance and operations at Washington and Lee University, Lexington, VA, and APPA's 2014-2015 President. He can be reached at rhare@wlu.edu.



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APPA Membership Starts with Our Own Institution

By Greg Clayton, P.E.

APPA membership matters. I am sure most of us reading this magazine could fill at least a page on what APPA membership means to us. Here is my story.

THE START

After working in healthcare for ten years in Nova Scotia, I moved to Prince Edward Island in 2000 to become the director of facilities management at the University of Prince Edward Island. It has been a great 15 years and counting. When I started my new position, I immediately began to network with my local chapter, AAPP (Atlantic Chapter). Before I knew it, I was treasurer of that chapter and attending my first Eastern Region (ERAPPA) conference in 2001, in Hershey, Pennsylvania. I have been attending ERAPPA annual conferences ever since.

Over the past few years, I have been fortunate enough to be able to attend the APPA Annual Conference and plan on attending this year in Chicago. When I look back, I think it is interesting how my facilities management professional network has dramatically expanded. It has grown from the early days of networking with local institutions in Atlantic Canada to networking with facilities professionals across North America. This is one of the great values of APPA membership and of getting involved in the association.



University of Prince Edward Island

My involvement included being a membership committee member at the chapter, regional, and international levels; a chapter treasurer; an ERAPPA regional board member; and a chapter president, a position I currently hold. This involvement, along with attending the annual conferences, has enabled me to meet many great facilities professionals and to vastly expand my professional network. The ability to pick up the phone or e-mail a colleague to get

advice, to help solve a problem, or to help fuel a new campus initiative is invaluable.

OTHER VALUES OF MEMBERSHIP

APPA also provides a lot of other great values to its members, including the credibility APPA and its research brings to our profession. Attending the APPA conference allows you to hear the outcome of some of our recent research. The APPA bookstore is also full of great resources to help you and your department to improve

and to implement new ideas. For our institution, we use the APPA Operational Guidelines trilogy, to determine and verify staffing levels for our campus. We also participate in the annual Facilities Performance Indicators survey to help determine where we are doing well and to help set goals for improvement.

Another valuable benefit of APPA membership are the educational opportunities it provides. Here in Atlantic Canada, APPA has worked with our chapter over the past two years to host the Leadership Academy Track 2 and the Supervisor's Toolkit. We are planning on hosting Leadership Academy Track 3 this fall. APPA's willingness to work with our chapter to host these programs has allowed our members to receive excellent leadership training. This has helped us introduce APPA to institutions that are unfamiliar with our association, and

to show them firsthand what it has to offer them.


GROWING THE MEMBERSHIP

My thoughts turn to how we can continue to make positive contributions to our associations, our members, and our profession. One way to do that is within your own institution. Look in your facilities department to see who is not yet an associate member and get them to sign up. They will soon appreciate the values of membership, because they will gain access to APPA's Body of Knowledge, the digital *Facilities Manager* magazine, and the wealth of knowledge that comes from networking.

Another way to grow our membership is to pick up the phone and reach out to new professionals who have recently started at an institution near you. Try to make them feel welcome and give them

the information to engage with APPA early in their career.

Finally, look around your province or state and reach out to an educational institution you have not seen at an APPA event, talk to them about the values of APPA membership, and invite them to come to your next APPA function. Doing this will plant a seed that will strengthen our membership and our professional network.

I have truly enjoyed my APPA journey to date. We can all make a difference when it comes to growing membership and strengthening APPA. Membership really does matter! 

Greg Clayton is director of facilities management at University of Prince Edward Island, Charlottetown, PEI. You can reach him at gclayton@upe.ca. This is his first article for *Facilities Manager*.

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Ownership and the Problem of Moral Hazard

By Joe Whitefield

Good leaders are continuously engaged in continuous improvement. The saying that “everything works, but nothing works for long,” has never been truer than it is now. That is because everything changes. Change seems to be one of the few constants for today’s organizational leaders. Even good ideas and programs can have a short life because something will change, increasing the costs or diminishing the benefits.

One great challenge for organizational leaders is establishing an environment where change is expected and cultivated in such a way that positive outcomes and actual improvements result. One attitude that can be critical to a pro-change environment is ownership. How often do we hear a call to take ownership of some aspect of our work or the situation? What does this really mean?

MINE

Ownership is centered in the concept of possessing something. Possession implies that, in addition to having rights to any benefits, the owner incurs the costs of possession as well as retaining several responsibilities that can result in negative consequences if not properly carried out. In order to maximize benefits and minimize negative consequences, owners often take their responsibilities seriously and make decisions that support their interests. And ownership decisions are often different from non-ownership decisions.

We are all familiar with the question, “Who washes a rental car before they



turn it back in”? Although I have washed the cars that I own numerous times, I can honestly say I have never washed a rental car. Again, the responsibilities and consequences of owning something and simply using something are quite different.

This concept is so well engrained that we rarely have to explain it. We speak of taking ownership and most people know what we mean: Act like you own it so that you make better decisions, or take more pride in it and better results will follow. Adoption leads to improvement.

YOURS

As it turns out, there is actually an economic term, and a snappy one at that, which explains many issues related to ownership. It is *moral hazard*. Moral hazard is a circumstance by which individuals make different decisions, typically

involving more risk, when the cost or consequences of a bad decision falls to someone else. Think about the decisions people make when spending their own money versus spending some else’s money. A mother recently told me how her son always orders a foot-long sub sandwich when she is paying but only a six-inch sandwich when he uses his own money. Apparently, understanding of moral hazard starts early.

THEIRS

Moral hazard is more prevalent in businesses and more destructive than many people realize. To unpack this with a facilities management focus, let’s first consider where it might exist. Most university and college campuses, including mine, have numerous processes that involve some form of other-party payers or cost subsidization. This column has

discussed before the basic landlord structure that exists whereby facilities management services are delivered to tenants who often do not bear the direct costs or the full costs of the services. To these customers, services are simply provided. They include basic services such as:

- Routine maintenance—if someone else will repair/replace it, what is the incentive to protect it?
- Cleaning services—if someone else will pick it up, what is the incentive to properly dispose of it?
- Energy/utilities—if someone else is paying for it, what is the incentive to conserve it?

These attitudes are not only negative, they often have significant costs to the organization.

FUTURE COSTS AND CONSEQUENCES

There is another significant area where moral hazard is often at work, namely in the design of new buildings. Even with recent advances in the concepts of life-cycle costing and total cost of ownership, many design processes still fall short of providing for cost-effective out-year operations and maintenance.

Inaccessible equipment, inadequate system isolation strategies, non-standard/costly cleaning requirements, technologies that cannot be reasonably supported, and inadequate/unsupportable energy management systems and strategies are just some of the costly byproducts of a process in which those designing the buildings are not the ones bearing the costs or consequences of operating or maintaining the buildings. Being out-of-sight and out-of-mind, future costs and consequences are easy trade-offs for present building elements and amenities. It requires a special commitment to the principle of ownership to truly account for life-cycle costs.

INSTILLING OWNERSHIP

Ownership is an incredible attitude to instill in employees and write into the processes of an organization. There are a lot of books and resources extolling

the benefits of this attitude. At its core, it requires people to ask questions and make decisions as though the current and future costs and consequences would be theirs.

Make no mistake, however; it is never as easy as it might seem. Moral hazard is a formidable foe. As long as the conse-

quences and costs are passed along to someone else, there is little incentive to change. 

Joe Whitefield is assistant vice president, facilities services, at Middle Tennessee State University, Murfreesboro, TN. He can be reached at joe.whitefield@mtsu.edu.

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Shifting Goal

Managing

By Mark Crawford



S, Expectations

Disruptive change is coming to educational facilities management. Administration has increasing demands and expectations for staying current and improving both operational and student performance, with fewer resources. Demographics and student preferences are rapidly changing. Is informational technology adequate or obsolete? Are facilities and campus infrastructure modern enough, and flexible enough, to be readily adapted as goals evolve? What are enrollment trends, and how will they impact facilities management in the future? With the huge pressure to control costs, the last thing colleges and universities want to do is update or build facilities that will later be underutilized.

Administrative goals can create a pile-up of expectations, including:

- Unlimited desires for flexible space that can be adapted quickly to accommodate multiple, diverse purposes
- Technology-enabled space that can simultaneously accommodate both traditional live, in-person pedagogy and distance-enabled education
- Improved energy efficiency and carbon neutrality, in many cases driven by responses to student interests
- Keeping up with and matching peer institutions' capital investments, especially for research capacity

And, perhaps the greatest expectation of all (and the most challenging) is achieving all these goals while reducing operational costs and avoiding or deferring capital investments.

"The demand to reduce the cost of education, the age and condition of physical plants, opportunities to learn online, and diminished state and federal financial support all impact goals as they relate to facilities," says **Gregory Scott**, assistant vice president for finance and business for Penn State University at University Park, Pennsylvania. "It's especially hard to manage facility-related expectations because facilities have such a long development and life. Facility-related decisions are long-lasting and difficult to change rapidly."

"The title of this article really describes the career of every facilities professional in the education environment," adds **Mary Vosevich**, vice president for facilities management at the University of Kentucky in Lexington. "We deal with the changing delivery methods of education and what that means for the built environment, while we are managing facilities that are aging along with our workforce. Coupled with that are university administration expectations of doing better with less. I think change is the one constant! Therefore we need to be flexible, stay current, and have well-trained staff that is actively involved in managing the expectations."

DRIVERS OF CHANGE

Goals and expectations typically revolve around the top stressors that affect performance and financial performance. An institution's campus and facilities portfolio are usually the largest capital investments a college or university is required to support. The facilities management department needs to be able to manage these physical assets both efficiently and effectively for the institution to be successful. Top stressors that prompt strategic planning and goal-setting are:

- **Technology.** The biggest issues regarding IT are being up to date and adequate. Do facilities have the latest information technology and energy technology that can be deployed readily and easily to enhance pedagogy and save operational expenses?

This can be a big challenge—for example, more instruction is moving to the Internet. "Large lecture halls are no longer in high demand," says **Duane Hickling**, managing principal for Hickling & Associates LLC in Chicago, Illinois. "Even though it is less expensive for instruction to be delivered over the Internet, higher education is challenged in trying to repurpose and rightsize the facilities portfolio to adapt to this new environment."

Another aspect of technology relates to faster communications and how work gets done. "In the past, the trades folks just did the work, they didn't have to worry about telling the story,"



says **David Button**, vice president, administration, at the University of Regina in Regina, Saskatchewan. “Nowadays, I find that people and business are far more difficult to satisfy. Indeed, customers are watching so carefully, not so much to see results, but sometimes to see if they can find a flaw in the process. The advent of social media means that before the facilities staff even hears about the problem, the customer has already identified the issue, developed solutions, and created a firestorm of opinions—rightly or wrongly. Responding to all that takes as much effort as undertaking the technical fix.”

- *Stranded assets.* When facilities lose value because of unexpected or premature economic shifts, they are considered “stranded” in that they are not serving their original purpose and likely creating a negative income stream. “The first big challenge is facilities that are no longer needed because pedagogy has changed and they are either are superfluous or are not flexible enough to be updated,” says **George Pernsteiner**, president of the State Higher Education Executive Officers Association in Boulder, Colorado. “The second is that enrollment at some colleges is shrinking and may continue to do so, making facilities unneeded.”

A number of campuses are over-built, thanks to relatively low interest rates that have continued for an extended period of time. This has made it easy for campuses to bond for and construct new buildings. “It is estimated that higher education may be overbuilt by as much as 50 percent,” says Hickling. “If a campus has excess space, it means there are increased O&M expenses such as utilities, cleaning, repairs, and preventive maintenance that must be addressed annually.”



Gregory Scott

Deferred maintenance. The backlog of deferred maintenance at most educational institutions is so large that managing it effectively with constrained resources may not be realistic—resulting in facilities that do not fully serve the needs of students, are unattractive, and possibly be even unsafe or unsound. “Service expectation levels continue to rise as we seek to become as efficient as possible,” says **Polly Pinney**, executive director of facilities management for Arizona State University in Tempe. “Our aging infrastructure and lack of funding for basic maintenance and deferred maintenance continues to stretch our resources and complicate the execution of services.”

- *Shifting demographics.* Fewer students are enrolling in American higher education, increasing financial strain on tuition-driven institutions. Excess classroom space and empty residence halls quickly become a liability. “There is less income to support them, but the facilities costs of supporting the

brick-and-mortar campus do not necessarily decrease very much,” says Hickling.



Duane Hickling

- *Greater diversity.* In the coming years the student demographic will continue to change, reflecting a wider range of ages. More students will be coming from low-income backgrounds and communities of color. In general, a greater proportion of incoming students will also have a deeper knowledge of technology that exceeds the previous generation of students.

“The net result is that lower cost is becoming more imperative than ever—leading perhaps to facilities being used in different ways, or more intensively,” says Pernsteiner. “Technology could even lead to fewer facilities, but it will be a tool that can reach students who cannot come to campus, or who cannot afford to do so.”

FOCUSING EXPECTATIONS

Although these stressors may not immediately impact the FM department, they can change the financial business model of the institution and require the campus costs

be controlled while the adaption occurs—resulting in shifting goals and changing expectations. The best way to manage these is by having a well-conceived, carefully considered management plan that is aligned with the institution’s mission and includes an awareness of how to deal with future contingencies.



Mary Vosevich

Working with multiple educational institutions over the years, Hickling has noticed that many FM departments have sharpened their focus on achieving greater value from the resources committed to sustaining the campus. “The most effective FM programs are those that have accurately aligned the goals and objectives of the department with the institution,” he says. “This can include containing costs, improving services, improving facility reliability, or improving campus attractiveness.”

For example, Arizona State University has grown exponentially to become one of the largest institutions of higher education in the U.S. Its goals include demonstrating American leadership in academic excellence and accessibility, establishing national standing in academic quality, and becoming a global center for interdisciplinary research, discovery, and development by 2020. “We have expanded with additional external campuses, added large amounts of new construction, and significantly increased our research effort, all while our campus populations continue to increase,” says Pinney.





Although the goals at the University of Kentucky have not changed significantly in recent years, there has been an increased focus on delivering excellence—especially for the student experience. “Now, more than ever before, our goals are more student-centered and focused on their quality of life,” says Vosevich. “Where are our students living? Where are they collaborating with each other and their faculty? What is the classroom experience? Where do they recreate? All the facilities where this is happening should be state-of-the-art and deliver the resources the students need to succeed.”

Scott indicates that at Penn State University, with a new president in office, the focus of the institutional direction has sharpened. “We are focused on excellence, student engagement, diversity and demographics, access and affordability, student career success, and technology,” says Scott. “These are not that different from our previous mission, but they are more defined and forward focused.”

In a dynamic environment, change can come quickly. Fast shifts—although exciting—can be difficult to man-

age. Some institutions simply are not nimble enough to make the changes happen quickly, both structurally and culturally. But a college or university also doesn’t want to become too complacent and set in its ways—because, in this environment, reacting to change is a “given” in order to survive.

“Fast shifts can be good and bad,” Scott adds. “Penn State tends to be an institution that is very measured in managing change. But being too conservative can also lead to missed opportunities, so there is a need for balance.”

Institutions that handle change well tend to look forward and play through “what if” scenarios that are important for creating a wider awareness of the factors that impact facilities management. In the best cases, this creates a mindset of thinking ahead so that when the surprises happen, they aren’t really surprises and the institution knows how to respond (expectations already in place).

“The effective institutions are the ones that recognize the susceptibility to external pressures that could upset established plans,” states **Larry Goldstein**, president of Campus Strategies LLC in Crimora, Virginia. “These institutions incorporate contingencies in their plans to enable to them to shift gears relatively more



David Button



George Pernsteiner

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easily than those that fail to acknowledge the limitations of their control. Donors, sponsors, and regulators can cause institutions to change direction in ways that make sense but were not contemplated. When that happens, it helps immensely if the institution has approached efforts with the ability to shift to go in other directions, with only minimal warning or time lost to engage in planning that could have been done earlier.”



Polly Pinney

MANAGING THE FUTURE

Major forces will continue to converge on facilities management—these include new technical equipment and maintenance needs, increased enrollment requiring new or improved space and density needs, and balancing increased online presence with facilities needed to support this trend toward online education. Shifting demographics among students and employees will lead to



Larry Goldstein

shifting needs and expectations. Increased pressure on resources will continue. Dramatic workforce shifts necessitated by looming retirements both at management and staff levels within facilities operations will also have to be managed.

“Another top challenge will be labor force,” says Vosevich. “I believe that we will be training the next skilled trades groups. We are going to have to grow our own and do what we can to retain them. The ever-present challenge is to do better with less. This speaks to the absolute necessity that we have the best-trained labor pool possible and that they understand the goals and mission of the institution.”

In general, the most successful facilities professionals engage in “what if” analyses to develop alternative approaches that will serve them and the institution if goals or expectations begin to change. “Combined with enhanced communication, they can position themselves for optimal effectiveness in the dynamic environments in which they find themselves,” says Goldstein.

At times facilities professionals can be too close to the process to be truly objective. It can be useful to bring in consultants to help develop the process for achieving goals and managing results and expectations. The best consultants are those who can enhance efforts on campus, rather than simply provide answers. They can facilitate discoveries that emerge from within the existing knowledge that are highly beneficial in building institutional capacity.

“Sometimes outside eyes and minds can be a great help in allowing us to move forward from the past and welcome and embrace the future,” says Pinney. “APPA is an excellent resource for keeping up with trends, and a colleague is only a phone call or e-mail away. I don’t think any of us are capable of accurately predicting the future, but we can certainly stay on top of trends in the business and new ideas and products to help us prepare.”

Ultimately, facilities management leaders must look carefully at their mission, purpose, environment, and resources to make the best decisions. “They need to know who are they, who they serve, who the competition is, and what their comparative strengths and advantages are,” says Pernsteiner. “Taking a hard-eyed look at these things requires an honesty that consultants may be better equipped to facilitate than internal players. However, leadership is still required—for example, board, presidential, faculty, and community—and the engagement of all important stakeholders is imperative.”

Mark Crawford is a freelance writer based in Madison, WI; he can be reached at mark.crawford@charter.net.

PARTING WORDS OF WISDOM

“Be true to your mission and know your own market. If that market is changing, or if your mission is evolving, be mindful of who you serve and what they need, want and expect. —George Pernsteiner

“Keep an open mind and be willing to model out-of-box thought. Always keep your eye on the dichotomy between expectation and reality in relation to communications with your campus leadership.” —Polly Pinney

“Stay true to the mission and vision set by senior administration. Make sure you understand where the institution is heading and be supportive. Stay grounded in good sound business decisions and best practices. Be careful not to chase every ‘flavor of the day’ idea.” —Gregory Scott

“Communicate and be sure staff understand the important role each of them plays in the mission of the institution. They are not just custodians, or groundskeepers, or electricians—they are people making a difference every day.” —Mary Vosevich

“Be adaptable. Identify performance metrics to measure the organization’s response capabilities and the performance of the FM portfolio. FM leaders should not immediately assume the institution is able to divert increased funds or resources to maintaining the facilities portfolio.” —Duane Hickling

“Work smarter, not harder. There is a tendency in higher education to be consumed by meetings. It would be more effective to carve time out to be reflective and think about the future, rather than waiting to be run over by it.” —Larry Goldstein



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More than 50% of facilities management personnel are expected to retire in the next ten years.

50%



From the Sloan Center on Aging and Work reports.

digging THE Gap

By Sanjyot Bhusari, P.E., LEED AP, CEM,
Brian Perez, and Bill Reese



between Building Intelligence and Facilities Knowledge

An emerging dichotomy of our times is that while buildings are becoming more intelligent, facilities are losing knowledge. The Sloan Center on Aging and Work reports that more than 50 percent of facilities management personnel are expected to retire in the next ten years.¹ At the same time, more and more data is making its way into facilities through building information modeling, building automation systems, work order management systems, and other related technologies. These sharply divergent trends will create significant challenges if business-as-usual models of operation persist. Alternatively, a new class of management functions and skill sets, institutional prioritization of strategic data and knowledge management strategies, and data analytics and building systems intelligence can exploit these trends to great benefit.

Colleges and universities are incorporating these measures into their facilities management master plans and are taking a step-by-step approach to executing them. Santa Fe College, in Gainesville, Florida, is providing its staff with hands-on training led by the college's annual services engineer to successfully transition into new facilities management leadership, as more than 75 percent of their facilities management staff retires in a span of two years. In Miami, Florida International University has optimized failure trending processes to initiate predictive maintenance that increases their operational efficiency.

MANAGING MORE WITH LESS: THE CHALLENGE

Energy conservation and operational efficiency have been constant challenges for the past decade. As experienced staff members capable of adopting new tools retire and facilities are inundated with high-volume data from multiple new sources, these challenges only become harder to overcome.

Most institutions have a few key individuals that know what it takes to operate building systems on campus. They know all the unique system requirements, can recall 20-year-old renovations, and can remember where chilled water valves are buried, or where the rogue hot water heating system three-way valves are located. These individuals know what works on campus and know their preferences. All of this critical information is seldom found documented in an organized manner, but instead stays in their brains. This campus-specific knowledge goes with them when they retire.

Compounding the matter, facilities leadership has to eliminate these vacated positions due to lack of funding, and even when they can hire replacements, finding new staff with the right skill set match is a challenge. Meanwhile, most campuses invest in new buildings without investing in additional staff to maintain them. The expectation is for facilities management staff to do more with less, but the outcome is that they may actually be doing *less* with less.

RECOGNIZING THE PROBLEM

Every major campus has a multimillion-dollar investment in building automation systems (BAS), fire alarms, access control systems, and computerized maintenance management systems (CMMS). If BAS are only being used as a monitoring tool, while their most powerful functions for troubleshooting and predictive analysis are rarely used, opportunities for increased operational efficiency are untapped. The introduction of Building Information Modeling (BIM) as another data source can cross the tipping point. Without strong data management standards, this kind of data coming into facilities will differ in type, naming convention, time intervals, and storage location. Facility managers complain that they are inundated with data when what they really need is information.

Furthermore, though today's BAS rely heavily on information technology (IT) and networking standards, this skill set is rarely part of a facilities management organizational structure. When facilities management relies on campus IT staff for help, IT capacity is compromised and facilities management suffers from a lack of full understanding of goals and challenges.

MANAGING MORE WITH LESS: THE SOLUTIONS

The first step to increasing operational efficiency through intelligent building strategies amounts to taking a step back and prioritizing how to better use technology and more fully leverage data

STANDARDS AND SYSTEMS: THE BASIS OF KNOWLEDGE MANAGEMENT

Standards and systems together can become knowledge repositories. Many institutions have mechanical, electrical, and plumbing services construction standards; however, most do not have BAS/controls, BIM, or software standards. Such standards can capture owner preferences and best practices so that this information is not lost when key staff members retire.

Standards also help drive performance expectations. The International Society of Automation promotes the use of standards to improve performance, lower maintenance costs, reduce downtime, enhance operability, and save money.

BAS standards can lead to enhanced operability when they include such details as sequence of operations, required data points, hardware and software requirements, and open protocol preferences. Standards can define BIM to be an information repository for almost every aspect of a building, from its equipment and systems to its structure. Capturing important operational information in BIM can lead to more efficient performance from staff. BIM standards can lead to consistent information delivery from each construction project—for example, getting a detailed inventory of all major equipment out of the model via COBie (Construc-

tion Operations Building information exchange)² to upload into the CMMS system without a manual inventory. BIM can also make it easier for staff in the field to access system drawings.

Software standards establish a consistent format for storing data, information, and knowledge, and such industry standard databases as MSSQL, MySQL, and Oracle allow flexibility and future-readiness, as most IT professionals are well versed in them. Having a common database backend allows for better interoperability and data exchange between other software. For example, having a common database between CMMS and space and scheduling management systems can automatically resolve location record discrepancy issues.

TAKING AN ENTERPRISE APPROACH

An enterprise approach that optimizes or automates work processes has long been successful in the business world. A similar approach to facilities management can be implemented using systems integration, data visualization, and BAS to do more with less. Operations departments can take advantage of mobile technologies specifically for BAS and CMMS to provide quicker response times to work orders, document field conditions with pictures, and access operations and maintenance manuals and system drawings onsite, without visiting a plans room.

NEW SKILL SETS NECESSARY TO LEVERAGING TECHNOLOGY INVESTMENT

To leverage existing investment in technologies such as BAS and CMMS, some new skill sets and job functions will be required. Powerful BAS trending and reporting functions typically require the skills of a BAS manager or a continuous commissioning engineer to enhance campus operations. The need to organize large amounts of data from disparate systems to look for patterns and to mine data for anomalies and faults calls for a data analyst who can also focus on data quality and consistency, factors which are critical to maximizing data use. Data planning skills resolve work orders when multiple systems and departments need to interact, preventing the problem of technicians arriving onsite to resolve work orders only to find that required materials are not present. Planners can also use the data collected by the CMMS to determine if the preventive maintenance program is running efficiently.

ORGANIZATIONAL STRUCTURE CHANGES

As more data flows into facility operations, it should be easily accessible to staff members so they can verify its quality and make good business decisions. IT personnel are trained in managing and organizing data, thus having dedicated IT staff within the facilities management function is ideal. Alternatively, sharing resources with campus IT departments may be sufficient.

DATA MANAGEMENT

With the goal of using data to drive operational decisions, completing the simple statement “I wish I knew—” will generate responses that determine what information is required for facility operations and allow the organization to prioritize needs. Furthermore, asking whether data already being captured can address those needs, and assessing the quality of that data, will determine the proper processes for capturing missing data. For example, using text fields for reporting can lead to errors such as misspelling that compromise reporting at an operational level. Pull-down menus and codes are a much more effective way to capture reporting data.

Once the right information is being collected, data can be used to predict future problems. Every organization has data in various systems but in most cases this data is not interconnected. Answering the subsequent question, “Can the various systems exchange information?” initiates the transformation of a reactive organization into a predictive one.



For example, integrating occupancy data from the existing space and scheduling system into the BAS can determine when to operate equipment, leading to huge energy savings across campus. And integrating occupancy data into the CMMS system will prevent staff from going out to perform work in occupied spaces. Exchanging information between the BAS and CMMS can drive preventive maintenance scheduling. The CMMS is great at housing historical data about work performed, and the BAS is great at capturing data about equipment performance in real-time. Integrating them improves accuracy and efficiency over rigid calendar projections.

CASE STUDY: FLORIDA INTERNATIONAL UNIVERSITY

Florida International University (FIU), with a 9.6-million square foot campus, has increased operational efficiency through better use of its CMMS system by capturing failure information and staff knowledge. The staff use the CMMS software to enter and close out work orders. They are required to enter their time and materials and report back

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what they did to correct the problem. The CMMS also tracks work performed by outside contractors.

Management traditionally used the information from the CMMS for productivity reports (i.e., number of work orders) and to determine the cost of labor and materials separated by location.

CHALLENGES

The challenge at FIU was to manage more buildings while not adding staff. The operations group had lost a lot of collective knowledge when staff retired across the various disciplines. FIU wanted to capture this collective knowledge and at the same time needed to establish a better way of reporting on failures and organizing that data to make better decisions on resource use.

SOLUTIONS

Using its internal IT staff, the operations staff conducted a review of the CMMS system to determine if it was capable of handling this challenge. The review determined that the CMMS had the built-in capability for failure reporting using a hierarchical Problem–Cause–Remedy (PCR) failure coding system. Each of the shops was consulted to develop the codes. The codes addressed as many failure scenarios as possible. A process was then developed to easily add codes as needed to continually build on the system. The PCR was deployed to the staff using a pull-down menu system for ease of use.

RESULTS

The system has streamlined the work order closeout process, because staff are no longer required to type any information and can use drop-down menus instead. The information being captured is now consistent and easily reportable. The new system is easier for the staff to use and much less time consuming than the previous process. The staff can now do their own investigation on prior failure history without needing to consult others or rely on IT to pull reports. Operations is now able to see failure trends by building and to group failures together, and can now decide if certain assets require more preventive work or need to be replaced. The ultimate goal is to become more predictive in addressing problems instead of reactive, thus better utilizing limited staff resources.



CASE STUDY: SANTA FE COLLEGE CHALLENGES

Santa Fe College (SFC) has a 1-million square foot campus. The vision of the facilities management department at SFC is to be an environmental leader, with a goal of achieving one of the lowest energy utilization indexes in Florida. This goal had become increas-


ingly difficult, with nearly 75 percent of SFC's entire facilities management staff retiring over a year-and-a-half period. Adding to the complexity was a lack of operational funding. While adding more buildings on campus, SFC has not been able to add staff to support them.

SOLUTIONS

Recognizing that they needed special and diverse skill sets to leverage their investment in BAS and CMMS, SFC developed a new position. Before the position was filled, however, immediate funding became unavailable. Instead of letting that position go unfilled, SFC decided to outsource the position to its annual services engineers as an energy engineering service. Instead of one position, SFC got the diverse skill set of multiple team members with expertise in mechanical and electrical engineering, data analytics, BAS and CMMS experience, and energy engineering.

The energy engineering service is a time-bound program that engages SFC staff to carry out its functions and provides hands-on training. The goal is to organically grow the new skill set in SFC's team. The energy engineering team has optimized the BAS and used data analytics strategies to discover and resolve energy and operational anomalies on campus.

RESULTS

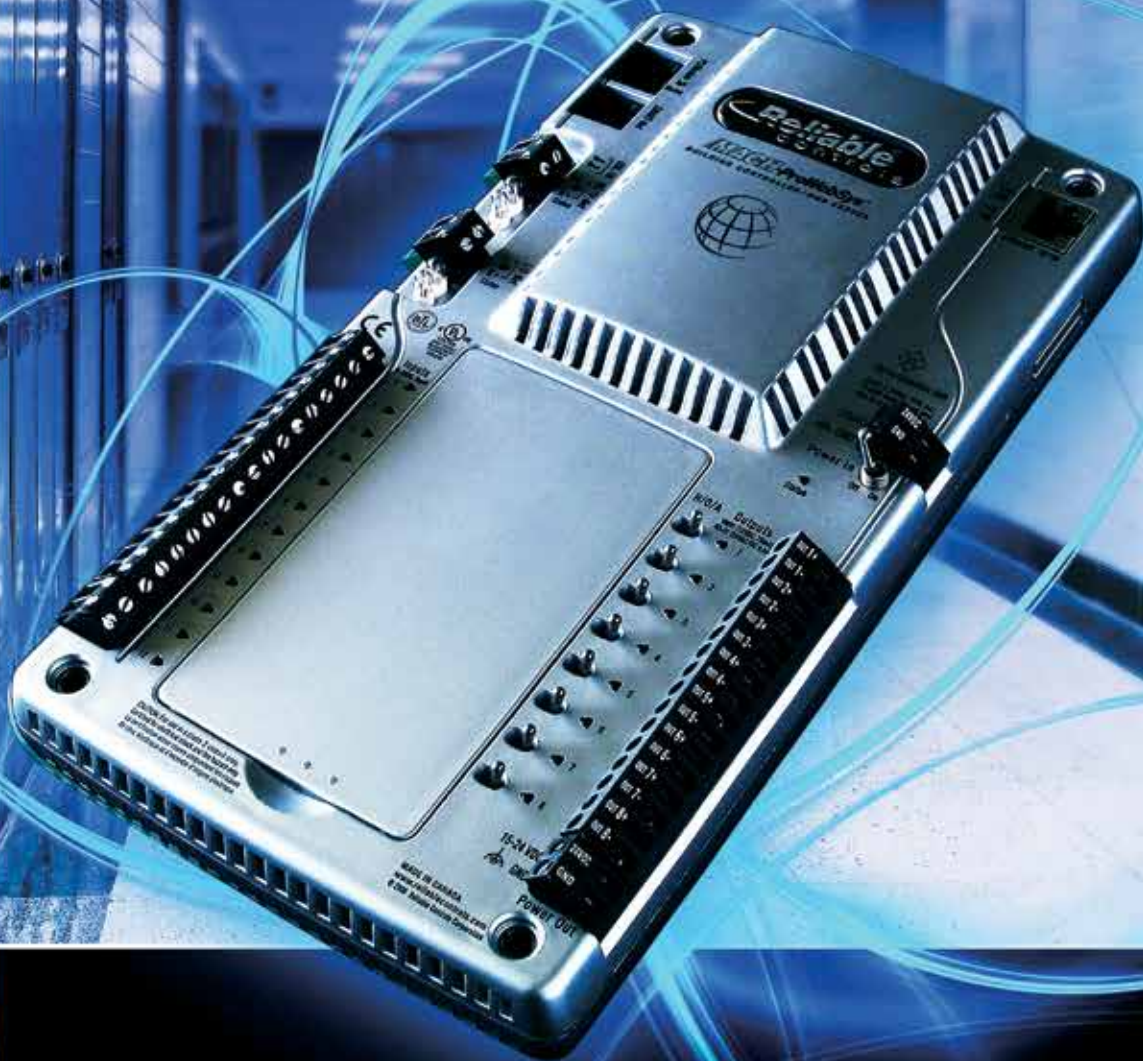
With continuous energy savings over the past ten years, Santa Fe has reduced its annual energy consumption while also adding facilities, and is smoothly transitioning to a new facilities management team. 

ENDNOTES

- 1 Tom Willie, "Facility Realities: CFM as an Inevitable Trend," *Facility Management Journal*, May/June, 2014, see: http://fmj.ifma.org/article/Facility_Realities%3A_CFM_as_an_Inevitable_Trend/1711354/209515/article.html
- 2 National Institute of Building Sciences, "Construction Operations Building Information Exchange (COBie)," see: http://www.nibs.org/?page=bsa_cobie

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forward thinking



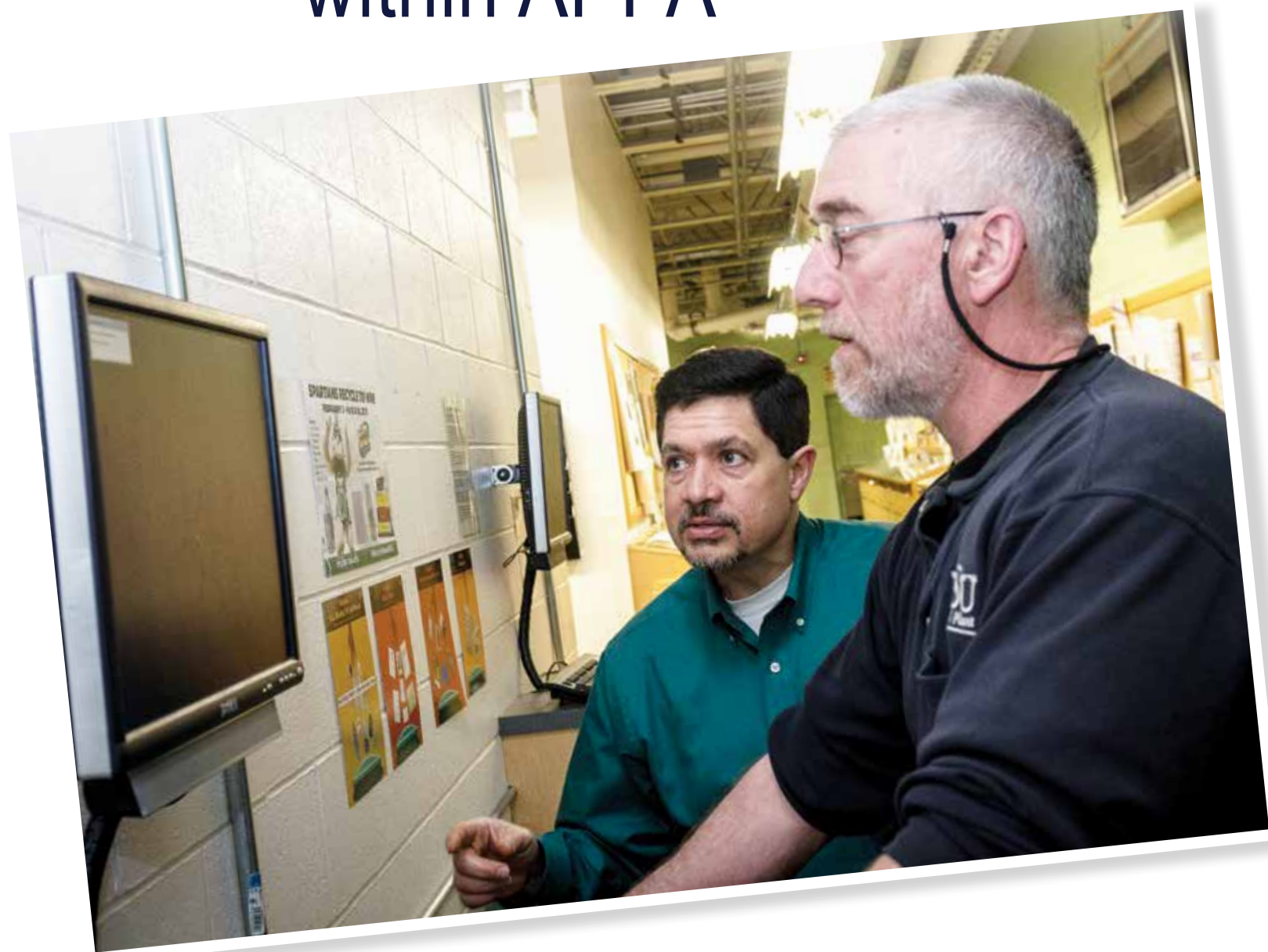
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A Study on **MENTOR** within APPA



BY JOHN P. MORRIS, P.E., CFP

ING

Mentoring is not a new concept; it has its roots in ancient Greece. Homer recounted how Odysseus, before leaving home for the Trojan War, turned to his trusted friend, Mentor, to provide care and guidance in his absence for his young son, Telemachus. Thus, the word “mentor” is one that we associate with wisdom and counseling.

Throughout the millennia, mentoring or providing guidance and counsel to another individual has frequently occurred spontaneously as informal relationships: a supervisor at work who takes an interest in an emerging professional’s upward mobility, a teacher who takes extra time with a struggling or promising student, or an older family member who provides a shoulder to lean on when needed.

In recent years, as growing numbers of people have recognized the tremendous power of mentoring, formal mentoring programs have been cropping up throughout the public and private sectors. More and more community organizations, professional organizations, businesses, and governments are launching formal mentoring initiatives. Consequently, there is a growing need for skilled mentors and effective mentoring programs that adhere to sound management and operation practices. APPA now has the unique opportunity to capitalize on its own mentorship program.

In June 2014, through the support of APPA’s Center for Facilities Research (CFaR) and with the assistance of Steve Glazner, APPA’s director of knowledge management, a survey was distributed to the APPA membership requesting their interest in having a mentorship program. This article provides a summary and related inferences based on the results of that survey.

BACKGROUND INFORMATION

In 2008, the Rocky Mountain region of APPA (RMA) began a mentoring program known as the Fourteeners Club (a.k.a. 14ers Club). The purpose of the club is to:

1. Provide a recognition program for individuals within RMA who aspire to greater heights.

2. Support RMA in its mission to elevate the leadership and influence of facilities professionals.
3. Recruit and mentor others to prepare for and fulfill leadership roles at their own institutions, within RMA and within APPA.

To become a member of the 14ers Club, RMA members must climb 14 peaks. Peaks consist of longevity, participation, and service requirements. Members of the RMA 14ers Club are expected to be committed to advancing the goals of RMA and to the promotion of hospitality, mentorship, communication, and comradeship within the region.

In 2010, the Midwest region (MAPP) began its own mentoring program known as the M&Ms (Mentors and Mentees), and the concept expanded to the Eastern region (ERAPP) and then to the Pacific region (PCAPP). The M&M program offers an opportunity...

1. For members to engage with other facilities management professionals.
2. To connect young professionals with seasoned professionals.
3. To share successes and lessons learned to strengthen our profession.
4. To share professional development.
5. For guidance and information.
6. To network and engage in career prospects.
7. To have fun and build lasting relationships.

In December 2013, the four regional mentoring program coordinators began a quarterly conference call to share their successes and lessons learned.

THE SURVEY

The intent of the survey was to determine the interest of APPA’s membership in mentorship programs for educational facilities professionals. Since several APPA regions had started mentoring programs, results from the survey would help determine if there is sufficient interest to continue developing additional programs.

SURVEY RESULTS

There were 347 responses to the survey. If we assume a population of 5,000 APPA members eligible to respond to the survey, then this response provides a confidence interval of just over 5 percent with a confidence level of 95 percent. This indicates that the sample size adequately represents the opinion of the overall APPA membership. If there were more than 5,000 eligible members, then the response rate would not be sufficient to be considered a true statistical sample of the

The survey asked the following questions:

1. How many years have you been in the educational facilities business?
2. What is your region?
3. Describe your leadership role/position at your institution.
4. Identify your area of responsibility.
5. Are you aware of any existing mentorship program offered by an APPA region or chapter?
6. Does your own region or chapter have a mentoring program?
7. If you answered YES to Question #6, do you participate in a mentoring program?
 - a. Are there reasons you have chosen not to participate?
8. If you have participated in a mentoring program, did you find it beneficial?
9. If APPA, your region, or chapter had a mentoring program, would you be willing to participate as a mentor?
10. If APPA, your region, or chapter had a mentoring program, would you be willing to participate as a mentee?
11. Do you feel that a mentorship program would benefit you in your career path or APPA journey?
12. What reasons would lead you to participate in a mentorship program? Check all that apply.
 - a. Develop a professional network
 - b. Address a professional challenge or problem I am facing at work.
 - c. Learn how to deal with difficult people, or assistance with a current challenge.
 - d. To enhance my career and prepare me for the next level.
 - e. Pass forward my experience.
 - f. Learn how to become more involved with APPA, my region, or my chapter.
 - g. Assist me with my APPA journey.
 - h. Assist me with developing my leadership skills.
 - i. Share knowledge.
 - j. Help others excel in their career.
 - k. Assist others in their APPA journey.
 - l. Other.
13. Do you feel there are any specific elements of a mentoring program that should be considered during the program's development?

organization; i.e., supervisor up through the senior facilities officer (SFO), and a good mix of respondents with varying areas of responsibility across the facilities profession. These various distributions allow for reasonable inferences that the survey results represent a wide distribution of the respondents without being skewed by any one group.

Over two-thirds of the respondents indicated they have participated in some form of a mentoring program in the past and found it to be very beneficial. Many of the respondents found mentoring beneficial early in their careers and would like to share that experience with others.

There is a strong willingness of respondents to participate as a mentor (81 percent). Willingness to be a mentor was evident for all levels of experience and years in the industry. As might be expected, the percentage of willingness to be a mentor for those with 0 to 5 years of experience was lower than those with greater than 15 to 20 years.

There is also a strong desire to participate as a mentee (75 percent). Those newer to the industry were more likely to want to be mentored, although there was still a high percentage (55 percent) of those with greater than 20 years in the industry that indicated they would benefit from having a mentor.

A high percentage of the respondents (85 percent) felt that a mentoring program would benefit them in their APPA journey. The 15 percent who felt otherwise tended to be retirees and longtime members of the organization. However, several of the more senior respondents felt that a mentoring program would

be a great opportunity for retirees and emeritus members to continue to contribute.

One observation that appeared contradictory is that 81 and 75 percent of respondents respectively answered "yes" to questions 9 and 10, asking if they would be willing to participate as a mentor or mentee, and 85 percent answered "yes" to question 11, asking if they felt that a mentoring program would benefit them. However, 51 percent of respondents answered "no" to question 7, asking if they participated in an existing program in their region if they were aware of it. Further investigation is necessary to determine why members do not participate despite

available population. But in this case the responses do provide enough information to make some reasonable observations and inferences. Thus, it was assumed throughout the study that the sample population adequately represents the opinions of the larger APPA membership.

The APPA overall results had a reasonable representation across all of the APPA regions ranging from 9 percent in PCAPPA to 25 percent in the Rocky Mountain region, a fairly good distribution of responses from those new to the industry through those with longer-term experience. There was a good mix of respondents throughout various leadership levels in the

the overall results indicating that they would be willing to and would find it beneficial. Mentoring may not be desirable for everyone, but there appears to be enough interest from others that a program would be beneficial.

A common concern from those who answered “no” to question 7—“Do you participate in a mentoring program?”—is the perception that it would be too time consuming. It is important for program administrators to stress that it can help save time.

For example, if a mentee is struggling with an issue, then having a mentor to talk with would save time compared to trying to solve the problem on their own. For the mentor, it may seem like it is taking more of their time to help another individual, but it may give the mentor some additional insight that helps to improve the mentor’s existing programs. Contact between mentors and mentees can be as little as one hour a month and still be productive.

Some individuals were concerned that if they were required to have face-to-face meetings, then location would be a deterrent. However, face-to-face meetings can happen at the annual regional conferences, and electronic tools such as e-mail and social media can be useful ways to stay in touch. Scheduling a regular time for a phone call (5 to 10 minutes a month) or as needed can also be effective.

When asked what specific elements of a mentoring program should be considered during the program’s development, the most common responses were:

1. Good matching and pairing of the mentor and mentee.
2. Time concerns—some were concerned that it would take too much time, especially if regular face-to-face meetings were expected.
3. Developing leadership skills.
4. Location—some felt close proximity was important, although others felt that cross-institutional matching was best in order to provide a broader perspective and network base.
5. Developing clear objectives for programs.
6. Easy access in order to reduce the time commitments and to help with pairings that may not be in the immediate location.

7. A good program review to ensure those who are participating are getting the most out of the experience.
8. Ensuring commitment by those who participate.

The most common reasons for wanting to participate in a mentoring program include sharing knowledge, passing forward experience to others, developing a professional network, helping others excel, and developing leadership skills. A high number

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Mentorship is....the 20+ year friendship and professional relationship between Lander Medlin and Doug Christensen. Each would say mentoring works in both directions.


of respondents felt that a mentoring program could help with succession planning within their organization. Over 40 percent of the respondents would like to participate to learn more, the regional governance indicating there is a market for potential future board members if the regions can help these individuals meet their goals.

CONCLUSION

There is an interest for a mentoring program within APPA, and APPA should consider endorsing the concept. All regions, with the support of APPA, should consider starting or expanding a program within their region. Those regions with existing programs should continue reviewing their programs to ensure they are meeting the expectations of the participants and continue to promote their programs.

One option to consider is for APPA to help develop the general guidelines for an APPA mentoring program and then work with each region to tailor it to their specific needs and desires. Representatives from the SFOs and the emerging professionals could assist with or provide review during the program development. It may be desirable to merge the existing programs (the RMA14ers, MAPPA, and ERAPPA)

into one mentoring program under APPA. This option may be easier for the mentorship overall and could help with explaining the program. Each region could still have certain aspects tailored to their region, but from a consistency standpoint, one program may have its advantages.

The survey responses included numerous comments that training on how to be an effective mentor would be useful. Thus, APPA may want to consider developing a mentor training program. Training could then be delivered at the regional levels, similar to training provided by the Supervisor's Toolkit. 

John Morris is associate vice president of facility services at Northern Arizona University, Flagstaff, AZ. He can be reached at john.morris@nau.edu. His article is adapted from his research project (project CFaR027-12) conducted under the auspices of APPA's Center for Facilities Research. Morris will be presenting his findings and recommendations on mentoring at the APPA 2015 conference in Chicago in August. His full research report can be found at www.appa.org/research/cfar.



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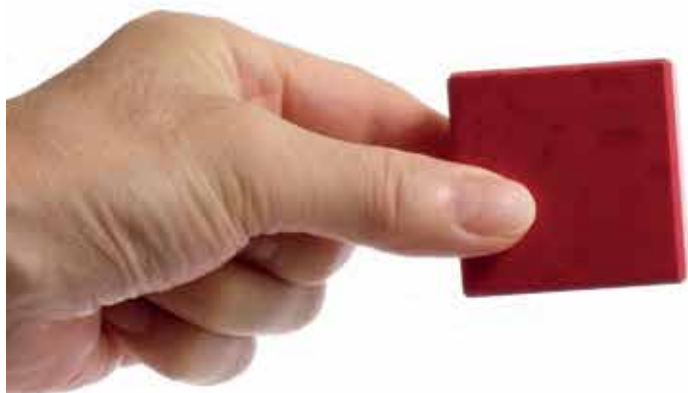
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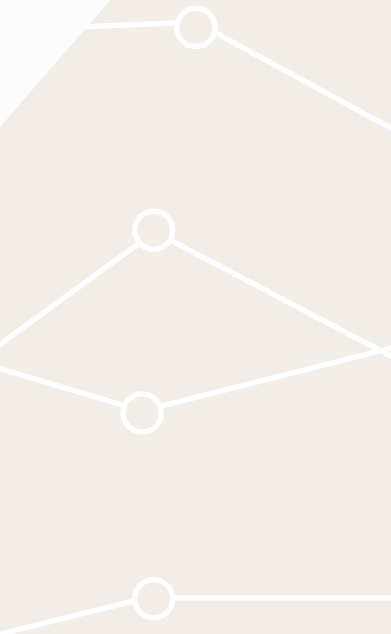




Tracking Your Facilities Vital Signs

By Ernest R. Hunter Sr., P.E., ACP, MOS (Master)

SALARY TRENDS in Facilities Management: SENIOR LEADERSHIP



In our first FM salary report published last year, “Six-Year Salary Trends for Facilities Professionals,” I wrote about the importance of facilities professionals devoting as much effort, study, analysis and debate to our employee compensation policies, practices, and trends as we do to the more exciting and comfortable technical challenges of our profession (*Facilities Manager*, July/August 2014). The article and the sources it cited were intended to serve as a resource for you and your fellow facilities professionals to gain insight into facilities management workforce salary trends. I described a method for using the APPA *Facilities Performance Indicators (FPI) Report*, the Department of Labor Bureau of Labor Statistics (BLS) annual National Compensation Survey, the national *Consumer Price Index (CPI)*, and the national *Employment Cost Index (ECI)* to perform trend analysis on the health of your workforce facilities management compensation program.

In this article I will drill down into the personnel salary data of the APPA FPI report and focus on 11 facilities management senior leadership job titles reported on from the annual APPA FPI survey. There are six modules in the APPA FPI survey representing the six facilities management core functions—*Administration*, *Maintenance*, *A&E/Construction*, *Custodial*, *Landscape/Grounds*, and *Energy/Utilities*. The survey collects salary data for 52 different jobs, grouped by the core function they are associated with. Due to space limitations, we have posted the charts showing salary data for all 52 job titles on the APPA website at <http://www.appa.org/documents/SalaryReportFigureswithText.pdf>.

SALARY TRENDS IN FM SENIOR LEADERSHIP JOBS

Let’s turn our attention to the 11 job titles that are designated as senior leadership jobs as indicated in Figure 1. It is important to recognize the value of the entire facilities management workforce and realize that proper salary policies and practices are key success factors in recruiting and maintaining high-quality personnel. Simply having a snapshot of current salaries is not enough to make an informed judgment about the impact of salary policies and practices on the success of your facilities management organization. Being informed about your organization’s salary trends and the relationship of salaries among different jobs within your organization and with certain external salary-related indicators will put you in a better position to make good salary management decisions.

Figure 1. 11 Senior FM Leadership Positions



Visit www.appa.org/documents/SalaryReportFigureswithText.pdf for additional informational salary data.

Figure 2 is a graph of salary trends for the 11 APPA FPI senior leadership job titles for the seven-year period from FY 07-08 to FY 13-14. A quick glance will reveal that the reported average salary for all senior leadership job titles is relatively flat over this period, with only slight increases in most of them and slight decreases for two of them. As you interpret the meaning of salary trends, it is important to review how the job titles are

defined in the APPA FPI survey. For example, the APPA FPI definition for Chief Facilities Officer is:

The highest ranking facilities administrative officer responsible for the operation and maintenance of the institution’s facilities. Common titles include vice president for facilities, associate or assistant vice president or vice chancellor, director of facilities management or physical plant, and superintendent of buildings and grounds. An institution may report more than one individual in this data field when primary responsibility for activities such as planning, construction, and maintenance of facilities are separated within the institution.

After reviewing the APPA FPI job title definitions, you can compare current and historical salaries for comparable job titles in your organization to those in Figure 2 and get a macrolevel view of how salaries stack up for people in your organization serving in senior leadership job titles.

The data in Figure 2 provides insight into average salary trends for senior leadership job titles for K-12 and higher educational institutions as reflected in the APPA FPI report. However, a trend analysis of your organization’s salary history compared to trends of other external salary data and related indicators can also be informative.

The Bureau of Labor Statistics publishes the *Consumer Price Index* (CPI)¹ and the *Employment Cost Index* (ECI).² The *CPI* tracks an element of the cost of living and also tracks the cost to employers of one hour of labor, thereby representing salary trends for various groups of workers. By normalizing the CPI, ECI, and the APPA FPI data using FY 07-08 as the base year, we are able to compare the senior job title salary trends with two national economic indicators. In other words we analyze the change in seven years compared to the base year of FY 07-08. These normalized results are displayed in Figure 3.

The normalized view provided by Figure 3 is more effective in displaying the slight increases and decreases in average salary over the seven-year period for each of the senior leadership job titles. The two dashed lines represent the normalized CPI and ECI as denoted in the graph. The CPI and the ECI have had a steady mild growth rate, with both indicators coincidentally climbing to 11 percent higher than their FY 07-08 value.

Although the CPI and ECI are national macro indicators, the implication is that an aspect of the cost of living was 11 percent higher in FY 13-14 than it was in FY 07-08, and that average salaries kept pace with the cost of living from a national macro viewpoint. However, the average salaries for senior leadership job titles as reported in the APPA FPI lagged behind the cost of living and national salary growth trends. All but one senior leadership job title in the APPA FPI experienced a FY 13-14 growth rate of less than 8 percent compared to FY 07-08. The average compos-

Figure 2. FPI Senior Leadership Jobs – Average Annual Salary Trend

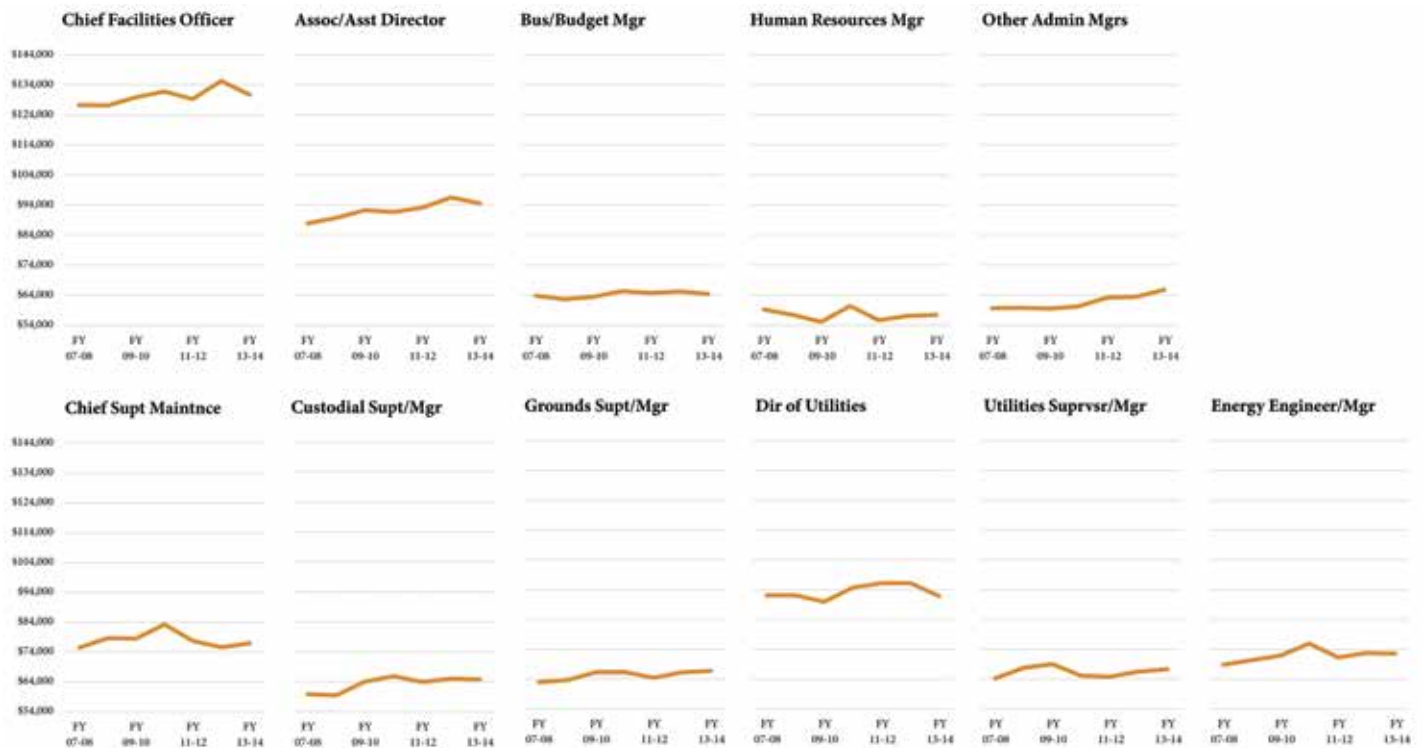
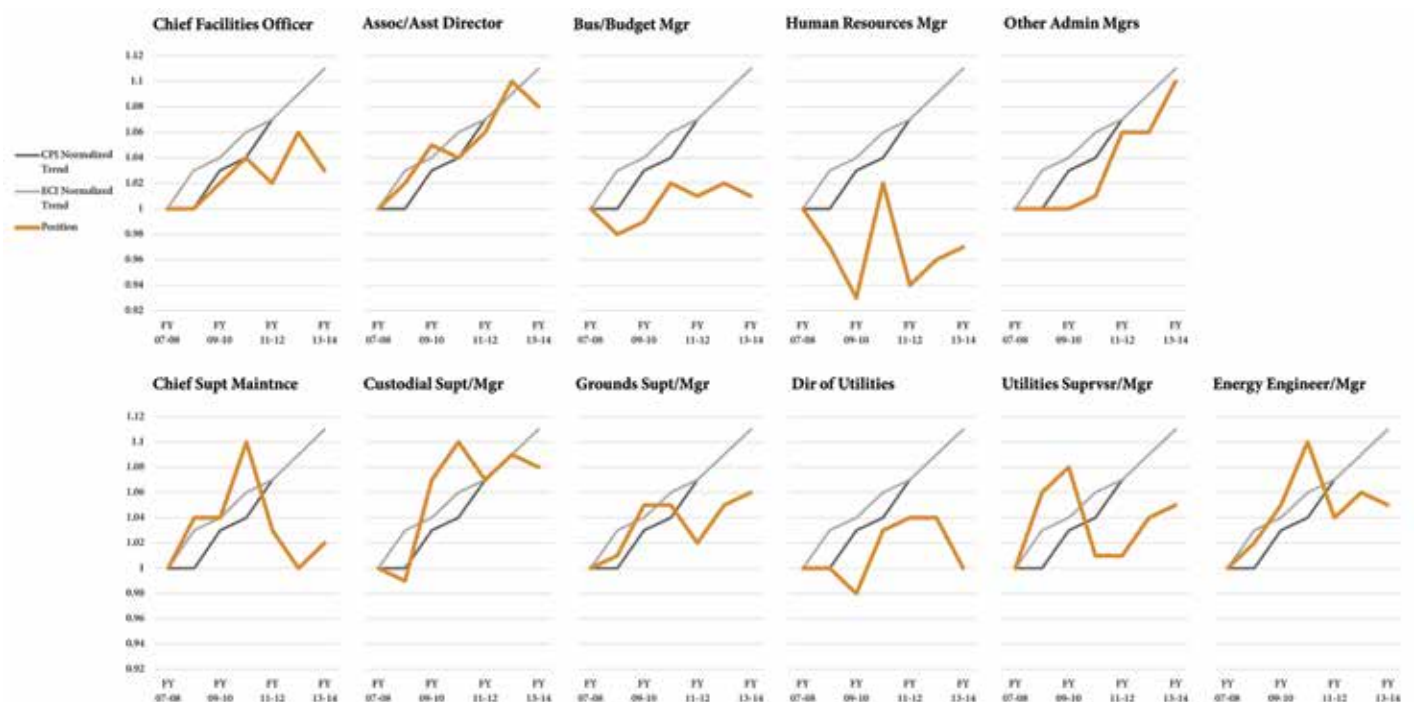


Figure 3. FPI Senior Leadership Jobs – Normalized Salary Trend



Base Year = FY 07-08



Process Overview

Starting with seven years of salary data from the files downloaded from the APPA FPI report on the APPA website, we also downloaded the ECI and the CPI data files from the BLS website. We built an Excel data model integrating the data from all those sources. Then, using the same method as BLS, we created composite indicators to represent groups of jobs. We normalized the data against the FY 07-08 base year for data compatibility and “apple-to-apple” comparisons. In addition to comparing current average salaries, we also reviewed salary trends and compared them with trends for three external salary-related indicators.

ite change for all 11 job titles is 4 percent compared to the 11 percent change in the CPI and ECI.

In order to visualize trends for the APPA FPI senior leadership job titles as a group, I used the same method used by BLS to generate a composite trend line. This is done by computing the total salary amount reported for each job title (average salary times the number of full-time equivalent employees (FTEs), summing the results, dividing by the total number of FTEs reported in the APPA FPI survey, and then normalizing against the base year of FY 07-08. I also performed these same operations on the salary trends for all 52 APPA FPI job titles.

By normalizing this composite trend data, we are now able to compare the result with the normalized CPI and ECI as shown in Figure 4. Close inspection of Figure 4 reveals that as a group, the salary for APPA FPI senior leadership job titles kept pace with the CPI and ECI until FY 12-13. From FY 12-13 to FY 13-14, while the CPI and ECI continued to exhibit mild growth, the composite average salary for the APPA FPI senior leadership job titles exhibited a relatively flat trend. One might make a macro conclusion that FPI senior leadership job titles salaries failed to keep pace with the cost of living and fell behind national salary growth for the seven-year period of this analysis.

An interesting observation is that FPI senior leadership jobs composite salary trends roughly follow the composite trend for all 52 FPI job

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Figure 4. APPA FPI Senior Leadership Jobs—Composite Salary Trend (Base Year = FY 07-08)

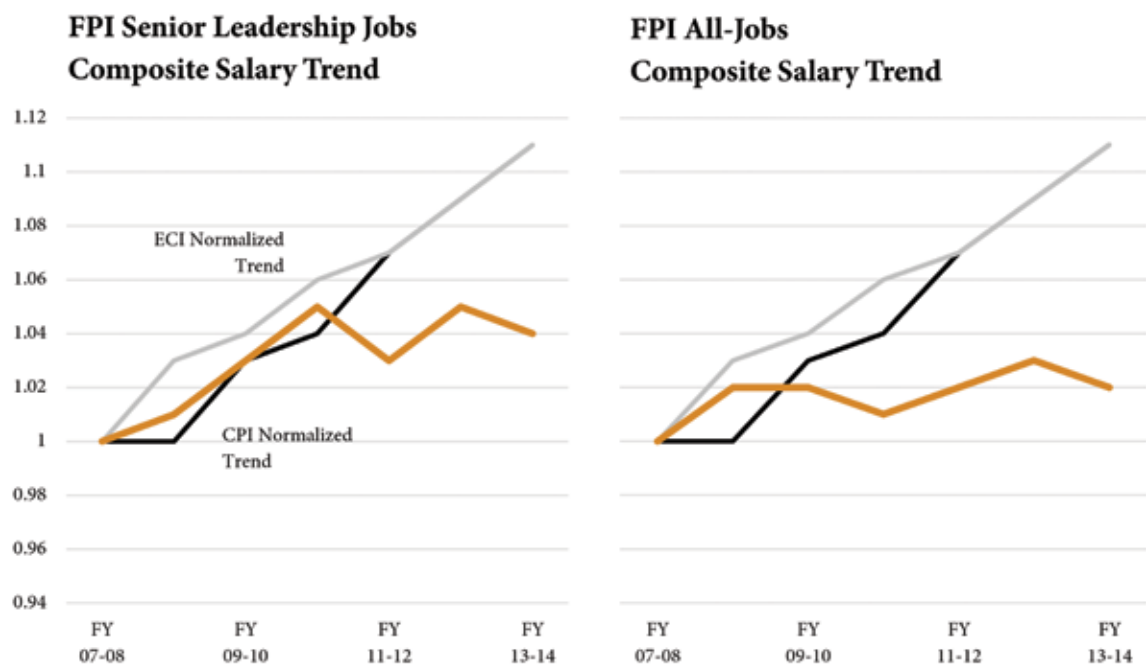
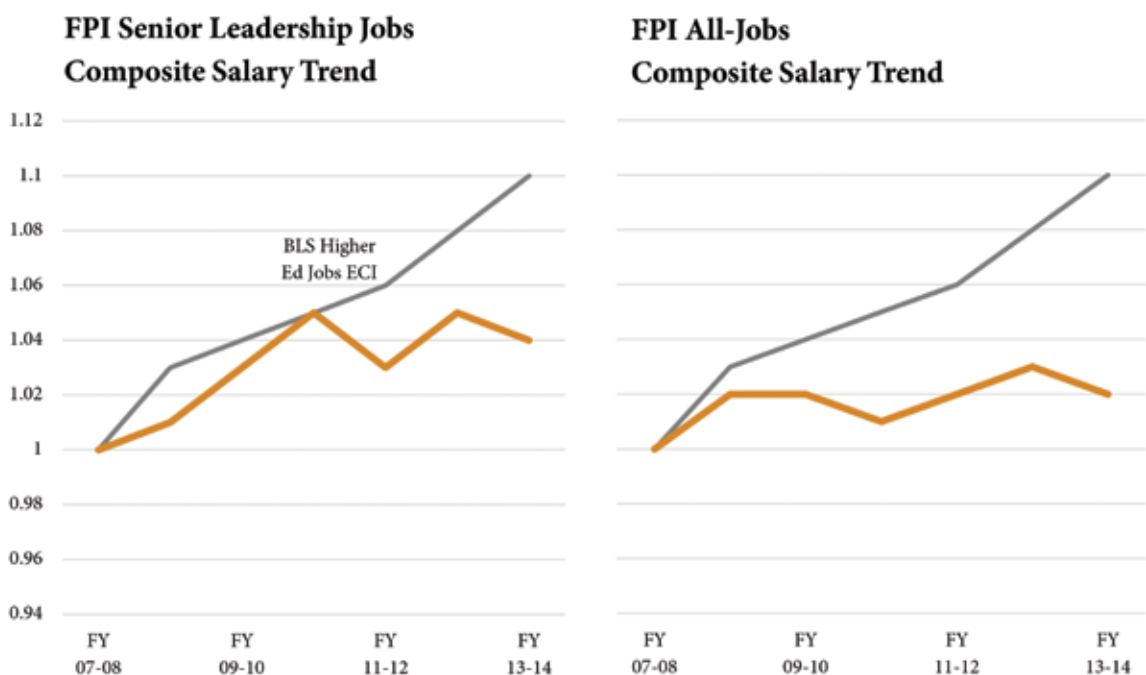


Figure 5. Higher Education Jobs Salary Trends (Base Year = FY 07-08)



titles except for a divergence in FY 10-11, when the composite average salary fell for the 52 FPI job titles but rose for the senior leadership job. At the end of the seven-year period, the composite average salary for the 11 senior leadership jobs had increased by 2 percent more than the composite salary average for the 52 FPI job titles. Therefore, salary trends for the 11 FPI leadership job titles fared slightly better than the general population of job titles reported on in the FPI report for the seven-year period.

So what about salary trends for all jobs at higher educational institutions in general? Are the trends exhibited by the FPI leadership job titles and the 52 FPI job titles just a reflection of the salary trend for jobs at higher educational institutions in general? The short answer is no. The *BLS Employment Cost Index* data is provided for various categories or sectors, one of which is the *junior colleges, colleges, universities, and professional schools* category.

I have normalized this data, plotted its composite trend line in Figure 5, and labeled it *BLS Higher Ed Jobs ECI*, along with the composite trend line for the FPI leadership job titles and the FPI all jobs trend line. As can be seen, the composite salary trend for all higher education jobs as reported by BLS significantly outpaced salary trends for jobs reported in the FPI.

CONCLUSION

By using data from the APPA FPI report and other public sources, you can make better judgments about the adequacy of your organization's salary policies, practices, and historical trends. Armed with data-driven conclusions about salaries backed up by thoughtful analysis, you will be in a better position to advocate for your organization's fair and appropriate share of your institution's salary budget. 💰

ENDNOTES

1. Consumer Price Index (CPI): see <http://www.usinflationcalculator.com/inflation/consumer-price-index-and-annual-percent-changes-from-1913-to-2008/>
2. Employment Cost Index (ECI): see <http://www.bls.gov/web/eci/ecbistrynaics.pdf>

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Focusing on the BOK: Energy, Utilities, and Environmental Stewardship

By Darryl K. Boyce

One of the most comprehensive and ambitious initiatives undertaken by APPA has been developed through the online Body of Knowledge (BOK). This digital resource is the most authoritative and up-to-date guide to the art and science of educational facilities management, and is available 24 hours a day, seven days a week. As an APPA member you can access this resource, which also provides online access to every staff member at your institution! The current BOK builds on the foundation provided by the four-volume printed desk reference *Facilities Management: A Manual for Plant Administration*, which was last published in 1997. To learn more, visit www.appa.org/bok.

THE BOK: PART THREE

This article will focus on the BOK's section on Energy, Utilities, and Environmental Stewardship. This section is significant, as it covers areas of responsibility that are not normally associated with traditional facilities management, but that are a normal part of educational facilities management in a campus environment involving complex utility distribution systems similar to those in a small city. The chapters within the Energy, Utilities, and Environmental Stewardship section are structured to support the operation of multiple facilities within the campus environment and are arranged

in three sub-sections: Energy Utilization and Environmental Stewardship, District Energy Systems, and Other Utilities. Many of the chapters that were contained in the third edition have been completely rewritten, others have been significantly updated, and new ones have been added. A small number of chapters are still being worked on, and the new versions of those chapters will be online soon.



WHAT WE FACE TODAY

As part of the development of this current BOK, we asked the authors to provide information on the application of current technologies, regulations, and issues currently faced by facilities management professionals.

An example is the development of the new chapter by Jiri Skopek and Walter Simpson, **Roadmap for Campus Environmental Sustainability**. This chapter provides a structure for the assessment of sustainable practices and energy use for a complete campus operation, and also provides concepts that effectively support initiatives to improve the envi-

ronmental impact of the campus. This chapter covers the topic through use of an action-plan format, from establishing senior management support, creating a baseline, setting goals, and implementing initiatives, to monitoring results. This chapter includes examples of tools that assist in the documentation of the current state, opportunities for improvement, and ongoing monitoring of environmental sustainability.

The principles outlined in this chapter were used in the creation of the APPA Energy and Sustainability Assessment Tool (ESAT). In developing this tool in cooperation with the Jones Lang Lasalle organization, APPA has provided a powerful way for members to facilitate the assessment, documentation, and tracking of the energy and sustainability features of each building and the campus operations. Once implemented, the ESAT will allow each institution to prioritize energy and sustainability enhancement programs and to measure results. This chapter also includes many Web links to other resources and is sponsored by the Southeastern region (SRAPPA).

In the **Data and Voice Network Infrastructure** chapter, Denis Levesque has outlined strategies for facilities management and information technology (IT) professionals to jointly provide effective IT services to the campus


community. This cooperation between facilities management and IT professionals is even more important as we move into the era of massive amounts of data (big data). We will be expanding this chapter in the near future to show how the integration of systems will enhance data availability and improve campus operations.

A new chapter on **Computerized Control and Monitoring Systems** by Scott MacDonald provides information on newer technologies in the expanding area of computerized control systems for buildings. This chapter expands on the monitoring and data analysis role of the control system, and also covers building control fundamentals, selection and instrumentation, and operational strategies.

In the **Campus Utility Systems Master Planning** chapter, John Tyseling and I provide a high-level overview of the issues and approaches that should be considered when developing or expanding a campus utility system. You will learn why master planning is important, how utility master planning connects with overall institutional master planning, what variables to consider during the planning process, and what the funding implications are for these approaches.

In the **Cooling Systems and Thermal Storage** chapter, Kent Peterson walks us through the advantages and disadvantages of central cooling systems, including the fundamentals of central plant design, covering refrigerants, chillers, prime movers, pumps, piping cooling towers, and auxiliary equipment. The chapter also reviews the topics of system design consideration, system performance operations and maintenance, and thermal energy storage.

In a new chapter, **Energy Generation Alternatives**, Donald Schmidt and I cover the area of nontraditional

sources of energy to heat or cool campus buildings, including combined heat and power (cogeneration) and alternative electrical generation options. This chapter covers basic principles of these systems, regulatory issues, and business case evaluation. 

Darryl Boyce is assistant vice president of facilities management and planning at Carleton University, Ottawa, ON. He is the BOK's content coordinator for Energy, Utilities, and Environmental Stewardship, and can be reached at darryl.boyce@carleton.ca.



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Factors that Affect Maintenance Trade Staffing Models

By Matt Adams, P.E.

Recently the facilities administration of Arizona State University began to use the APPA staffing guidelines to model their requirements. This work led to some questions about using the reference books and if there are other factors such as campus population density that would impact the three models of trades, housekeeping, and grounds. While it was quickly concluded that density does affect custodial operations and not grounds operations, the trades were less clear. This question started a dialogue that resulted in some interesting discussions and perhaps conclusions.

NO TWO CAMPUSES ARE ALIKE

First of all there is the reality that no two campuses are exactly alike. Some are rural and some are urban. The funding levels vary full spectrum. The types and sizes of the facilities vary with the academic mission. Naturally there are regional climatic factors that play as well. Given all of this, what additional factors really *do* impact the models, or even better, what factors can be manipulated to further rationalize and exploit the models?

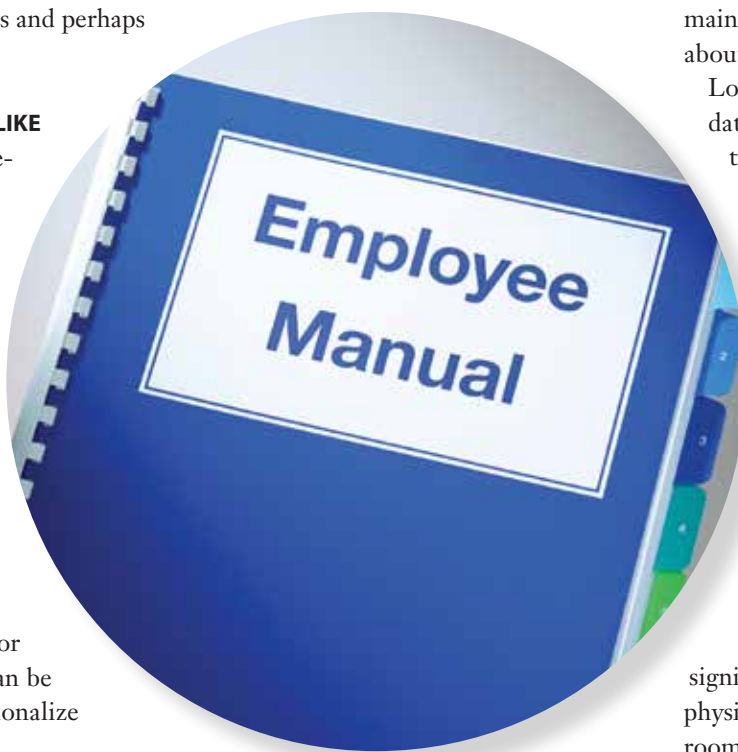
To figure this out one must first acknowledge that skilled labor is the constraining factor of the problem (model). From there we can list many factors that impact positively and negatively the maintenance requirements (skilled trade hours) of our campuses. Many surveys have concluded the fact that in facilities management the most satisfied skilled workers are those that have the fewest obstacles and the most time to perform their respective jobs well. As managers, creating this environment should be our goal.

TRAVEL

For the skilled trades and grounds staff, travel is a relevant factor. Everyone knows anecdotally that travel to and from performing services uses valuable time but few know how much. There is data out there that allows for high-level analysis and can result in policy changes. For example, from time studies performed by the University of Miami in years past, we know that a central dispatched maintenance force uses approximately 35 percent of its labor traveling. Alternatively, a zoned maintenance staff with truck stock uses about 22 percent.

Looking at Google Maps or the FPI data you can compare your campus to U of M and see if you would be taxed even further if you are centralized and larger than the Coral Gables campus. Most APPA professionals believe in the benefits of zone deployment. Nevertheless, the “travel” factor remains an adjustment to staffing models. The average length of trips multiplied by the daily average volume impacts larger spread-out campuses more than compact urban campuses.

If you determine that travel is significant because you have an off-site physical plant office or off-site stockroom, you can estimate the cost using



the factors above multiplied by the fully loaded cost of the skilled staff involved.

WORK RULES

A second factor involves work rules. Many of our peers have one or more collective bargaining agreements. In addition, some that are not unionized have unique policies regarding work rules. The stricter the delineation of trade specific labor in your work, rules the greater the impact on your staffing model.

It is true that most basic preventive maintenance activities are based on a single trade. However, other work, rules associated with breaks, lunch, and mandatory two-person teams certainly affect staffing models as well.

CAMPUS DENSITY

Density of the campus as a factor demonstrates the need to apply changes to the models carefully. Some have said that denser campuses require more maintenance due to increased “wear and tear.” This seems like an oversimplification.

If the buildings on campus were designed with a more typical density in mind and this increased dramatically over time, the original conclusion might hold true for some areas. However, architects and engineers design buildings with the density, traffic, and load in careful consideration so that equipment is installed in quantity and quality to meet such density.

Take for instance bathroom fixtures. The number of bathrooms and fixtures specified in the designs take into consideration the density of traffic of faculty, staff, and students. There will likely be more fixtures throughout the facility, but they will be used at a similar rate as at a less-dense facility. So this makes it interesting. The same impact results, but the reason changes. There is more maintenance for some items like bathroom plumbing fixtures resulting from an increased number of fixtures and not more rapid failure.

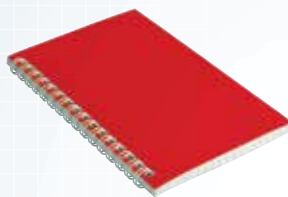
What building assets might fall into the same category?

- Elevators—clearly specified for traffic density
- Primary entrance doors and associated hardware—perhaps adding work for the carpenters for maintenance and repair. However, it’s not much in

the big scheme of things. The number and size of doors is still a result of fire codes and egress traffic density.

- Longer run times for HVAC equipment—only if the facilities were not properly designed to accommodate the increased density. If so, this is of little impact unless multiple substan-

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A



B



C



D

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dard systems are installed such as split systems or heat pumps.

- Increased wear and tear on water coolers or increased maintenance because of larger number of units installed to accommodate density.
- Bathroom plumbing fixtures, again based on original design, could be either more of them or more use of too few of them.
- Lighting—no impact that I can determine.
- Low-voltage systems, fire and BAS are not really impacted by density.
- Electrical supply, branch wiring are not statistically significant.

On the other hand, density might impact maintenance costs in other ways not related to the actual wear and tear on assets:

- Typically a dense campus means the trades don't have as much travel times considering they often use "mules" with shop stock on board and park next to the facility. This saves trade FTE time.
- Most dense urban campuses have fewer buildings due to the scarcity of land, but larger buildings on average. I would approximate the average GSF of all general fund facilities in the U.S. to be about 55-60k GSF. I would also guess the average GSF for dense urban campuses like ASU to be more like 100k+ GSF.

Why does this matter? The larger a building is built the more robust and heavy duty are its HVAC systems with less overall maintenance. In fact, large dense buildings often need little or no heating and only cooling,

and this is provided by large industrial-grade systems that are designed to run for a very long time.

CONCLUSION

In the final analysis creating your own staffing models provides insight into your operations in more than just a budgetary way. While trying to identify those factors that make your campus unique you will also find potential areas of improvements. This can come in the form of design standards, maintenance resource deployment strategies, and/or rationalized work rules. ☺

Matt Adams is president of Adams FM², Atlanta, GA. He can be reached at matt@adamsfm2.com.



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Book Review Editor: Theodore J. Weidner, Ph.D., P.E., CEFM, AIA

The job of a facility officer requires

attention to many details. These details may be strategic and future-driven or they may be mundane, operational functions.

Enjoy reading whatever catches your eye this summer. Here are two books that caught mine.

COLLEGE: WHAT IT WAS, IS, AND SHOULD BE

Andrew Delbanco, Princeton University Press, Princeton, NJ, 2012, 177 pp., softcover \$13.46, Kindle, \$9.99.

In order to be at the table and make meaningful contributions, the senior facilities officer (SFO) needs to know where the institution is headed. It is not enough to know the goals and aspirations of the institution and the current administration; one must also know the forces affecting the institution and higher education in general. So although *College: What It Was, Is, and Should Be* is not a book about facilities, it is a valuable book for an SFO and others interested in higher education trends.

As facility officers, we are maintaining, renewing, and renovating an inventory of facilities that were created based on “historic” decisions. With an average renovated age of over 40 years, these facilities reflect the strategic decisions of our youth, our parents’ youth, or those of older generations. For good or bad, change comes slowly in higher education.

In *College*, Delbanco charts the birth, development, and growth of higher education, predominantly in the Western world. He concentrates mostly on U.S. higher education and on well-endowed Eastern universities: Harvard,

Yale, and Princeton.

The early focus of those institutions was theological and meant to produce a well-rounded citizen who understood different perspectives, literature, and basic sciences. The physical organization of two of these campuses (Harvard and Yale) changed to a college/house organization echoing Oxford’s college system. Some other U.S. institutions followed this approach; Rice and UC-Santa Cruz are notable examples that I’ve visited.

Significant legislation influenced higher education: the Morrill Act in 1862 and the G.I. Bill in 1945. As Delbanco points out, these acts have changed the focus of higher education: Students no longer attend college to become better citizens and prepare for a career; they come to campus to learn a career. This focus on financial outcomes has distorted higher education. Concerns about student behavior haven’t changed much. Students still engage in inappropriate ways. Remember, they’re in college to learn—and to learn about life.

Delbanco’s *College* is about reminiscences and hopes, predictions and warnings. But if you are a facility officer, it is one more perspective that can open your eyes to potential outcomes for your

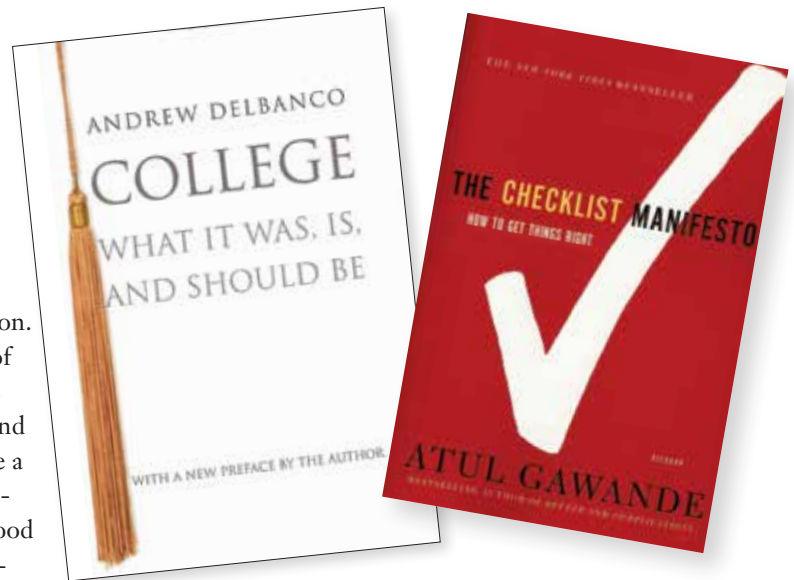
institution. Obviously, Delbanco cannot predict where higher education will be in 20 years, but he does provide an interesting narrative of how we got here and where we may go. If you have a seat at the table, *College* may prepare you for the discussion.

THE CHECKLIST MANIFESTO: HOW TO GET THINGS RIGHT

Atul Gawande, Picador, New York, 193 pp., softcover \$16.

A number of readers may not understand why a book written by a physician about how he used a checklist system to improve healthcare is relevant to facilities. To some extent, I was initially skeptical of *The Checklist Manifesto: How to Get Things Right*, but as I read further, it started to make sense.

A checklist—the thing used to make sure you don’t forget something—is typically used when you’re packing for a long trip, chaperoning a school



group, or shopping for an important dinner. Why do you have a checklist? So you don't forget an important piece of clothing or travel item, lose a child under your charge, or omit a key ingredient. *The Checklist Manifesto* was written for many of the same reasons—to demonstrate how even the most sophisticated professions can improve the effectiveness (and the safety of patients and the public) by making sure simple steps have been taken.


Atul Gawande has documented the challenges and successes of the medical profession in other publications. Although medical challenges are better controlled by following checklists, *The Checklist Manifesto* demonstrates that we use these tools in many other ways to ensure a successful conclusion to a complex task. Think about the tasks handled by facility managers (for example, the

construction of a building, which is complex and referenced, using critical path scheduling and communication procedures to complete). In facilities, we use checklists for many things. However, we don't seem to use checklists often enough. Maybe we're just overconfident, like some surgeons who resisted using checklists in a hospital surgery suite.

Checklists should be used in almost every complex task we do: cleaning buildings, restarting a boiler, making repairs on a roof, policing campus grounds for trash, and so on. Yet many of us think that a checklist is beneath us, or that the task is not important enough. Gawande does a reasonably good job explaining that checklists are important for many reasons and provides some examples in the appendix. I argue we should be using them simply to demonstrate we can plan our work-

day well, and get the job done right the first time.

The Checklist Manifesto is an easy read, and is interesting and lighthearted. It should open your eyes to the importance of being organized and taking care of business, even when your business might seem to be mundane or have a minor issues.

Facility officers affect the lives of hundreds or thousands of people every day. We may not do open heart surgery, but lives depend on what we do and how well we do it. 

Ted Weidner is an associate professor at Purdue University, West Lafayette, IN, and consults on facilities management issues primarily for educational organizations. He can be reached at tjweidne@purdue.edu. If you would like to write a book review, please contact Ted directly.



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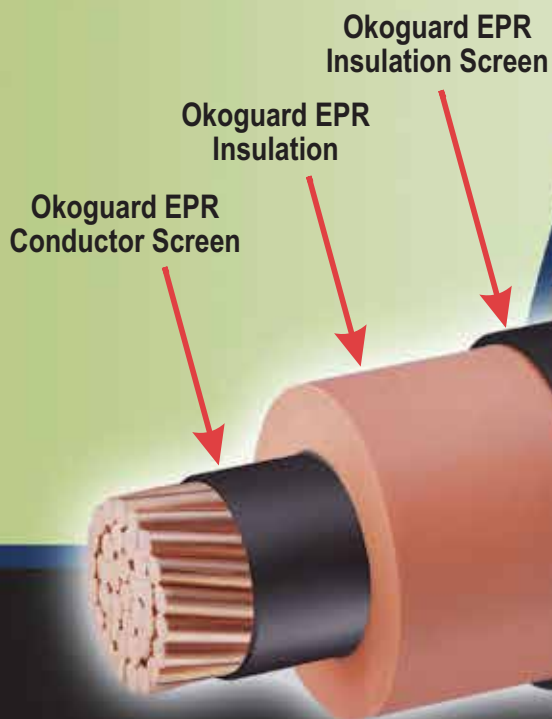
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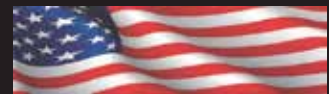
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