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# FACILITIES manager

JUL/AUG 2013



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FM Success Through Analytics

FPI Cohort Reports

ESAT—Under the Hood

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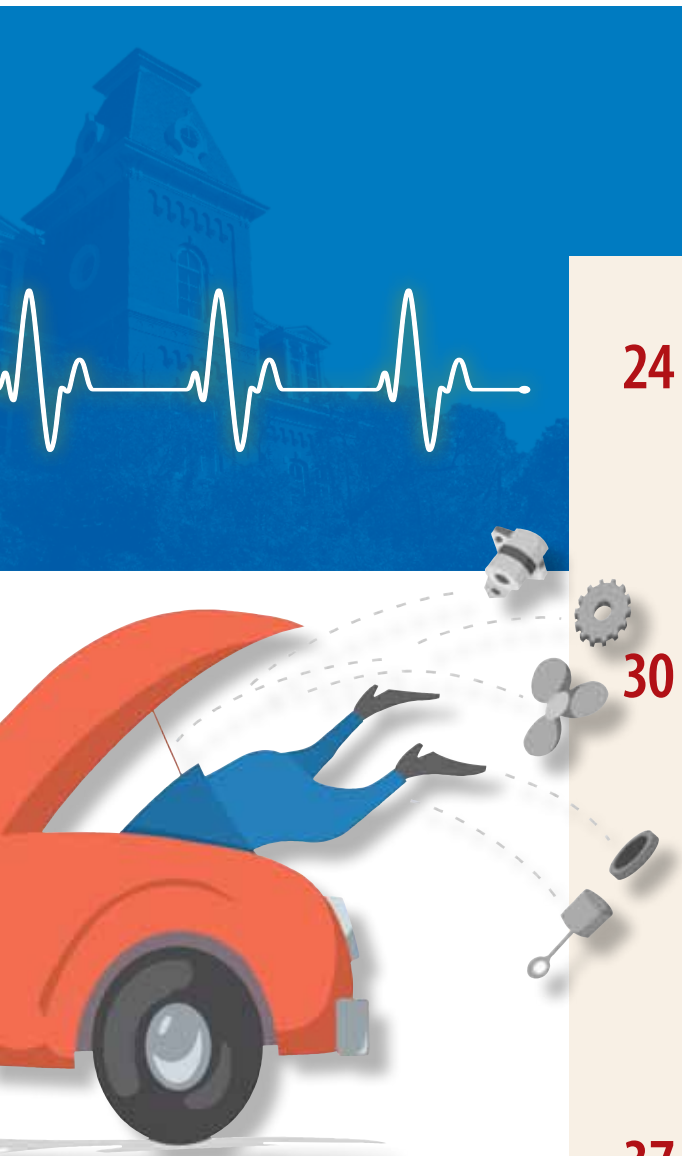


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There is a good reason to look at energy and sustainability as *the* capital investment—savings that can be achieved through energy conservation and other sustainability measures can help offset increasing deferred maintenance and capital renewal costs.

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\$1.08	69,686	2	\$1.09	38,504
\$1.49	77,480	2	\$1.16	29,497
			\$2.18	33,259
\$3.08	77,962	3	\$2.19	27,292
\$1.62	71,176	2	\$1.21	38,292
\$1.98	61,693	2	\$2.11	35,289
\$2.00	41,467	2	\$1.36	32,592
\$1.57	71,192			





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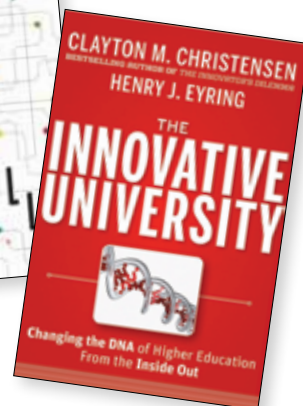
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## GUCKERT AND KING WIN 2013 REX DILLOW AWARD

### An annual duty of mine that I

always enjoy is announcing the winner of APPA's annual Rex Dillow Award for Outstanding Article in *Facilities Manager*. This year I am pleased to share that **Donald J. Guckert** and **Jeri Ripley King**, both of the University of Iowa, are the 2013 award recipients for their article, "Creating a Shared Context for Value-Based Collaboration & Decision Making."

Published in the July/August 2012 issue, Don and Jeri's article describes a process and a model to help answer the question: "How do you succinctly communicate the breadth, complexity, and forward-thinking approaches that are necessary for facilities management organizations to operate in today's complex and ever-changing environment?" The article was selected by the Information and Research Committee from nine eligible articles published in the six issues of *Facilities Manager* within the past year.

Don and Jeri won their first Rex Dillow Award in 2003 for "The High Cost of Building a Better University." Don is an APPA Fellow and the dean of the Planning, Design, and Construction track for the Institute of Facilities Management. In addition, he has just signed on as the new content coordinator for the PDC section of APPA's BOK (Body of Knowledge). Jeri is a past CFaR researcher and is the current APPA Vice President for Information and Research. Congratulations to both on their accomplishment.

Since the first Rex Dillow Award for Outstanding Article was presented to Doug Christensen in 1987, a total of 26 authors have written or co-written a winning article in *Facilities Manager*; some have won more than once:




Guckert



King

- Bill Daigneau (*four-time winner*)
- Walter Simpson (*three-time winner*)
- Don Guckert & Jeri King (*two-time winners*)
- Harvey Kaiser (*two-time winner*)

To read all the tremendous articles that have been awarded the Rex Dillow Award since 1987, please visit [www.appa.org/recognition/dillowawardees.cfm](http://www.appa.org/recognition/dillowawardees.cfm). Congratulations again to Don and Jeri for their great work this year. 



### Coming in Sep/Oct 2013

- Profile of President Glenn Smith
- APPA's 1914 Beginnings
- The "State-of-the-State" of APPA
- APPA 2013 Conference Highlights
- 2013 Thought Leaders Report, Part 1

## FACILITIES manager

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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 5,200 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](http://www.appa.org).

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# facilities digest

By Anita Dosik



## APPA U

### APPA U IN SEPTEMBER

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**September 8 - 12, 2013**

**Fort Lauderdale, FL**

Register at [www.appa.org/training/eventregistration.cfm](http://www.appa.org/training/eventregistration.cfm)

**February 2 - 6, 2014**

**Dallas, TX**

Registration will open on November 1, 2013



## 2013

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### APPA WELCOMES NEW CONTENT COORDINATOR FOR BOK PDC SECTION



Guckert

**Don Guckert**, associate vice president and director of facilities management at the University of Iowa, has agreed to serve as the new content coordinator for the Planning, Design, and Construction section of APPA's online BOK (Body of Knowledge). As a longtime faculty member and dean for PDC for APPA's Institute for Facilities Management, Don is well qualified to serve as a content coordinator for the BOK. His responsibilities with the BOK will include reviewing chapters and topics for updating, and identifying and working with subject matter experts and chapter authors.

Don replaces **Bill Daigneau**, who recently retired as chief facilities officer at the University of Texas M.D. Anderson Cancer Center and now serves as an educational facilities consultant.

APPA and Maggie Kinnaman, BOK's editor-in-chief, welcome Don to the BOK Editorial Board, and thank Bill for his many years of service on the BOK and its predecessor, the *Facilities Management* manual. Learn more about the BOK at [www.appa.org/bok](http://www.appa.org/bok).



Daigneau

### APPAINFO: JUST ASK!

APPAINFO is an e-mail discussion list for educational facilities professionals where you can find the answers to many of your everyday problems simply by posing a question to your peers—1,100 of them!

How should your school handle graffiti and vandalism? How can you creatively deal with customer service issues? What strategies

are you using to tell the facilities story to your senior campus administrators? The possible discussion topics are endless. Just ask!

Subscribers can post their questions and responses to [appainfo@lyris.appa.org](mailto:appainfo@lyris.appa.org). To subscribe to the APPAINFO discussion list, go to [www.appa.org/discussionlists/index.cfm](http://www.appa.org/discussionlists/index.cfm).

Contact Steve Glazner at [steve@appa.org](mailto:steve@appa.org) if you have any questions.

## APPA EVENTS

- Aug 1, 2013** SFO Summit, *Minneapolis, MN*
- Aug 1, 2013** Emerging Professionals Summit, *Minneapolis, MN*
- Aug 2-4, 2013** APPA 2013: Annual Conference & Exhibition, *Minneapolis, MN*
- Aug 5-6, 2013** CEFP/EFP Credentialing Prep Course and Exam, *Minneapolis, MN*
- Sep 8-12, 2013** APPA U: Institute for Facilities Management and Leadership Academy, *Fort Lauderdale, FL*
- Sep 19-20, 2013** CEFP/EFP Credentialing Prep Course and Exam, *San Diego, CA*
- Sep 26, 2013** CEFP/EFP Credentialing Prep Course and Exam, *Colorado Springs, CO*
- Sep 28-29, 2013** CEFP/EFP Credentialing Prep Course and Exam, *Galveston, TX*
- Oct 15-18, 2013** ACUHO-I/APPA Housing Facilities Conference, *Providence, RI*
- Oct 31-Nov 1, 2013** CEFP/EFP Credentialing Prep Course and Exam, *Grand Rapids, MI*
- Feb 2-6, 2014** APPA U: Institute for Facilities Management and Leadership Academy, *Dallas, TX*

## APPA 2013 REGIONAL MEETINGS

- Sep 14-18, 2013** PCAPPA, *San Diego, CA*
- Sep 23-25, 2013** RMA, *Colorado Springs, CO*
- Sep 29-Oct 2, 2013** ERAPPA, *Rochester, NY*
- Sep 29-Oct 2, 2013** CAPP, *Galveston, TX*
- Oct 12-15, 2013** SRAPPA, *Lake Lanier Islands, GA*
- Oct 27-31, 2013** MAPPA, *Grand Rapids, MI*

For more information or to submit your organization's event, visit [www.appa.org/calendar](http://www.appa.org/calendar).

## HELP APPA CELEBRATE ITS 100 YEAR ANNIVERSARY: CONTRIBUTE TO THE CENTENNIAL PROJECT TODAY!

The year 2014 will mark APPA's 100th anniversary. The APPA Centennial Project Site at <http://100years.appa.org/> offers all APPA members the opportunity to share their memories of APPA as it has evolved. These may include written insights, photos, videos, and other resources. APPA will use this material to celebrate our anniversary on the APPA website, in *Facilities Manager* magazine, in commemorative videos, and more. All are encouraged to participate! Share your "APPA Journey!"

### A Family Affair:

#### Sons and Daughter of APPA Office Staff Pitch In

The APPA office has been busy scanning images and photographing items to capture 100 years of APPA history. And who's doing all this work? None other than the kids of four of our own staff members.



Meet the interns: L-R Front: Carlton Yancey and Burt Brown-Glazner Back: Mike Dosik and Lindsay Bernhards

## 2013 APPA AWARD RECIPIENTS ANNOUNCED

### 2013 AWARD FOR EXCELLENCE IN FACILITIES MANAGEMENT

- **Texas Tech University**
- **University of Arizona**

### 2013 SUSTAINABILITY AWARD

#### Private Institutions:

- **Duke University**

#### Public Institutions:

- **University of Colorado Boulder**
- **University of Iowa**

#### Small Colleges and Universities Institutions:

- **Oberlin College**
- **Philadelphia University**

### 2013 EFFECTIVE AND INNOVATIVE PRACTICES AWARD

- **Carleton University** Rating the Sustainability of Campus Facilities Management: A Foundation for Action Using ESAT
- **North Carolina State University** NC State Facilities Management Feedback & Coaching Initiative
- **Seattle University** Professionals Without Borders (PWOB)
- **Stanford University** Stanford Energy System Innovations (SESI)
- **University of California Irvine** UC Irvine Field Laboratory for Energy Studies

### 2013 MERITORIOUS SERVICE AWARD

- **Dave Button**, University of Regina
- **John P. Harrod Jr.**, University of Wisconsin – Madison
- **Michael R. Johnson**, University of Arkansas

### 2013 PACESETTER AWARD

- **Bob Andrews**, California State University – East Bay
- **Greg Clayton**, University of Prince Edward Island
- **Tony Guerrero**, University of Washington – Bothell
- **Glen Haubold**, New Mexico State University
- **Chuck Scott**, Illinois State University
- **Chris Snow**, Oklahoma City Community College
- **Lindsay Wagner**, Northern Arizona University



## Supervisor's Toolkit

Nuts and Bolts of Facilities Supervision

Upcoming dates and locations for the Supervisor's Toolkit are:

### PCAPPA 2013

San Diego, CA  
September 14-17, 2013  
Cost: \$599

### Western Kentucky University

Bowling Green, KY  
September 30 - October 4, 2013  
Cost: \$549  
Register before September 13, 2013

Learn more at [www.appa.org](http://www.appa.org) and register today!



## NEW CREDENTIALING SITE MAKES IT EASY TO LEARN ABOUT THE BENEFITS OF APPA CERTIFICATION

A newly launched credentialing website at <http://credentialing.appa.org/> offers all you need to know about APPA's Educational Facilities Professional (EFP) and Certified Educational Facilities Professional (CEFP) certifications. You'll discover what the credentialing program specifically accomplishes for you and your institution. You'll learn which credential applies to you. And, you'll have information on pricing, current offerings, and more all at your fingertips. Access the APPA credentialing site today!

### Upcoming Offerings for the CEFP and EFP Prep Course and Exam:

Aug 5-6, 2013.....	Minneapolis, MN
Sep 13-14, 2013 .....	Ft. Lauderdale, FL
Sep 19-20, 2013 .....	San Diego, CA
Sep 26, 2013.....	Colorado Springs, CO
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Oct 15-18, 2013 .....	Providence, RI
Oct 15-16, 2013.....	Lake Lanier Islands, GA
Oct 19-20, 2013.....	Norfolk, VA
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Apr 12-13, 2014 .....	El Paso, TX



## APPA'S FACILITIES MANAGEMENT EVALUATION PROGRAM (FMFP)

The quality of an educational organization's facilities has a major impact on attracting and keeping students. But how do the many people who depend on your facilities define quality? How do your facilities meet their expectations? And how do they measure up against other campuses?

APPA's Facilities Management Evaluation Program (FMFP) helps you turn these questions into a powerful catalyst for improving how you manage your facilities. Modeled after the Baldrige National Quality Program Criteria for Performance Excellence, the FMFP criteria provide a framework for continuous improvement. This customized evaluation gives you the feedback and actions you need to transform your educational facilities program into one worthy of international recognition for quality.

The FMFP is not a cookie-cutter process. Each FMFP is customized and tailored to the specific institution for which it is conducted. The

evaluation team is handpicked so that each institution is evaluated by a select group of peers from campuses sharing similar educational, financial, and physical characteristics.

If you are interested in:

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- Exceeding customer expectations
- Improving your understanding of facilities issues
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# Contracting for Grounds Maintenance Services

By Sabeena Hickman, CAE, CMP

**T**he economic downturn forces organizations to take a serious look at their budgets, and when it comes to ground maintenance, one of the first questions is: Should we consider outsourcing the work? To be sure, professional landscape companies have seen an increase in the number of educational and municipal facilities that want to completely or partially outsource their grounds maintenance operations.

## SCOPE OF WORK

Consider the scope of work you want a contractor to handle. Are you outsourcing the entire grounds maintenance operation or just part of it? Many large landscape companies can handle a full range of work from basic maintenance and landscape design and installation to lawn maintenance, irrigation, tree care, water feature management, and even paving and snow removal. Determine what services are most important to you and if you want them all to be provided by one company, if you will use more than one provider, or a mix of in-house and contracted workers.

## PUBLIC SAFETY

A contracted landscape company should enhance the reputation of the institution. Consider a company's history working with large facilities or public institutions. Most public facilities stress the need for public awareness, safety, and cleanliness as top concerns. Companies who have worked with public institutions know that their employees need to have a high level of awareness of the public and behave courteously and attentively and not be intrusive.

Ask about a company's safety record and what requirements they have in place

for personnel and equipment. Professional landscape companies put safety first through extensive training, power equipment certification, and safety meetings.

## SUSTAINABILITY

Institutions looking for sustainable landscape practices should discuss options with potential companies or address specifications in the RFP. Many landscape companies have water management specialists, as well as professionals educated in sustainable landscape practices like the use of drought tolerant, low-water native plants; green roof or green wall installation; organic lawn and landscape maintenance; composting of green waste; and installation of water-saving drip irrigation systems. Some institutions are installing edible landscapes and teaching gardens with the help of professionals. Companies can also assist with the goals set out for LEED-certified buildings.

For institutions that have specialized landscapes such as ponds, large water features, or agricultural areas to maintain, investigate a contract company's skill set and consider what specialized staff the new company can bring to the table.

## SELECTING THE BEST COMPANY

It is important to take all of these factors into account when writing an RFP and putting a job out to bid. Many institutions will actually look to outside landscape companies to consult on specifications for the RFP. Many RFPs include criteria to ensure that the company is:

- state licensed,
- has Landscape Industry Certified, Certified Irrigation Contractor, Certified Grounds Manager, or Certified Arborist staff,

- follows industry standards,
- has a criminal screening process for hiring staff,
- has extensive safety training procedures, and
- maintains maintenance records for equipment.

When selecting a company, make sure their proposal captures your expectations accurately in the scope of work, which should include startup plan and the ability to offer multi-year plans with designs and budgets so you can plan for the future.

Consider their reputation. Find out how long they've been in business and get a sense of how they approach customer service, quality control, safety compliance, training programs, communication methods, and responsiveness to special requests, problems and emergencies. Ask for references of similar properties so you can look at their work and see their crews in action. Be sure to call any references they provide.

When making the transition from in-house to completely contracted services, facility managers should look for a company that understands the politics and difficulty that surrounds the possibility of laying-off of staff or incorporating them into a new organization.

Assess whether they have tenured professionals. Make sure they are licensed and insured to operate in your state and are in good standing. Strong horticultural knowledge is an absolute necessity along with formal knowledge of maintenance operations, irrigation, tree care, and pest control. Association memberships and certification is an indicator of the provider's commitment to maintaining the most current knowledge and skills.



Investigate how they measure customer satisfaction. Do they capture feedback on performance from every customer to measure their level of satisfaction and identify ways to continuously improve service delivery?

Resist the impulse to merely accept the lowest bid. "You will definitely save money when you contract out the grounds maintenance services," says Chris Kujawa, executive vice president of Kujawa Enterprises in Oak Creek, Wisconsin. "The question is whether you will get a great partner who is flexible and able to deal with all your special concerns like scheduling around band practice, weather, and sports events and still be able to provide a great service."

#### IT'S REALLY ABOUT THE PARTNERSHIP

"We always start with a partnering meeting," says Bill Horn, vice president at California- and Colorado-based Terracare Associates. "We never assume anything. Every situation is different, priorities are different, and we want to hear the goals and concerns from the institution."

When a partnership is formed, facility managers should take advantage of having a fresh set of eyes on the property. Horn suggests asking the new company to do an assessment of the grounds and make recommendations for improvements to any areas that raise public safety concerns, as well as areas where maintenance could be improved, water waste can be reduced, etc.

Many facilities are choosing to outsource their grounds maintenance program for financial reasons. If managers choose a professional company that is a good fit with the needs of the institution, there are many opportunities for a high-value partnership with benefits that go beyond just the pocketbook. ☞

Sabeena Hickman is the chief executive officer of PLANET, the Professional Landscape Network, based in Herndon, VA. This is her first article for *Facilities Manager*, and she can be reached at [sabeenahickman@landcarenetwork.org](mailto:sabeenahickman@landcarenetwork.org).

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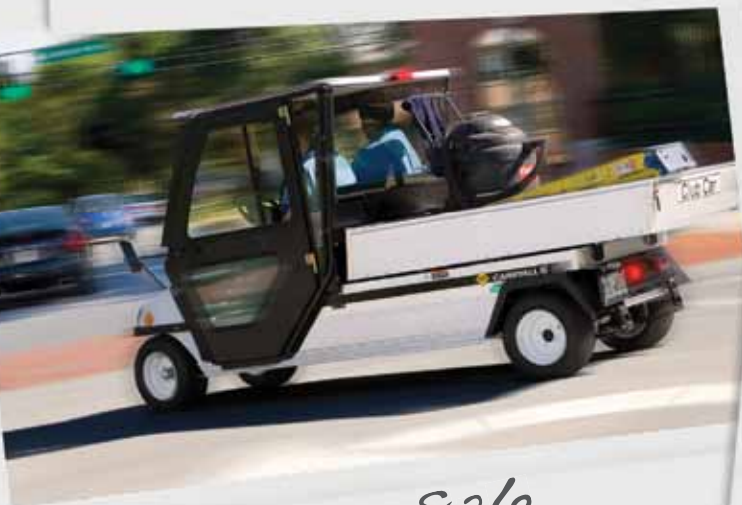
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# Professional Development Committee

By Chuck Scott



The recent buzz phrase in APPA-land is “Why APPA?” On most of our campuses, there is much talk about what we do and how we do it. Yet, now there begins a shift in focus to WHY we do what we do.

Let’s take a few moments as I share the work of the dedicated volunteers who make up APPA’s Professional Development Committee—because they are hard at work for you! In this article, I hope to convey the value of these APPA offerings to our members and their respective institutions. I hope to convey “Why APPA.”

## AN INTRODUCTION

Because some readers of this article may not have been involved in the APPA officer election process, I would like to introduce myself as your new Vice President for Professional Development. As such, I want to share a little bit about myself, my APPA involvement, and what I hope to bring to our members. I have been a long-standing supporter of professional development and have demonstrated this as a graduate of the APPA Institute for Facilities Management, Leadership Academy, University of Notre Dame Executive Institute, and am an Educational Facilities Professional.

My support of continual learning is also felt by my staff at Illinois State; annually we ensure participation in many of the APPA professional development offerings. Together we have

created a culture on our campus that conveys a strong customer service focus and greater professional knowledge base that results in campus-wide appreciation for the services we provide. We have adopted the “Fun is Good” philosophy from Mike Veeck, whereby we take our work very seriously while simultaneously having fun in the workplace.

We also subscribe to the notion that one can go to college and get a degree, but one must be engaged to get an education. So, you may ask, “How do I have fun, how do I engage, and why APPA?”

## SO, WHY APPA?

First off, APPA is fun! Where else could you interact with peers that have similar interests and concerns? Have you heard about the continued success of APPA U with nearly 800 facilities professionals attending during fiscal 2012-13? Are you aware of the expanded delivery of Academy on Campus with Track 1 and Track 2 of the Leadership Academy available truly at your time and place of choice? The same is true with the Supervisor’s Toolkit, where you can bring it to your own campus. Have you participated in the expansion of our Drive-In Workshops as we build new relationships with Business Partner members in successful training and networking opportunities?

Are you attending APPA 2013 in Minneapolis? This annual conference



begins APPA's 100-year anniversary. Included in its offerings will be the SFO Summit, and a new Emerging Professionals Summit that will provide interaction with the SFOs. Each of these are opportunities for fun and engagement. For a full listing of upcoming professional development opportunities,

including dates and locations, please visit [www.appa.org/training](http://www.appa.org/training).

#### COMING UP

For a sneak peek into one of the planned keynote sessions at APPA 2013, *Our Asset, Our Burden: The Future of Campus Space* will be discussed.

Space is both an asset and a burden for our institutions. Space has a tremendous value, in many cases well into the hundreds of millions of dollars. Space is the medium in which the institution operates. Online courses have proven that education can be conducted anywhere, but most teaching, learning, and research still takes place on campuses. And while the value of buildings and grounds can be calculated, college and university spaces have a greater intrinsic value in the minds of students, faculty, alumni, staff, and community members.

Campus spaces and places, the buildings and grounds, hold memories, retain emotions, and represent the ethos of an institution. They represent that "sense of place" so important to an institution's community and brand. Join us for a highly charged session with invited experts who will discuss the challenges of space management and finance, the coming advancements and best practices to embrace, and the new meaning of space in our campuses.

#### THE APPA PD COMMITTEE

As we continue look to the future, it is important to note the work of the Professional Development Committee and their work on the Strategic Plan. This group of dedicated professionals is significantly impacting the deliveries and how we are helping to take APPA to the next level. While APPA's Vision and Mission are clearly articulated in the Strategic Plan, contributions by the committee are essential in upholding them and ensuring that the professional development opportunities provided to the membership are aligned. The challenge lies in continuing to identify the most pertinent topics of instruction for our members and in locating the best professional experts in the field to deliver the programs. Listening to the membership will set the stage for this work.

One of the most important roles of the Professional Development Committee is to listen to all constituencies and to incorporate their ideas into action



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## THERE IS ALSO GREAT VALUE IN COLLABORATING WITH OUR PEERS IN OTHER EDUCATIONAL ASSOCIATIONS.

plans with a specific goal of developing future leaders. This gives them every opportunity to learn new processes, through varied program delivery and methods, for the betterment of the facilities profession as a whole. This collaborative process will ensure the entirety of APPA members have opportunities to pick and choose their own path of personal professional development.

There is also great value in collaborating with our peers in other educational associations. Associations such

as NACUBO, SCUP, AIA, ACUHO-I, and ACUI all also listen to the needs of college campuses and their own members. The value in bringing together these groups, and others, is immeasurable. Think of the strength and credibility of a common message if all similar associations collaborated and delivered it to university presidents and state or provincial legislators. Much work is to be done in this arena, and I look forward to forging ahead toward building community while simultaneously upholding

the principles and values of APPA.

In closing, as your newly elected Vice President for Professional Development, it brings me great pride in sharing our committee progress. I am also extremely proud to be part of a group of professionals that deliver high-quality facilities and leadership training for all APPA members to enjoy. It is my goal to aid in the development and delivery of these programs so that you, too, will enjoy WHY APPA is the facilities association of choice. ☺

Chuck Scott is executive director, facilities management, sustainability, parking & transportation at Illinois State University, Normal, IL, and APPA's VP for Professional Development. He can be reached at [cascott@ilstu.edu](mailto:cascott@ilstu.edu).

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# Increasing Condensate Return and Return on Investment at VCU Medical Center

Located in Richmond, Virginia Commonwealth University (VCU) Medical Center is one of the leading academic medical centers in the U.S. The 865-bed facility is the primary Level I Trauma Center for the region.

The four large boilers at the central steam plant generate steam for the VCU campus and medical center as well as for several adjacent municipal customers that purchase steam from VCU. The central steam plant is located across Interstate 95 from the campus, which covers several city blocks. A small facility that generates steam for remote academic buildings is located several miles away.

The central steam plant provides steam for domestic hot water, building heat, sterilizers, kitchen equipment, and other uses on the VCU Medical Center campus. Steam is distributed from the steam plant to its various destinations through a large header that crosses I-95 underneath a bridge and is routed through tunnels that connect the campus buildings, medical center, and municipal customers.

When steam is distributed, condensate must be returned effectively and efficiently, which was not the case at VCU Medical Center campus. Maintaining steam systems can be challenging if the facility does not have the proper tools, equipment, and knowledge in place.

When Reece Barefoot, district manager for Spirax Sarco, moved to nearby Midlothian, VA in the mid 2000s, he asked Paul Johnston, steam fitter at the VCU steam plant about the effectiveness of the facility's condensate return.

## Water, condensate everywhere

Barefoot and Johnston worked together to determine that VCU needed a better condensate recovery pump solution to return the condensed steam from the campus back to the steam plant. The condensate piping was routed through the VCU tunnel system and included a section with a vertical run of several feet. This vertical section routed the condensate return line to a higher elevation

before continuing toward the steam plant. Consequently, VCU had to deal with frequent piping failures such as steam in the condensate lines, leaks, and water hammer.

At the time, many of the pumps on VCU's steam system were electric, which are notorious for cavitation, vibration, and condensate leaks. "A number of the electric pumps were not working," said Barefoot. "They were leaking and dumping condensate down the drain."

## Creating solutions, proving concepts

Barefoot informed Johnston that high condensate temperatures cause cavitation in electrical pumps. As the impeller turns, hot condensate is pulled in, flashing as it enters. Over time, this flashing action erodes the impeller.

The resolution was a steam-pressure-powered pump package, a receiver, and new piping. Contrary to electric pumps, steam-pressure-powered pumps operate only when they need to. The pump cycles as the receiver fills and empties. "I suggested that he put a Spirax Sarco Pivotrol—a pressure-powered pump system—at the vertical section to pump the condensate up to the elevated level instead of relying on the system pressure to push the condensate," Barefoot said. "VCU installed the pump and it has worked like a charm ever since."

## Conclusion

Using steam-powered pumps eliminates the problems associated with electrical pumps such as cavitation, vibration, leaks, and failures. "The steam-powered pumps perform much better than the electrical pumps," said Barefoot. "They have enabled VCU to minimize its maintenance calls and costs. Another benefit is it doesn't matter how hot the condensate is or flash steam is you can't hurt a pressure powered pump."

VCU is pleased with Barefoot and the Spirax Sarco team. According to VCU, steam trap failures have been reduced because of the annual surveys, resulting in significant savings. Because of the reliability of the pressure-powered pumps, more condensate



is returned to the steam plant instead of going down the drain. Steam system efficiency has increased while energy costs have decreased.

Until Barefoot moved to the area, VCU did not have the benefit of Spirax Sarco's steam expertise. Over the years, he provided solutions, proved concepts, built a lasting relationship with VCU, and helped them standardize on Spirax Sarco solutions.

## For further information please contact:

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# APPA Student Membership on the Rise

By Santianna Stewart

Today's college student has access to so many resources and tools to help elevate them to the next state in life: the Real World—the world of work, responsibility, and independence. As an emerging professional myself, I have learned to seek opportunities and professional development resources to advance me into the career that I worked four years in undergrad (and went into debt) to achieve.

Institutions such as Brigham Young University, Cornell University, Ferris State University, New York City College of Technology, Temple University, and others offer bachelor degree programs in the area of facilities management. Although facilities management is not viewed as prominently as other fields of study such as business administration or healthcare management, it is a vital profession that is growing and expanding each year.

APPA is sensitive to this particular industry and has taken into great consideration the increased interest from students who want to learn more about the facilities management industry. To accommodate this growth in interest, APPA offers a student membership that is available to full-time students in degree-granting colleges and universities.

## COST AND BENEFITS OF STUDENT MEMBERSHIP

APPA student membership is *free*. All that is required of the applicant is a completed student membership application and verification of enrollment. Acceptable forms of verification documentation

include a copy of current class schedule, copy of a valid student identification card, or a letter of recommendation on school letterhead from a professor or campus administrator. Some of the benefits of student membership include (but are not limited to):

- Virtual copies of *Facilities Manager* magazine
- A subscription to APPA's e-newsletter, *Inside APPA*
- Access to APPA's Career Center, which includes:
  - Job Express
  - Resume Bank
  - Internship listings

Also, students receive a discounted registration fee of \$295 to attend the APPA Annual Conference and Trade Show, taking place in Minneapolis, MN August 1-4.

## HOW TO GET THE BEST USE OF A STUDENT MEMBERSHIP

APPA is always open to new ideas from its members on how to improve or restore

existing programs and services. Fresh ideas and adapting to changing times is what this association supports and credits to its 99-year survival. APPA encourages graduating students to take advantage of Job Express, a valuable resource for job postings in campus facilities management. As a student member, you can also follow APPA on Twitter, drop us a line on our Facebook page, or network with other APPA professionals on LinkedIn.

APPA also encourages students to start APPA student member chapters on their respective campuses. APPA currently has a minimal number of student chapters on record. However, with 111 total student members located across the United States and Canada, we strongly encourage increasing student chapter membership through student promotion and networking.

## GET INVOLVED TODAY

Make the choice today to take advantage of some of the most valuable resources to advance you scholastically and professionally. As a bonus, APPA student memberships have a three-year life extension for students to get the most from their involvement. From articles to professional development opportunities, involvement at the chapter level to networking, APPA has the necessary tools and resources to promote individuals from student to emerging professional in the facilities management field. 💡

Santianna Stewart is APPA's membership & outreach manager and can be reached at [santianna@appa.org](mailto:santianna@appa.org).







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# Appreciating the Effort:

## The Psychology of Providing Services

By Joe Whitefield

Suppose you have locked yourself out of your house and must call a locksmith to open the door. Before the locksmith arrives, answer the following question about the impending service; would you rather the service be (a) faster and cheaper, or (b) slower and more expensive? Obviously, we would all prefer option (a), right?

In practice, many people actually prefer option (b). After learning of this behavior from an actual locksmith, behavioral economist Dan Ariely began looking into these irrational economic decisions for an explanation. Several experiments later he uncovered some interesting views about money that explain this behavior in a way that should interest anyone in service industries—including facility managers. Consider the following:

### PERCEPTIONS

Early in his career, a locksmith confesses to be less competent. When working on a lock, he might take 45 minutes to an hour to open the door. This would often involve breaking the lock and replacing it with a new lock. After completing the work, the customer is presented with a bill that includes a door

opening fee and charges for the new lock. Happy to have the door opened, customers would often pay the bill and give him a tip.

Later in his career, the locksmith is more competent and experienced, and can often open the door in 10 minutes without breaking the original lock. This bill only has a door opening fee. Under this scenario, the customers would frequently complain about the “excessive” charges and would rarely give him a tip. So, in essence, the customers feel better about paying more, in both time and money, when they see the locksmith making a bigger effort.

Effort is rewarded and effectiveness is not. In this case customers are paying for incompetence. Put another way, customers often do not know how to value expertise, and that taints their view of the quality and value of the services they receive. The costs associated with obtaining the expertise (education, training, tools, equipment) are mostly upfront or fixed costs. The costs associated with performing the individual task (mainly direct labor or supplies) are the marginal costs. With little knowledge of or appreciation for the upfront costs, customers conclude the marginal costs are the drivers and that services should be charged in accordance with the visible effort.

As a consumer, your mind may be taking off remembering encounters when you have irrationally valued effort over true expertise, and questioned or even complained about a service you received. I know someone who has had the exact encounter with a locksmith while on

vacation. As a facility manager, you may be thinking of a time when people have complained about a service you provided. If so, let’s look at this problem a little deeper to see if there are some helps for us.

### INVISIBLE EXPERTISE AND EFFECTIVENESS

Facilities departments provide essential services to their campuses. We are conscientious, efficiency-minded, customer oriented, and typically quite competent in providing these services. As such, we often strive to be part of the hidden organization. We perform a significant amount



**C** Completion  
**O** Organization  
**I** Innovation  
**N** Being Nice

## SIMPLY MAKING A SAMPLE OF YOUR SERVICES MORE PUBLIC CAN IMPROVE PERCEPTIONS AND CREDIBILITY WITH CUSTOMERS.

of work at night, have utility shutdowns on weekends, perform major projects over schedule breaks, and perform many more services out of sight or with as little disruption as possible – all in the name of efficiency and effectiveness.

And yet, our services at times seem underappreciated and undervalued by our customers. I suggest that this is due, in part, to the problem of valuing services by the marginal cost of effort rather than the true full cost. In designing efficient delivery systems for our services we can, inadvertently, set our organizations up to be improperly judged according to visible efforts, instead of invisible expertise and effectiveness.

If this is happening on your campus,

you need to consider ways to have some of the positive and productive efforts of your employees become visible without becoming disruptive. Simply making a sample of your services more public can improve perceptions and credibility with customers. Here is a small example. On my campus we use blowers to clean off sidewalks daily.

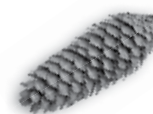
We now schedule this activity for early morning, when students and faculty are arriving. This is not very disruptive, it moves fast, and it has the added benefit of being heard as well as being seen. It conveys the impression (and fact) that we are opening for business. We have received some comments about this. As people notice the workers, they have

developed an appreciation for the result—cleaner paths on which to walk. This is fairly painless yet effective.

### INCREASED VISIBILITY

What hidden services do you provide that is seemingly undervalued by your customers? If you have been unsuccessful in convincing them how great and cost effective your services really are, perhaps you should focus on increasing the visibility of the effort. Consider a sample of services that could be performed publicly. While this may not seem rational it could be effective in building trust and credibility with customers, and improving perceptions of your organization. And we all know about perceptions. ☺

Joe Whitefield is executive director of facilities services at Middle Tennessee State University, Murfreesboro, TN. He can be reached at [joe.whitefield@mtsu.edu](mailto:joe.whitefield@mtsu.edu).



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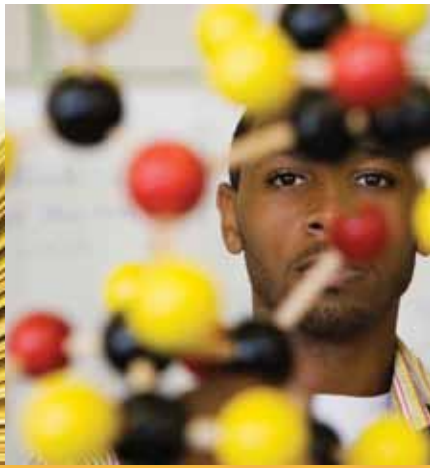
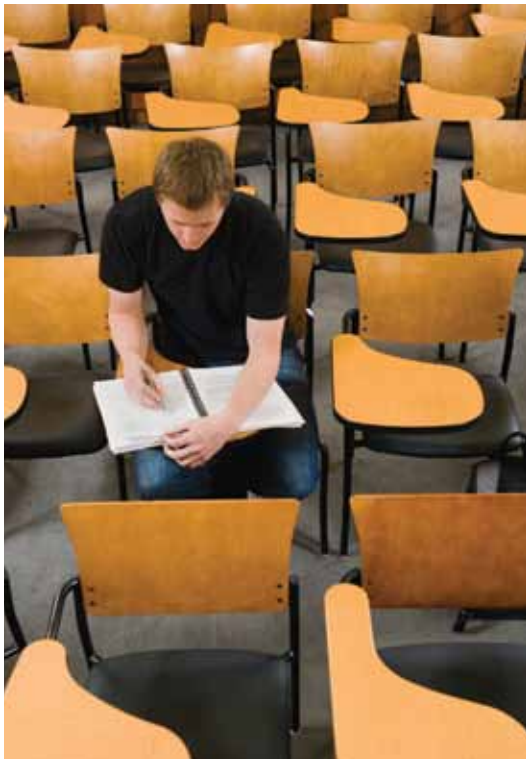
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# FPI

## FM Success Through Analytics

The APPA Facilities Performance Indicators (FPI) is perhaps one of the most powerful analytical tools that institutional facilities professionals have at their disposal. It is a diagnostic facilities performance management tool that addresses the essential questions that facilities executives must answer to effectively perform their roles. It can provide the data that highlights current levels of performance and opportunities for potential improvement. And, the metrics that it provides range from the strategic to tactical.



### WHY ARE FACILITIES METRICS NECESSARY?

A few years ago I heard an APPA regional vice president say to a regional conference audience that they should consider participating in the FPI because “it provided information that their boss would be interested in.” The implication of this statement could be that the FPI is not too useful for facilities management executives – but, their bosses want to know what is happening. Or, it could suggest that facilities personnel should be effectively managing what their bosses are interested in.

Either way, it struck me that there seemed to be a somewhat “reactive” intonation about the value of the FPI directly to the institutional chief facilities executive. I firmly believe that the

FM professional would do well to aggressively embrace the FPI as a tool to effectively manage their facilities operations.

Although many institutions are seeing some budgetary relief with recent economic trends, this is being countered by current public pressure and expectations for the costs of higher education to be controlled. There have been several articles published in the *Wall Street Journal* and *New York Times* in the past few months reflecting the public expectations being placed on both public and private institutions in controlling costs and managing resources effectively. In addition, the rising cost of higher education was the central theme of APPA's 2013 Thought Leaders symposium.



Facilities managers play a significant role in responding to these concerns. They are managing the largest capital portfolio for most institutions. Even a moderately sized campus can have a replacement value of several hundred million dollars. Only the top level elite institutions have a financial endowment larger than the institution's capital investment in its facilities portfolio. The difficult thing that facilities managers face is that expenses are incurred in managing the facilities portfolio, whereas, the financial endowment of an institution creates income. Effective management of institutional O&M (operations and maintenance) activities is critically important in helping sustain the financial standing of an institution.

So, it is not surprising that institutional executive leadership expects the facilities professional to collect, possess, and understand analytical information that demonstrates how the management of the facilities portfolio is aligned with the institutional goals and objectives. There is usually a much greater degree of trust and confidence when FM is able to provide this information in a proactive manner.

Conversely, if the chief business officer does not trust the institutional facilities management leadership to gather the information that demonstrates the FM organizational perfor-

mance and hires an outside firm to gather it for them, it's a good indicator that they aren't sure that the FM department has a good handle on the management of the facilities. It is a wise facilities management leadership team that uses the tools available to them to report on the performance of the condition of the management of the facilities portfolio.

#### **FM ANALYTICS AND PERFORMANCE MEASUREMENT**

The FPI provides in-depth cost analysis for institutional FM practices—and does so across the spectrum of FM activities. However, it also provides metrics reflecting staffing density for various FM activities, utilities cost and usage, capital investment ratios, customer service ratings, and a host of other metrics. The metrics also report on the quality of the services provided for custodial, building maintenance, and grounds operations.

The foundation of the FPI is a database that is created by the results of a survey of approximately 350 participating institutions. Many facilities managers tend to think of the FPI as a benchmarking tool—using it to compare facilities data between various institutions. In doing this, the results are often used by institutions to attempt to justify current levels of spending, staffing levels, or related facilities metrics.

However, FM performance measurement is so much more than making comparisons between institutions to verify levels of spending on facilities management activities. The FPI offers the opportunity to measure the health of a facilities management program on many levels. It creates the opportunity to explore the results of various FM management practices. As an example, it can be an indicator of the potential expected impact of installing information technology to support FM practices and the benefits of improving work processes. In other words, what happens to the cost and quality of FM services when information technology has been deployed throughout the organization?



## A SAMPLE ANALYSIS

Figure 1 is an example of analysis done with statistics from the FPI database to measure management practices. In this example, we've identified four institutions that have fully deployed FMIT systems (1-4 in Figure 1 vs. A-D for those who don't) and are comparing their performance against four institutions that have not yet invested in either the systems or the redesign of the corresponding work processes that is done for an effective implementation of this technology. (The complete characteristics of each of the groups are listed in the Notes section below.)

It is easy to argue that this sort of analysis might be suspect in that it is not an "apples to apples" comparison. It is correct that the institutional sample did not attempt to find institutions that are similar in their profile characteristics. They were selected on their known FMIT investment or lack thereof. All eight institutions have hardworking facilities management departments, and were performing relatively well using the available tools and

techniques at the time that this survey was done. Some of them have had to respond to serious budget constraints and are working hard to improve their performance on several levels (e.g., life-cycle cost, customer satisfaction, and productivity).

The observation from this comparison is that there is a general trend of both maintenance and custodial services being delivered at a reasonable level for less cost when the FM organization has invested in the deployment of FM information technology and has made the effort to adjust work processes to use the systems effectively. Group 1-4 schools also show that they have on average more GSF per FTE. The analysis would indicate that these IT systems have allowed them to work smarter.

This analysis does not tell us specifically what management activities are causing the improvements. But, organizations that have data that can support their ongoing operational decision making almost always develop a degree of discipline and rigor that continuously improves their operations.

Figure 1. Maintenance and Cleaning Service Levels<sup>1</sup> and Costs

Groups (1-4 & A-D)	Maintenance			Custodial		
	Service Level	Cost/GSF	GSF/FTE	Service Level	Cost/GSF	GSF/FTE
1	3	\$1.42	77,272	3	\$1.23	44,859
2	3	\$0.57	91,817	3	\$0.89	55,497
3	3	\$1.08	69,686	2	\$1.09	38,504
4	2	\$1.49	77,480	2	\$1.16	29,497
A	4	\$3.08	77,962	3	\$2.18	33,259
B	3	\$1.62	71,176	2	\$2.19	27,292
C	3	\$1.98	61,693	2	\$1.21	38,292
D	2	\$2.00	41,467	2	\$2.11	35,289
All APPA Average		\$1.57	71,192		\$1.36	32,592

Data from 2011-12 APPA Database.

<sup>1</sup> Service levels are measured reported using the APPA operational guidelines for both building maintenance and custodial cleaning.

NOTES: The following are the characteristics of the respective groups shown in Figure 1.

	Funding	Carnegie Classification	APPA Region	Campus Size (GSF)
1	Public	Masters	PCAPPA	3.0 million
2	Public	Research VH	CAPPA	6.8 million
3	Public	Research VH	CAPPA	13.8 million
4	Private	Research VH	SRAPPA	5.8 million
A	Private	Masters	MAPPA	.8 million
B	Private	Baccalaureate	PCAPPA	1.2 million
C	Public	Research VH	ERAPPA	4.5 million
D	Private	Doctoral	PCAPPA	1.5 million



Examples of additional data that can be collected in the FPI survey include measuring worker productivity, closely tracking parts, materials and services costs, and creating effective business cases for repair vs. replace decisions on major equipment. This last point improves the effectiveness of the organization's capital renewal spending by treating it as an investment that can not only improve facilities reliability, but control annual O&M costs.

#### FM AT THE AT THE DECISION TABLE?

One complaint often heard from facilities departmental leadership is that they don't have a seat at the table when institutional decisions are made that impact the facilities portfolio. Academic or research initiatives may be launched requiring significant facilities input and FM leadership learns about it "after the fact." This forces them into the mode of trying to catch up in supporting the decision, or worse, trying to support the decision without recognition of the resources that might be required to effectively make the initiative successful.

The best way for FM managers to be included in an institution's decision making is to be in a position to provide value to the exercise. By having data that offers hard, proven analytical information, institutional executives will usually develop a level of trust in the dialog that is provided and will more frequently ask for the information to be made available.

Nonetheless, it is important to know that a level of trust in the management ability of FM leadership does not necessarily mean that money and other resources will flow freely to the FM department.

The challenge facing executive leadership is to try to maximize the resources that are dedicated to the core mission of the institution (i.e., academic instruction, tuition paying students, or research). The task of the facilities management professional is to get the maximum amount of value out of the resources available. Any excess funding that is spent on the physical campus may mean that the institution has few funds for library acquisitions, student aid, support of research, or for faculty recruitment.

This is where the FPI can be an enormously effective tool. It can help the institution's management team understand if full value is being derived from the resources that are spent on the facilities portfolio. "Full value" may be different for different institutions. If an institution is experiencing financial difficulty, it may be necessary to adopt a "minimalist approach" and reduce costs while trying to hold an acceptable level of quality. If the college, university, or school is in a growth mode, it may require that the facilities department increase quality. Other

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drivers may be facilities reliability, improvement of curb appeal, support research initiatives, or even, how to effectively reduce a campus size while sustaining the highest quality of services.

Answering these questions is not a matter of comparing institutional FM expenditures. It is more a matter of looking across an array of multiple metrics to determine what the reality is of the total organizational performance. In the same way that a physician needs multiple tests and vital sign readings to make a successful diagnosis of a patient, it's necessary to review multiple metrics to understand what the condition is of a facilities portfolio—and what the optimum management actions should be.

#### FPI PARTICIPATION

Given the power and versatility of the FPI program, one could ask why more APPA member institutions are not participating. After all, participation and the results are at no charge for institutional members; approximately 24 percent of the APPA member institutions participate in the annual survey. In my discussions with FM leaders over the past few years, I've often asked them about their hesitation with the program. There are several reasons that are often cited:

- Concern about the amount of time to complete the survey

- Concern that the data is not accurate—or, data is tracked differently at other institutions
- Unclear how to interpret or use the data
- Not sure how it could help us do a better job managing the facilities
- The results might make us “look bad” to our executive leadership or public stakeholders

These are all understandable and valid concerns. It's hard to enthusiastically embrace a set of management tools if they are time consuming, benefits are unknown, and they might not be accurate, and, worse, someone might use the results against us.

APPA has done a good job in responding to most of these concerns. First, there is an abbreviated survey of “essential questions.” The survey instrument is shortened to gather only the most essential information and gives a higher level and less detailed set of information. It allows an organization an easier road into the survey database.

APPA has also created detailed and easy-to-read definitions on every survey question. The survey instrument allows the reader to access the definition with only a mouse click. Data accuracy is assisted by the survey instrument triggering an alert when a response appears to be out of line. This alerts the survey responder to check their entry.

APPA has also sponsored conferences, meetings, and provided advisors to help members interpret their FPI data and use it to more effectively in managing their campus facilities portfolio. This assistance can be as broad as attending a conference or contacting APPA for personalized assistance from an APPA identified advisor. And, although the fear may be real that FPI data may show that some organizations are resulting in performance that is not currently up to par, it has often been shown that a management team that sees opportunities for improvement and starts on a road of enhancing FM performance will ultimately be highly appreciated. ⑤

Duane Hickling is president of Hickling & Associates, Chicago, IL, and serves as a qualified FPI advisor. This is his first article for *Facilities Manager*, and he can be reached at [dhickling@hicklingassociates.com](mailto:dhickling@hicklingassociates.com).

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# FPI

## Cohort Reports



### California State University System

*By Robert J. Quirk*

**T**he California State University (CSU) system is the largest higher educational system in the United States. The system has physical assets valued at more than \$20 billion (current replacement value) on the “State” side of the house alone. With more than 1,200 buildings, and 50 million square foot of mixed-use space, the CSU facility managers have an enormous responsibility, in addition to extremely high expectations from the stakeholders.

This article will explain how the CSU facilities professionals and administrative staff use the APPA Facilities Performance Indicators (FPI) survey and report for decision making, forecasting, justification of funding levels, and quality improvement. Through years of using the FPI data as a system and refining the information to be ever more reliable, this information provides the basis for the best use of lean public funding.

The CSU is one of the first state university system to establish its own group within the APPA FPI. Led by the Chancellors Office and several progressive campus facility leaders, the group is in its fifth year of participation. Every year, the outputs get better due to a number of factors. The CSU’s facility managers/system have developed a deep and ever growing understanding of, of their funding and staffing levels, how they relate to expectations for quality on each campus and the terminology used in the profession. At least once per year, the CSU group meets to

discuss the process, the need to clarify and/or refine terminology and look for best practices.

The facility leaders ask others in their Carnegie class, in and out of the system, how they do what they do with certain funding levels. In conjunction with other system and campus information and nuances, they discuss strategies for meeting budget challenges, and quality improvement with the use of information and trends as articulated in various forms in the APPA FPI. The level

of knowledge of each CSU campus facility executive and management team has grown over time with the use of this quality program.

#### DATA-DRIVEN SUPPORT

Having this type of information in facilities managers’ “hip pocket” provides empirical data for an unlimited number of situations in which they find themselves. This information has been and is used to discuss productivity and quality outcomes with numerous constituencies: budget committees, policy level administrators, supervisors, managers, staff, and collective bargaining groups.

Intuitively, the campus facilities organizations know they do a good job, but the FPI data provides an impartial tool to verify, if indeed, that we are meeting expectations within the funding and staffing levels provided. It equips facilities representatives with

*Continued on page 35*





## Canada/CAUBO

*By George Dew*

**T**he introduction and ongoing support of APPA's Facilities Performance Indicators (FPI) in the Canadian context is a real success story, and participation within Canada is strong and building. This positive show of support for FPI would not have happened without the leadership and assistance of CAUBO.

CAUBO—the Canadian Association of University Business Officers—is a volunteer-driven organization that represents the administrative function of virtually all Canadian universities (CAUBO is the Canadian counterpart to NACUBO in the United States). Member committees provide direction and subject matter expertise, with each committee typically focused on one or two major projects at any given time. A small national office in Ottawa, Ontario, with the support of consultants as required, offers administrative, analytical, and project management functions for these projects.

Historically, from its origins over 75 years ago, CAUBO largely worked in finance and related areas. Beginning in the mid-2000s, in response to growing demand from other functional groups for national representation, this mandate was expanded, and in 2006 a Facilities Management Committee was created. From the start, a significant part of this committee's effort was directed toward what was then known as APPA's Facilities Core Data Survey.

### **BUILDING AWARENESS AND ADDING VALUE**

One of the newly formed committee's first activities was the development of a Facilities Management seminar, offered as a pre-conference session in conjunction with CAUBO's 2007 national conference. This was an occasion to build awareness of the sur-



**FROM THE FIRST  
VISIT AT AGE 8**



vey and in particular of its reporting capabilities and its value for benchmarking purposes. A hands-on session led by past APPA President Maggie Kinnaman gave participants the opportunity to try it for themselves with expert guidance, seeing for themselves how they could benchmark results against peer groups.

As stated in the session description, the objective was to “offer suggestions on the ways to get the best value for the time spent collecting and entering the data.” This has become and will continue to be a recurring theme in our work to encourage the use of the FPI survey. It isn’t enough to simply make members aware of the survey; we have to acknowledge that completing it takes significant effort, and we have to help them find ways to demonstrate the value received in return.

Of course, the value received is also dependent on the comparability of the data across institutions, and the committee put significant effort into reviewing Canadian results and identifying inconsistencies. A review of meeting minutes from the time reminds us of the questions that were raised and the progress that has been made in some areas.

It also reminds us that this is an iterative process—many data cleansing issues raised in 2007 are still with us. Some of the areas where progress has been made include:

*Currency conversion:* Initially, amounts entered in Canadian dollars were converted to U.S. dollars for reporting. This in fact did not seem to improve comparability—it is difficult to determine an effective single conversion rate for a year given fluctuations in exchange rates, and a significant portion of expenses (e.g., labor) are constant in local currency regardless of the exchange rate. With APPA’s agreement, Canadian results are now kept in Canadian dollars; report users can apply their own conversion rate where a conversion makes sense for their own analysis.

*Carnegie classification:* Canadian universities are not part of the U.S.-based Carnegie classification system. This was actually an easy one to solve: the Carnegie definitions are clear enough that someone familiar with our institutions can quite easily review them and note which group they should fall into. So we did.

### The CAUBO Variations

In order to understand how a national organization like CAUBO operates, it is important to understand the political context in which Canadian universities function. Our member universities are all publicly funded by and accountable to their respective provincial governments—there is no federal department of education, and the federal government’s influence on higher education is indirect. As a result, the Canadian FPI participants do not form a “cohort” in the way you might usually use the term. CAUBO is certainly not in a position to mandate participation or require a specific approach to data collection and utilization, and participants don’t have a common set of reporting requirements.

What they do have in common, however, is an increasing emphasis by funders on accountability and reporting, and an increased need to demonstrate to those funders that they are receiving value for money. Our role is to ensure that the FPI helps them to do this. To the extent that CAUBO and its Facilities Management Committee are able to improve data consistency, increase participation, and demonstrate how to best make use of the results, our members will continue to see this value.

*Language issues:* About one-fifth of our member universities have French as their working language, making it difficult for them to participate in an English-only survey. Beginning in 2009, CAUBO had the definitions and module help files translated, and we have continued to update these as major changes are made. It is still not ideal—francophone members now complete the survey in English while looking at the translated definitions—but it’s a step forward and helps to encourage broader participation.

There was also a note that committee members would review the survey and comment on any “Canadianization” required. This is a theme that we revisit regularly—some terms and definitions seem to be universal while others require interpretation according to local practice. Identifying these and ensuring consistency in their usage is one more way in which we can improve the resulting data.

### REVIEWING AND IMPROVING

The efforts to increase the visibility of the FPI and participation by our members accompanied the need to seriously review the data and determine where improvement was needed. The Facilities Management Committee completed reviews of Canadian reports and worked to improve these where errors were identified, but at the same time recognized that a broader review could not be effectively done by volunteers. In light of this, CAUBO engaged Ernest Hunter, a qualified FPI advisor, to complete a thorough review of the Canadian data in comparison with the entire data set, and to identify anomalies and recommend areas for further review.

In something of a good news/bad news scenario, this detailed analysis gave us a clear and repeatable methodology for data review and identified those data points that could become a focus for improvement. It also gave us a better idea of the magnitude of effort that would be required to obtain comparable data in all areas of the survey. It became apparent, again considering the resources available, that we would be best to first identify the causes of inconsistencies in the more important parts of the survey.

This led, in 2010-11, to a pilot project involving six member institutions



## Participation in and support for the FPI are not “one shot” activities.

in a detailed review of their data collection processes and their understanding and interpretation of the survey definitions. These institutions engaged Dan Leslie and Dave Riddell, both FPI advisors with extensive senior facilities officer experience in the Canadian university system, to assist the six institutions in completing the survey, identifying data gaps, and fixing any problems with definitions and inconsistencies in their data collection methodologies. These were then extrapolated to provide recommended approaches for use by all participants. At the same time, the consultants reviewed the survey itself for questions that may not be relevant or well placed in the survey to best meet Canadian university needs.

Participants in the pilot study were:

- Carleton University
- Dalhousie University
- University of Alberta
- University of Calgary
- University of Regina
- University of Saskatchewan

Not only did these institutions support the project, they did so at their own expense, and we thank them for their contribution to our continuous improvement effort.

The resulting report provides clear recommendations for consistent interpretation of key data definitions, for specific Canadian practice in completing the survey, and for further steps in training and development to build on the improvements made to date. This report is intended to be used by participating members and so was distributed widely; it is also available on the CAUBO website at [www.caubo.ca/fpi](http://www.caubo.ca/fpi).

### MAINTAINING THE MOMENTUM

APPA members will certainly understand that participation in and support for the FPI are not “one shot” activities. When combined with the realities of limited volunteer resources, CAUBO’s Facilities Management Committee necessarily takes an iterative approach, pushing for improvement in one area at a time and revisiting key points as necessary. In keeping with this approach, the committee is now planning two projects for the coming year or more—one looking at FPI inputs and one at outputs.

The first of these—perhaps recognizing that our support to members has been somewhat ad-hoc to date—will work to define and establish an annual cycle of activities tied to the FPI survey. It will establish a multi-year plan to create support mechanisms that could include participant training, data validation, a process for refining and documenting the Canadian interpretation of definitions, and an approach to providing regular interaction and support to the APPA team for further developments.

The second project, reaching back to the requirement for reporting to funders and to senior administration, will work to identify ways in which the FPI data can be used to improve operational effectiveness and accountability. This exercise will focus on key operations—maintenance, custodial, grounds, and waste management services—and will provide members with benchmarks, tools for analysis, and recommended practices.

So, what kinds of data points seem to require a specifically Canadian interpretation? At the risk of perpetuating certain stereotypes, snow removal is one of them. The survey currently includes this in the “Other” cost category; the pilot study report recommended that our members report it in the Grounds module to ensure that this major expense has appropriate visibility.





Through the support and leadership of CAUBO, the participation rate of Canadian institutions in FPI is 40% as compared to the general rate of 21% across APPA. It is only with extensive broad-based participation that the data and benchmarking truly become universally supported and trustworthy benchmarks cited nationally and internationally. APPA is growing the FPI participation rate slowly and consistently, but cohorts such as Canada that can provide the important leadership to enable and encourage broader participation will help us all and take FPI to the next level.

It will likely be the first in a series of similar projects, so that ultimately we will be able to offer a toolkit that will allow facilities managers to readily apply the available data to understand and manage their operations in all of the areas covered by the FPI survey and report.

#### THE VALUE OF DATA

The need for trustworthy and comparable data is a growing need and theme of increased accountability and transparency across campuses. With increased financial pressures on higher

education around the world, all governments, students, parents, and indeed our own internal institutional communities are looking for more data to validate the fairly large portions of our budgets that are required to keep facilities and operations at a quality to support recruitment and retention and ensure the continuation of quality teaching and research.

FPI is the most comprehensive and broad-based data gathering and reporting system for educational facilities. Canadian institutions through the support and leadership of CAUBO have embraced it as a benchmarking tool and look forward to continued improvements on how it can be used to effectively lobby for the funding necessary in our institutions. ☎

George Dew is senior analyst at the Canadian Association of University Business Officers, Ottawa, ON. This is his first article for *Facilities Manager*, and he can be reached at [gdew@caubo.ca](mailto:gdew@caubo.ca). Additional assistance and advice for this article was provided by Dave Button, University of Regina, and Bob Carter, University of Guelph.

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evidence and backing to justify funding levels and request funds for growth or defends against reductions. It provides a basis for establishing and modifying task and frequency, as well as planned and preventive maintenance schedules, normalize customer expectations, and support accountability in performance results.

Bringing a higher level of transparency on how you spend agencies and taxpayer's limited funds exposes organizations budgets to a level of scrutiny, to a wider audience, that without participating, may not otherwise be visible. But, by putting in the extra effort and taking the higher road to drive quality and the best decision making, the hard questions should be and need to be answered.

Within this program is information that is generally available in one form or another, sophisticated facilities organizations such as those in the CSU are positioned to use this information as a tool for improvement and have done so successfully. When results do not align with university goals, strategic plans, vision, and expectations, the APPA FPI provides a basis to discover why.

As campuses use the FPI over time, the trends become more meaningful. When discussing appropriate funding levels, it's important to know not only your staffing per gross square feet, or as a percent of your gross institutional budgets, or cost per acre, but also how the density of use of your facilities affect your staffing, cost and quality of services, as well as energy consumption of each campus.


#### ADDITIONAL BENEFITS OF FPI TO CSU

There have been many side benefits of participating in the FPI program as well. Innovative facilities leaders and organizations use this information to establish a basis for cost recovery for leases and special events. An important FPI measurement that has recently been established and is gaining system-wide momentum and understanding is reactive vs. proactive maintenance ratios. The effects of density of the use of space are of particular importance to the CSU system and the impact is routinely part of any staffing discussion.

The transfer of knowledge and intellectual capital is aided with the years of trending data available in the FPI that can be used to understand organizations in more depth. This is particularly more important during a change of leadership in any level of the organization. The questions of where have we been, where are we now, and how can the trends from the past aid in the decision making in the future, can more easily be answered.

#### CSU'S COMMITMENT TO EXCELLENCE

The commitment to excellence and effective use of the APPA Facilities Performance Indicators is evident in the CSU, as a near unanimous participation of the 23 campuses in a voluntary program, demonstrates the value it has and can deliver. It's easy to get caught up in the day-to-day issues and put quality measures to the side. The CSU facility managers have avoided this pitfall and use the FPI to learn and grow and in many cases be the benchmark to which to strive.

In their transparency, credibility, and quest to improve, the CSU facilities organizations are in a position to further align themselves with campus and system strategic objects and make decisions that best serve all of the interested parties. 

Rob Quirk is an APPA member emeritus working as an FPI consultant to the California State University System. He is based in Long Beach, CA and can be reached at [robertjquirk@gmail.com](mailto:robertjquirk@gmail.com).



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## Air / Dirt Separators Not Always “Equal”

The Gorham campus of the University of Southern Maine is one of three campuses that comprise USM, with a enrollment of approximately 9,300 students. Winters can be challenging in this climate, so properly heating the campus buildings is a top priority.

Few things are more frustrating than having major work done on existing buildings that continue to have problems right after the project is completed. Such was the case for USM's Gorham campus. The



University had their mechanical systems in Upton-Hastings Hall upgraded in 2010. As part of the complete heating system upgrade, the engineer called for coalescing type air/dirt combination units. Being a public institution, three manufacturers were listed, leaving the choice of brand to the contractor. In this case, one brand was chosen based strictly on the low bid. After the project was completed, weeks and months went by and USM was left with chronic air problems to deal with.

Dan Gearan (Associate Executive Director for Maintenance and Operations) had seen the Spirovent® portable demonstration unit at recent higher-ed conference and was interested in pursuing it further. An appointment was set up with Spirotherm's Regional Vice President and local representative to review the features and benefits further and perform an application review at Upton-Hastings Hall. A pair of coalescing air/dirt combination units had been installed correctly but air remained in the system. The result was Gearan's crew having to chase air throughout this large dormitory complex throughout the 2010/11 heating season.

In the fall of 2011, Gearan had two Spirovent air/dirt combination separators installed in an attempt to solve their chronic air problem. The Spirovent made by Spirotherm, Inc. (Glendale Heights, IL) employs the patented Spirotube® coalescing/barrier medium to scrub air and dirt from hot and chilled water systems with unprecedented efficiency, allowing it to break free of the flow path. The air is released through a patented air release mechanism while the dirt falls to the bottom and collects in the dirt chamber where it can be blown down through a manual or automatic blow down valve.



Just after installing and filling the systems, Gearan reported “I am happy to say we have finally installed the Spirovent units in Upton / Hastings Halls and they are working great. In fact my guys are now asking me to look at putting one in another problem building we have.” Spirovents are available from ¾” through 36” to handle flows up to 30,500 GPM and improve distribution efficiency in the system by eliminating air and separating dirt. For more information, visit [www.spirotherm.com](http://www.spirotherm.com).

# SPIROTHERM

By Jiri Skopek

# ESAT Under the Hood

**EFFECTIVE MANAGEMENT OF SUSTAINABILITY IN A** campus setting presents a challenge to both campus executives and facilities managers. While sustainability ideals are now already very much part of students' mindset, the hardest work remains with facility staff, who are constantly searching for effective strategies to manage campus operations. There is a good reason to look at energy and sustainability as the capital investment—savings that they can achieve through energy conservation and other sustainability measures can help offset increasing deferred maintenance and capital renewal costs.

Sustainability improvements and the associated bottom-line benefits also need to be managed and measured. The first generation of green building tools such as LEED or Green Globes has traditionally focused largely on rating a facility at a single point in time focused on aspirational goals or best practices. As sustainability becomes the new norm, the focus now is on continuous benchmarking and cost-effective asset management. This requires metrics to baseline and measure progress.

## **APPA'S ENERGY AND SUSTAINABILITY ASSESSMENT TOOL**

The APPA Energy and Sustainability Assessment Tool (ESAT) provides a dynamic database that can be used to track key energy and sustainability performance indicators, with respect to campus management and infrastructure as well as individual buildings. Since its launch in December 2012, over 175

campuses have visited ESAT online; yet only a handful has engaged in the full assessment. The objective of this article is to explain how ESAT works and the benefits of using it as a part of the campus management process.

ESAT was initially developed in 2010, through work at Carleton University, to evaluate the entire campus portfolio of 41 main buildings. The project helped the facility staff to develop and test a streamlined, practical, and budget-sensitive benchmarking program, which supports a roadmap for continuous improvement for the campus. This successful pilot eventually led to an enhanced Energy and Sustainability Module, which became integrated with the APPA Facilities Performance Indicators (FPI) program.

The addition of ESAT has greatly enhanced APPA's annual FPI report. FPI is the only report readily available on the costs and practices of facilities operations at educational institutions. The report is based on an annual survey of colleges, universities, K-12 organizations, and other educational entities. It allows comparisons of average costs for different types of space and



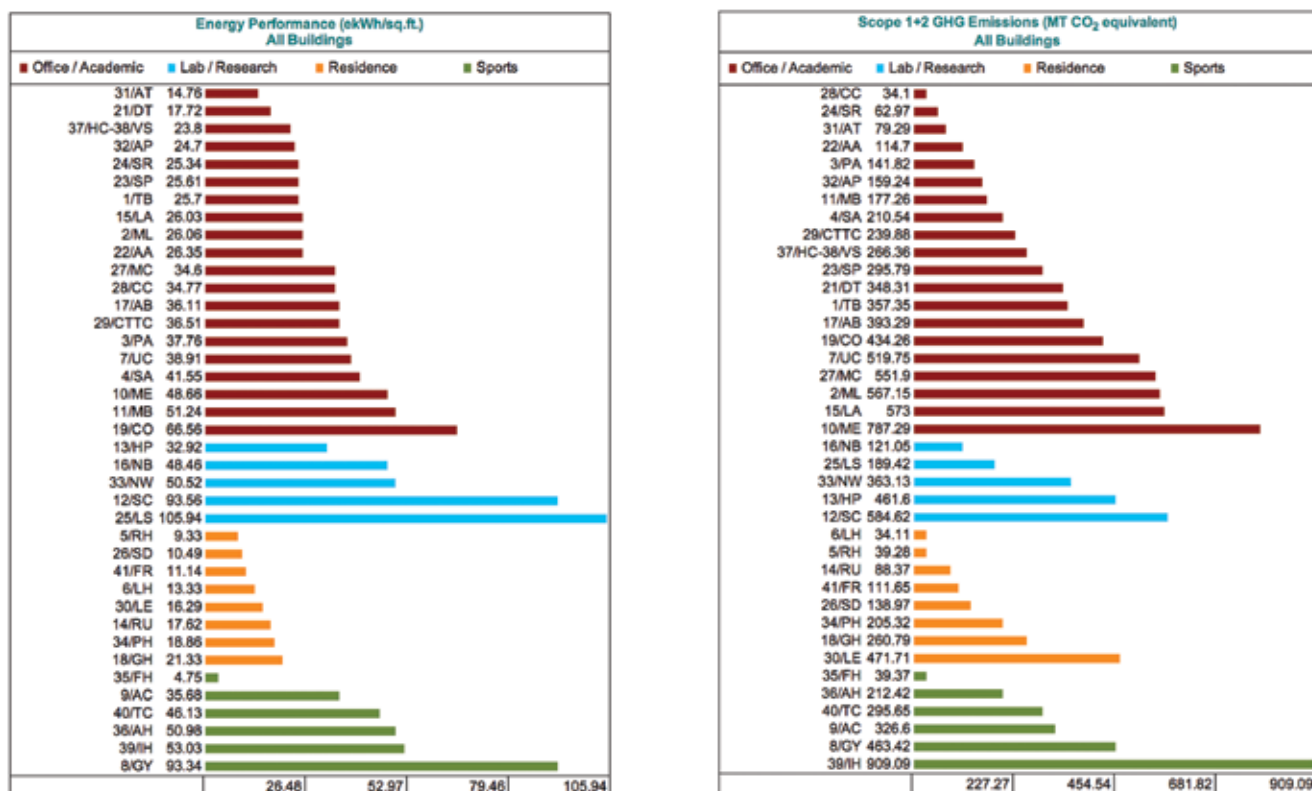
Figure 1. Campus Assessment



Figure 2. Summary showing overall campus scores and average scores for each building type



Figure 3. Energy intensity (ekWh/SF) and carbon (MTCO2) benchmarks for individual buildings are grouped by building type





institutions including staffing levels, salaries, and performance levels for custodial, grounds, maintenance, and other functional areas. With the addition of ESAT, the FPI report can now provide more detailed benchmarking of energy and sustainability performance of the individual campus buildings and campus operations as a whole.

#### HOW ESAT BENEFITS CAMPUSES

ESAT benefits campuses by providing a holistic approach to planning. As with any robust planning process, a baseline assessment is critical to understanding where the facility is currently at with regards to energy and sustainability, in order to establish targets and develop an action plan. Once the improvements have been implemented, a reassessment serves to monitor the progress and provide feedback on the effectiveness of the measures over a period of time. An added benefit is that ESAT enables a campus to benchmark its performance against other campuses.

The ESAT benchmarking tool has been set up to allow updates at any time. When FPI does its annual reporting, a “snapshot” of the following data from all the campuses is captured anonymously and transferred to the FPI.

- Energy performance benchmark
- Age distribution

- Data capture-size distribution
- Percentage of energy efficiency features found on campus
- Number of submetered buildings
- Carbon emissions benchmarks
- Water performance benchmarks
- Percentage of buildings that have various water efficiency features
  - Percentage of
  - Student and staff participation on the sustainable programs
- Buildings that have various Best Operating Features (BOP) related to the following
  - Utilities management
  - HVAC and electrical
  - Landscaping and site
  - Cleaning
  - Waste management
  - Hazardous materials management
  - Purchasing

#### HOW ESAT BENCHMARKS CAMPUS PERFORMANCE

A campus typically consists of several building types, which can be broadly classified as Academic Buildings, Labs, Sports Facilities (or other Auxiliaries), and Residences. These are



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subject to the usual energy and environmental performance benchmarking including energy, carbon, water, waste, pollution control and IAQ. ESAT has a specific assessment for each building type.

In addition, certain campus-wide management and operations are evaluated such as landscaping, transportation infrastructure, waste management, procurement, maintenance, and occupant communications. To provide a comprehensive view of the campus operations, both the CAMPUS assessment and the assessment for each INDIVIDUAL BUILDING should be completed.

#### CAMPUS ASSESSMENT VS. ASSESSMENT OF EACH INDIVIDUAL BUILDING

The Campus assessment and the assessments of each Individual Building both address the same key elements: Energy, Water, Transportation, Waste, Site, Emissions, Indoor Environment, and Environmental Management. Most of the sections have one or more subsections. For example, under the Energy Management sub-section are Policy, Audit,

Figure 4. Benchmarking Report—Energy Management Section

<b>Campus-wide Energy Management</b>					
X There is an energy management policy endorsed by senior management					
✓ Buildings on the campus have had an energy audit within the past three years					
X Building energy audits are followed up with energy reduction plans					
✓ Energy consumption is monitored by a qualified person to identify anomalies and take corrective action					
X There are energy usage targets					
X There is movement towards the targets					
✓ Carbon emissions are reported					
X Steps are taken to analyze and reduce peak electricity demand					
✓ There are financial provisions to improve the energy efficiency of campus buildings					
<b>Renewable Energy on the Campus</b>					
X "Green electricity" is purchased					
Individual Building Features	Audit: The building has had a recent energy audit	Metered electricity: The building is metered for electricity	Metered fuel: The building is metered for fuel	Sub-metering: Major energy uses within the building are sub-metered	Renewable Energy
<b>Office &amp; Academic Buildings</b>					
1/TB	100%	Yes	Yes	100%	0%
10/ME	100%	Yes	Yes	0%	0%
11/MB	100%	Yes	Yes	N/A	0%
15/LA	100%	Yes	Yes	0%	0%
17/AB	100%	Yes	Yes	0%	0%
19/CO	100%	Yes	Yes	100%	0%
2/ML	100%	Yes	Yes	0%	0%
21/DT	0%	Yes	Yes	0%	0%
22/AA	100%	Yes	Yes	N/A	0%
23/SP	100%	Yes	Yes	N/A	0%

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Management and Monitoring. Most questions require Yes or No answers. Pop-up tips further clarify the question. For some questions, you may find a circumstance when the criterion is Non-applicable. The rules for non-applicability are always explained in the tips.

The reason that ESAT is divided into two parts—Campus assessment, and an assessment for each Individual Building—is to facilitate and streamline the collection and reporting of data.

Having the two parts facilitates the capture of data no matter what the submetering profile is for the campus. For example, where there is no submetering of energy for each building or where district heating is used, or where there is no data on water consumption or the amount of waste generated by each building, then this quantitative data can be captured for the entire campus in the Campus assessment. Alternatively, where there is submetering at the individual building level, the data can then be entered for each building and the total aggregated into the Campus assessment.

The Campus assessment also stream-

Figure 5. Verifier Report

**WATER**

Rating Earned: 3%

Question	Answer	Applicable	Scored
<b>Water Consumption Information</b>		2	2
<b>Water Consumption</b>		0	0
Q1: How is water consumption data collected for this building?	<input type="radio"/> Water consumption unmetered <input type="radio"/> Pro-rated or otherwise calculated <input checked="" type="radio"/> Sub metered (including sub meters connected to BAS) or separate supplier billing		
Q2: Building consumption information will be entered as:	<input checked="" type="radio"/> Annual total <input type="radio"/> Monthly figures		

**WASTE REDUCTION**

Rating Earned: 0%

Question	Answer	Applicable	Scored
<b>Waste Reduction</b>		11	0
<b>Recycling, Handling and Storing Recyclable Materials</b>		11	0
Q1: Are there separate storage/handling facilities for used paper products, glass, metal and plastic?	<input type="radio"/> Yes <input checked="" type="radio"/> No	5	0
Q2: Are there collection points for sorting paper, glass, metal and plastic in the areas where waste is generated?	<input type="radio"/> Yes <input checked="" type="radio"/> No	5	0

is that the online diagram with more than 80 buildings loses clarity. Where more than 80 buildings are on single campus, the building group can be organized by building type.

## ASSESSMENT REPORT

Once the inputs are completed, the benchmarking report is generated, which addresses the overall operation and management of the campus and provides an aggregated portfolio report on the performance of individual buildings by a building type.

The ESAT report also provides granular information. For example, Figure 4 shows which campus-wide criteria were met with respect to Energy Management. The lower part of the table shows which individual buildings met various sets of criteria. The green-amber-red coding shows at a glance the high, medium, and low scores.

The assessment also presents a Verifier Report, which documents how the questions have been answered and how many points from the available points were allocated. This provides a transparency of the scoring (see Figure 5).

lines data collection for criteria that apply to the campus as a whole and all the buildings. For example, where there is the same campus-wide procurement policy for all the facilities, the data only needs to be entered once in the Campus assessment.

The Individual Building questions address the energy and sustainability features of a building or operational and management practices specific to the type of the building against generally recognized best practice. If available, energy, water, and waste quantitative data specific to the building are also captured. For the Individual Building assessments, the user must first enter the individual building type (i.e., Academic, Lab, Sports Facility, or Residence).

Because some campuses may be rather large or some institutions may have satellite campuses in different locations, the assessment makes it possible to organize the buildings into building groups. Ideally, a building group should be no larger than 80 buildings. The reason for this

Figure 6. Cost of Improvements and Savings Report

Item shaded in green	this is an opportunity that should be investigated immediately
Item shaded in amber	this opportunity should be investigated in more detail at the site level to determine feasibility
Item unshaded	this generates a long payback, but a detailed engineering assessment should be carried out to determine the feasibility and to develop more accurate costs and related paybacks

Savings by Building	Lighting Systems and Plug Load	HVAC Systems and Controls	Cooling Systems	Heating and DHW Systems	Water Reduction Measures
<b>Office &amp; Academic Buildings</b>					
1/TB					
Tot cost:	\$113,550	\$68,130	\$34,070	\$56,030	\$72,250
Savings:		\$6,810		\$2,520	\$6,500
Capital Cost:		\$76,550		\$5,100	\$70,170
Payback:		11.2 Years		2 Years	10.8 Years
Items:	High-efficiency package units, High-efficiency water heating, Low flush urinals, Low flow faucets				
10/ME					
Tot cost:	\$250,170	\$150,100	\$75,050	\$226,740	\$99,270
Savings:		\$15,010	\$9,010	\$15,310	\$8,930
Capital Cost:		\$112,810	\$206,820	\$92,130	\$103,410
Payback:		7.5 Years	23 Years	6 Years	11.6 Years
Items:	High-efficiency package units, High-efficiency chillers, High-efficiency water heating, Hotwater saving devices, Low flush urinals, Low flow faucets				
11/MB					
Tot cost:	\$56,330	\$33,800	\$16,900	\$60,990	\$6,470
Savings:	\$4,730	\$3,380		\$3,660	
Capital Cost:	\$21,910	\$26,290		\$12,710	
Payback:	4.6 Years	7.8 Years		3.5 Years	
Items:	Automated lighting controls, High-efficiency package units, High-efficiency water heating, Hotwater saving devices				



## CAPITAL COST OF IMPROVEMENT AND SAVINGS REPORT

While it is not necessary that all buildings be entered to generate a report, the greatest benefit is gained from the combined overall campus results along with the individual building reporting, which includes Level 1 energy and water audits. These can be used for budgeting capital costs of the building improvement as well as utility savings.

## USING ESAT TO DEVELOP A CAMPUS FACILITIES FOUNDATION FOR ACTION

To effectively develop and manage any program you need to measure and evaluate the current state, establish key indicators, and continue to measure the key indicators to ensure that the program is providing the desired result. For the areas affected by the campus and facilities operations, APPA's Energy and Sustainability Assessment Tool is an effective means for review and improvement.

The ESAT program at Carleton University made it possible to evaluate each building at a baseline point in time. With the baseline in place, the university and its energy services partner have initiated detailed audits of selected facilities, developed retrofit/renewal scopes of work, and are in the process of implementing the projects and measuring results compared to the baseline.


**For more information about ESAT go to  
<http://www.appa.org/esat/index.cfm>.  
ESAT is open and available for your data input.**

Carleton University plans to utilize this approach across the campus to continually improve the use of energy and reduce its overall campus environmental footprint.

## CONCLUSION

ESAT is well positioned to meet an increasing demand for a simple asset management tool, which can track overall campus and individual buildings performance on ongoing basis. Through the link with APPA's Facilities Performance Indicators (FPI) survey and report, there is now a possibility to correlate some of the energy and sustainability indicators with other campus indicators (financial, space, etc.). With the ever-increasing power of the analytics, the combined ESAT and FPI database will provide a valuable source of data mining on all aspect of your campus' facilities performance.

In the meantime, the ESAT's benefits can therefore be summarized thus:

1. Assesses the energy and sustainability performance of campuses in terms of their overall campus operations, and their individual buildings
2. Provides a benchmarking framework against which campuses can compare themselves anonymously
3. Provides the basis to develop a campus-wide strategy and action plans for individual buildings and campus operations, including a Level 1 energy and water audit, along with orders of magnitude of savings and payback time
4. Packages a vast amount of data about campus operations and individual buildings in a manner that tells a story at a glance
5. Integrates ESAT benchmarks into the FPI database to report on Built Assets and Operations. 

Jiri Skopek is managing director, sustainability, for Jones Lang LaSalle, Toronto, ON. This is his first article for *Facilities Manager*, and he can be reached at [jiri.skopek@am.jll.com](mailto:jiri.skopek@am.jll.com).



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# Physical Plant Public Relations

By Matt Adams, P.E.

There is a well-known expression: “Perception is Reality.” The meaning of this expression is clear but it’s often difficult to recognize that it can, and does, apply to our own professional environment. In fact, this often unfair gauge applies more to the facility management professional than many others. If the perception at your institution is not realistic, then those perceiving it must lack a functional understanding of the facility management profession. More specifically, they must not fully understand the role of the facilities department on campus. Unfortunately, people often assume the worst when given inadequate information.

## VARIED PERCEPTIONS

If perception is reality for us, what do our customers and peers on campus actually perceive or see? It’s not just about employees leaning on their shovels or taking frequent breaks. This concept delves much deeper into our reputations. For example, other than faculty salaries, the slice of the pie represented by operations and maintenance is the next largest. Annual reports and other budgetary documents that are readily available all reinforce the notion (and reality) that the facilities department expends a considerable portion of the campus’ annual budget.

The significance of this perception is easily illustrated by the two polar opposites on campus. To the supervisor within the trade shops, this budget is perceived to be inadequate, while a staff member in the library might perceive this allocation to be suspect and very

generous. Aside from any self-interest, what is the real cause of this varied perception? It’s the lack of meaningful understanding of facilities operations.

One of our primary difficulties with how others perceive us, is that the “us” represents so many unique and distinct job functions. In other words, we work in organizations that provide a wide variety of services from housekeeping, HVAC maintenance, steam generation, architecture, and so on. There isn’t a homogenous face for the department.

**IF PERCEPTION IS  
REALITY FOR US, WHAT  
DO OUR CUSTOMERS AND  
PEERS ON CAMPUS ACTUALLY  
PERCEIVE OR SEE?**

Our departments are often big, and they are technically complicated. But to those looking in, we are simply big. This lack of understanding and inaccurate perception creates what Stephen Covey refers to as the low-trust tax. The facilities department is given a second and third look during every budget review. Each and all invoices for small projects are immediately perceived to be excessive. While impossible to estimate in terms of reduced productivity it is clear that this tax impedes our operation in many ways.

Education is hard work and it takes time, talent, and technique. Education of our customers requires the same, and

most of our peers place a low priority on it. Perhaps it would be more accurate to say that most of our peers see education as important, but in a world of growing expectations and reduced budgets there is simply no time or money for formal education of customers. This is unfortunate because in a world where we must continually do more with less, a formal program of public relations that includes education of campus customers offers a very quick return on investment and profound long-term benefits.

If we understand how some might incorrectly “see” our operations and create incorrect perceptions, we should decide how to correct these misconceptions. How do we want our customers to perceive us and do we get to that point? The answer lies in the statement used earlier: people assume the worst when given inadequate information. More specifically, people will have negative perceptions when the information they are given is either inadequate or in a form that is unusable to them. Supplying our customers with information that is unfamiliar to them is ultimately useless. And a cardinal sin in our industry. In the hurry to get everything done we typically communicate to our campus stakeholders in a language that is technical and only understood by those within the facilities department. This is especially true of budgetary and cost communications.

## EDUCATING THE CUSTOMER—AND THE BUDGET OFFICE

An example of the need for better education of customers can be seen in small

project work. For most of us, the billing for this work is often perceived as excessive—or worse—compared to work that customers have had done in their homes. This negative perception is a result of a lack of understanding of the university business environment. A small HVAC contractor can install a window air-conditioner very inexpensively by himself.

However, our customers within the university must be educated to better understand that by being a part of the university, we have made a commitment to adhere to a high set of standards. On our website, our newsletters, presentations, and even at a presentation of a cost estimate, we should be illustrating in lay terms the impact that our higher

standards have on cost and how each bill is affected. For example, unless paid over time, our staff works an 8-hour day just like our customers. We adhere to all building codes and workplace safety standards. This is part of the higher standard that comes with working for a university. We use only high-quality materials and install them to last many years—a higher standard than is expected in residential contracting. This information should be communicated to our customers in terms they can understand, and done frequently.

Each and every interaction we have is an opportunity to inform and educate those around us. This is most important when it comes to submission of budgets. The typical budget in our industry has little or no explanation of service levels associated with resource expenditures. When times are tough, a budget that is perceived as large will be assumed to have room for reduction and/or improved productivity. When cuts are made, a large budget that is not fully understood will be “taxed” and forced to absorb more service responsibility without a corresponding increase.

What should happen is that every budget for every service center is communicated, in a variety of modalities, showing a clear cause and effect mathematical relationship of service level and resources (staff and materials). For example, the budget office should understand that for every new X gross square feet of space maintained to an APPA service level of 3, an HVAC technician is required. Furthermore, this formulaic relationship works both ways. To add space without budget requires a reduction in service level. Only when the budget officer understands this mathematical relationship and sees it in your documentation, will his or her perception of your operation be accurate. ☹

Matt Adams is president of Adams FM<sup>2</sup>, Atlanta, GA. He can be reached at [matt@adamsfm2.com](mailto:matt@adamsfm2.com).



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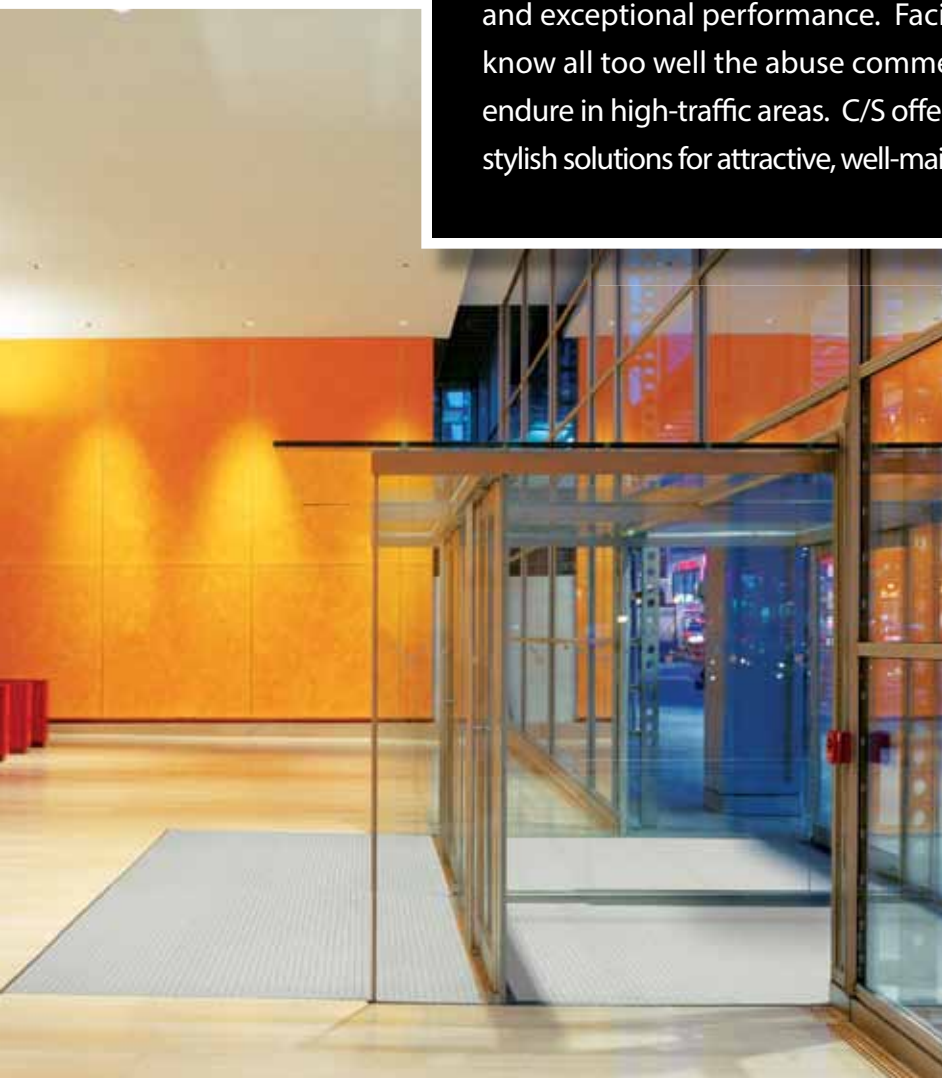
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# Reducing Water and Sewer Costs

By Larry Spielvogel, P.E.

In some areas, water and sewer costs are increasing at a faster rate than energy costs. This article will address some often unnoticed means to reduce those costs without any reductions in water consumption.

## GET INVOLVED

Water and sewer costs are influenced by the supply and treatment costs, as

the water officials. The majority of sewer utilities are municipal, and have similar structures. Thus, it is common to find that water and sewer rates and charges for non-residential customers (since they do not vote) are higher than comparable residential rates.

Some municipalities base sewer charges for non-residential buildings on the number and types of fixtures that discharge into the sewer system. The assumptions often used are based on older style fixtures that have higher water and sewer consumption than modern fixtures, while residential sewer rates are often based on water consumption. Therefore, it can be important to get involved in the water and sewer ratemaking process. Support and participation by other non-residential user groups can help offset

the costs and show broad concern.

The Main Division of Aqua Pennsylvania is a state regulated water supplier that serves hundreds of thousands of customers in many suburbs of Philadelphia. Their current charges for residential water use are:

- “Water consumed will be charged for at the following rates: For water consumed up to 2,000 gallons per month \$9.071 per thousand gallons.”

For commercial and public customers:

- “Water consumed will be charged for at the following rates: For water consumed up to 10,000 gallons per month \$10.00 per thousand gallons.”

Residential rates for over 2,000 gallons per month are inclining block charges (higher charges for higher use), while non-residential rates for over 10,000 gallons per month are declining block charges (lower charges for higher use). Thus, for small non-residential customers the water rates are higher than residential, while the opposite is true for larger non-residential customers.

## BILLING DIFFERENCES

The Aqua monthly water meter charges, regardless of how sewer and stormwater are billed, are:

Size	Charge
5/8" .....	\$16.00
3/4" .....	27.50
1" .....	46.70
1 1/2" .....	89.90
2" .....	127.90
3" .....	257.00
4" .....	418.00
6" .....	862.00
8" .....	1,508.00
10" .....	2,229.00

In the City of Philadelphia (often across the street from Aqua), the water consumption charges are the same for all customers with the same consumption, and they are declining block, so the larger users pay less per gallon. Until recently, and for many years, Philadelphia included their cost of dealing with stormwater in the sewer meter charges.



well as increasingly stringent government requirements. Water is often provided by regulated utilities or municipal utilities. Scant attention is paid to how their rates and charges are set, with more attention paid to electric and gas rates. Especially with municipal water suppliers, the rates are set by appointed, usually political officials. Their main focus tends to be on rates and charges for residential customers, who elect the municipal officials, who in turn appoint

Recent monthly sewer meter charges, in addition to water meter charges, based on water meter size were:

<b>Size</b>	<b>Charge</b>
5/8" .....	\$18.07
3/4" .....	89.93
1" .....	146.61
1 1/2" .....	287.43
2" .....	457.44
3" .....	853.00
4" .....	1,425.52
6" .....	2,845.25
8" .....	4,545.46
10" .....	6,537.71
12" .....	12,176.09

Thus, there is strong incentive to have the smallest water meter size installed, consistent with providing adequate service and pressure. Having a 12" water meter meant paying over \$146,000 per year in sewer charges before the first gallon of water went to the sewer. For customers with multiple water services, just the sewer meter charges alone could be substantial.

#### METER SIZE MATTERS

Plumbing designers and water companies have been heavy handed when setting water meter sizes. It is common to find existing water services with meters that are two, three, and even four sizes larger than needed. It is a rarity to find undersized water meters. It is common to find buildings with 2" meters that successfully consume more water than similar buildings with 4" and even 6" meters. I have a 1.6 million square foot building with a 4" water meter. Thus, water meter downsizing is almost always successful, both functionally and economically. Most water utilities provide any size meter desired at no cost, provided the customer makes the appropriate plumbing connections.

While many water suppliers will not release information on the amount of water consumed by each water meter size, this information can often be obtained by intervening in water company rate cases. Compare your own water consumption

and meter size to see how much smaller water meters can be used. Verify that water pressure is sufficient to maintain adequate service. If a water service is used for fire protection, insurance carriers may impose minimum water meter sizes.

Following are data from a water company rate case showing frequent examples where water consumption was measured and billed for various meter sizes.

<b>Size</b>	<b>Gallons/Month</b>
5/8" .....	150,000
3/4" .....	200,000
1" .....	400,000
1 1/2" .....	1,000,000
2" .....	2,000,000
3" .....	4,000,000
4" .....	8,000,000
6" .....	15,000,000

Most sewer providers base their consumption charges on the amount of water consumed. Another infrequently used but common option is to get sewer charge credits for water consumed that does not go to the sewer, usually as measured by subtraction meters. This can include consumptive use of water for things like irrigation, cooling tower makeup, and swimming pool makeup. Installation of subtraction meters is usually worthwhile. The sewer credit can be either an annual average percentage reduction based on subtraction meter data, or monthly or quarterly subtraction meter readings sent to the sewer provider. Depending on the building type and occupancy, consumptive use of water can be as much as two-thirds of the total water use, making the implementation of subtraction meters economical.

Of course, reducing water consumption is always worthwhile. Depending on water and sewer rates, replacing perfectly good existing plumbing fixtures with new water conserving units can often be justified. ⑤

Larry Spielvogel is a consulting engineer in Bala Cynwyd, PA, and can be reached at [spielvogel@comcast.net](mailto:spielvogel@comcast.net). This is his first article for *Facilities Manager*.



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# APPA BOK: General Administration and Management

By Jack Hug, APPA Fellow

*“If you don’t understand people, you don’t understand the Facilities Management profession.”*

Imagine that you are faced with intense budget pressures and have been asked to focus on the facilities management department cost structure, which is predominately related to people costs. You consider the alternatives—layoffs, furloughs, cutbacks in travel, reduction in training and development, hiring freezes, pay cuts, reduced overtime, changes in work shifts, and so on. At the same time you think about the challenges—loss of employee morale, loss of talent, and quite possibly a snowballing effect resulting in poor service productivity and performance.

With little to guide the decision-making process, you are unsure what to do and risk making a short-term decision that will have lasting negative impact on the organizations capabilities to perform. Is there a way to reduce costs and maintain organizational performance? So far, credible solutions to such challenges are hard to come by. Your plan must consider that change is inevitable, communication skills will be crucial, and you leadership talent will be put to the highest test yet.

## **APPA BOK (BODY OF KNOWLEDGE): LEADERSHIP AND ADMINISTRATION**

This section of the BOK contains chapters that are timeless and most relevant for the changing requirements faced by the facilities professional.

*Change Management, Communication, and Leadership*, all have one thing in common: people! The authors for these chapters make the case for our need to understand the human capital that we have been charged to steward and independently recognize the critical importance of the role of people in building organizational capacity and capabilities. Let me connect the dots for you.

# BOK

## Body of Knowledge

[WWW.APPA.ORG/BOK](http://WWW.APPA.ORG/BOK)

In introducing the chapter *Change Management*, author John Morris writes that “failing to change with the times and new demands will doom the facilities department to mediocrity. To achieve the world-class service that many of us strive for, we must be willing to embrace change and prepare our organizations to do the same. The true challenge of organizational change lies not in the mechanics of making change, but in addressing the cultural norms that define the current organization. It is important to estimate what impact a change likely will have

on employee behavior patterns, work processes, technological requirements, and motivation. Change will affect the individuals within the organization.”

In the chapter *Communication*, Bob Hascall and Karen M. Salisbury establish communication as not just a core leadership skill, but also “an essential ingredient for leadership success...Effective communication includes speaking, writing, listening, and ensuring congruency between your words and actions.” Bob and Karen reminds us that “we speak multiple times each day, so it’s crucial that our message, information, thoughts, and ideas are transmitted in a way that is understood by all listeners and that information is communicated in a caring and honest way. It is important to communicate with listeners in a way that achieves the desired outcome that is, to acknowledge, convince, motivate, or persuade the listeners.”

With the reference in this chapter to the book *Crucial Conversations: Tools for Talking When Stakes are High*, the authors outline seven tools that can lead to profitable conversations. These tools serve as a good reminder on the importance of careful practice of communication.

In the chapter *Leadership*, author Bill Daigneau has taken an insightful approach and has chosen from among all the broad topics typically included in discussions of leadership, to provide a



primary focus on the practical aspects of leadership: its characteristics, its traits, and its activities. "The three fundamental areas in which leadership is important are 1) setting direction, 2) building the management team, and 3) team leadership."

Bill describes the context of the higher education enterprise. In this setting, the meaning of leadership is explained along with six essential elements of mission, vision, values, communication, empowerment, and self-understanding. A series of questions were presented that can be used to define the level of practice of leadership within each of the six essential elements. The answers to these questions can help facility managers determine the areas in which they are presently providing the necessary leadership and those in which they might further develop their leadership in the future.

### ...THE PROBLEMS FACING FACILITIES MANAGERS ARE VERY REAL AND COMPLEX...

Bill reminds us that "Doing the right things in most any field of human endeavor, including facilities management is not easy. If it was easy, everyone would be doing it, and we would not need to talk about the problems facing higher education. However, the problems facing facilities managers are very real and complex, and will require some fundamental changes in how they approach and manage their job. This is what David Noer, in his book, *Healing the Wounds*, calls *culture busting*. It is the process of abandoning old paradigms and creating new ones. It requires that managers abandon their existing beliefs and venture into new and uncharted solutions. This process is extremely unsettling and would be impossible if it were not for a single great attribute of humankind: leadership!"

Notice the common thread here is people; the connection of Leadership

to Managing Change, and Communication. These authors are all proven successful practitioners with an undeniable track record of understanding people and each is well known for being *APPA-Active* and for their substantial contributors to our profession.

Do yourself a favor and read these chapters of the BOK. 💰

APPA Fellow and Past APPA President Jack Hug is president of Hug Consulting + Management Services, Colorado Springs, CO. He serves as the content coordinator for the General Administration and Management section of APPA's BOK and can be reached at [jackhug1@comcast.net](mailto:jackhug1@comcast.net).

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

## The topic of sustainability

is not new to APPA members, but it continues to grow as a topic for both APPA members, others in higher education—and in society in general. The two books reviewed this month look at implementation of institutional-wide sustainability, as well as personal sustainability.

In order to continue with the sustainability focus, if you are reading this online, don't print; if you're reading the print version, share it.

### CITIZENVILLE: HOW TO TAKE THE TOWN SQUARE DIGITAL AND REINVENT GOVERNMENT

Gavin Newsom with Lisa Dickey, Penguin Press, New York, 2013, 272 pages, \$25.95 hardcover, \$12.99 Kindle.

There are many companies, individuals, and organizations that expend vast resources to mine the wealth of data being collected every year and to identify valuable information about various groups and individuals. There are concerns about individual privacy when companies like Amazon or Google send us e-mails recommending what to buy, or when we are enticed (or irritated) by a pop-up ad for a movie or music download. There are larger, more beneficial results for society, as evidenced by an IBM ad showing a cop getting to a potential crime scene before the robber arrives, thus thwarting the crime. This sort of pattern-checking helped New York City get a better handle on crime, but still raises the privacy issue.

*Citizenville* discusses how the governments of San Francisco and California were able to leverage the data they had and how their citizens were able to use the data more meaningfully and usefully. Something as simple as tracking data about automobile accidents could result in improved traffic control at roadway

intersections, or identifying where water main breaks were occurring, so engineers could plan an upgrade or renewal in the water distribution network.

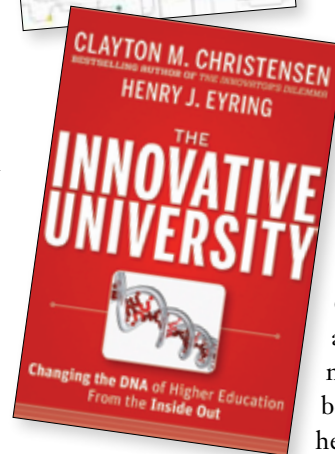
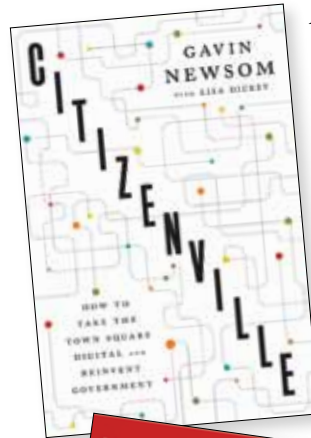
While authors Newsome and Dickey provide many examples about how ordinary citizens have helped themselves, others, and their communities by looking at open data that governments maintain, there is a clear argument to provide the data in a more readily accessible form, and to make other community data more readily available. Rather than focus the privacy issues and concerns about malfeasance, I prefer to use *Citizenville* for examples of how facilities managers and others can identify and leverage similar information in an educational setting.

There are several examples already in educational institutions where facility officers are benefiting from their own data-mining efforts. The University of Iowa is using building operating data combined with weather data to compare anticipated utility consumption against actual consumption. When anomalies are identified, mechanics are dispatched to identify building systems in need of repair or adjustment, rather than wait for a work request or an end-of-month utility bill to point out a problem. Similarly, the University of Nebraska Lincoln makes decisions about changing HVAC filters based on building operating data reported through the BAS (building automation system). This approach maximizes IAQ and operating efficiencies while minimiz-

ing staff time and material costs. Similar initiatives may exist at other campuses.

Consider what other ways can be used to improve service effectiveness or efficiency. There must be thousands of them on each campus represented by APPA members who are all struggling to do more with rapidly diminishing resources. Our CMMS software is a valuable source of opportunities to utilize our data better; linking the CMMS with the BAS or other facility data should provide more opportunities.

*Citizenville* is not written for the facility officer; it is written as examples of what has been done and what might be done in future. It doesn't matter who the audience is. What matters is that someone, somewhere, realizes there's on opportunity to take previously disconnected data, combine it with other data, and to create new opportunities to perform better. This book will stay in my library to help me find new inspirations.



### THE INNOVATIVE UNIVERSITY: CHANGING THE DNA OF HIGHER EDUCATION

Clayton M. Christensen, and Henry J. Eyring, Jossey-Bass, San Francisco, CA, 2011, 512 pages, \$32.95 hardcover, \$18.12 Kindle.

I've read many books about higher education and its history. I read them to get a better understanding of the core mission of the industry I have served, in the hopes of providing better service to the campus, and to understand what might be coming next to challenge the facilities area. Sometimes



I'm able to benefit from these books quickly, other times I've simply read an interesting book.

*Innovative University* is more than an interesting book; it provides a fascinating perspective on how one old university grew to affect hundreds of universities and then set a standard that is costly to attain. It also tells the story of a smaller, younger university that, through strong leadership, cut an independent and successful path in higher education. The comparison between these two institutions—Harvard University and Ricks College (now BYU-Idaho)—grew shows how each became successful and strong through determined and resourceful leadership. What's more interesting are the close ties between these two institutions that are separated by nearly 2,500 miles.

The authors have spent a great deal of time analyzing the history and innova-

tions of each campus and analyzed the characteristics at each major leadership or development change. What were the fundamental new traits of each innovation and the implications each trait? These are presented through an historical narrative and summarized in table format at appropriate points in the book. The traits change with the campus and era.

In addition to the description of the traits (the DNA), the authors discuss what worked and didn't work about each trait. They also discuss how many other institutions adopted the traits without understanding the "why" or the implications of having the trait. For instance, why does Harvard have the "best of the best" on the faculty, and what are the implications of having so many top researchers (cost.) Why does this work so well at Harvard and why do attempts to copy Harvard's DNA create strains for other institutions? Why did BYU-Idaho

choose a different path, and why is it working so well for them?

While *Innovative University* is more about the successful operation of two very different universities and much less about the facilities that make up the universities, there is some clear discussion about facilities and the cost implications on the institutions arising from facilities. So while I can't recommend this book for a reader eager to learn more about the history of higher education facilities, I do recommend it to readers interested in getting a better understanding of the historical influences that made higher education what it has been, and the environmental influences that are changing the way higher education may be in future.

Ted Weidner is senior director of project management and construction at Purdue University, West Lafayette, IN, and can be reached at [tjweidne@purdue.edu](mailto:tjweidne@purdue.edu).

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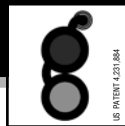
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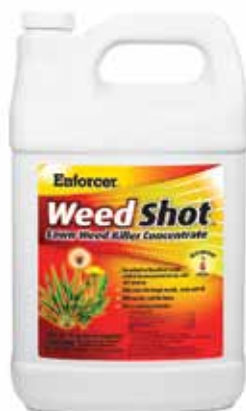


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**ASSA ABLOY** makes indoor security easier with the new Code-It electronic security handle from Mul-T-Lock. Impressing integrators, locksmiths, and consumers alike with its sleek design, effortless installation, and user-friendly operation, Code-It is designed to lend ultimate convenience to indoor applications. Code-It features four buttons at the end of its handle numbered 1, 2, 3, and 4, plus a manual “LOCK” button, LED status



indicator, and sound indicator (which can be switched on or off). Up to nine user codes (each code 4-6 digits) can be programmed, along with a master code. Code-It is battery powered and does not require an electrical outlet, and one pair of batteries is good for up to 100,000 entries. The LED displays activation, deactivation, and battery life status. For more information regarding ASSA ABLOY visit their website at [www.assaabloy.com](http://www.assaabloy.com).

**CULTEC** has released its StormGenie® v.2.0 automated drawing program, which is used in conjunction with the company’s updated Stormwater Design Calculator. The Stormwater Design Calculator calculates the system and the StormGenie draws the proposed system in AutoCAD(r). The StormGenie is an AutoCAD plug-in that simplifies the design phase and allows clients to generate project-specific AutoCAD drawings for the company’s Contactor(r) and Recharger(r) stormwater systems. The CAD drawings are fully usable and may be modified and incorporated into existing plans and used in final designs. To learn more about CULTEC visit [www.cultec.com](http://www.cultec.com).



**Deb Group** has launched an industrial hand-cleansing foam with suspended bio-scrubbers™. This new product, GrittyFOAM™, delivers the performance and effectiveness of traditional heavy-duty hand cleansers in a user-preferred foam format to gently remove tough soils while making hands feel great. GrittyFOAM is the world’s first heavy-duty foam hand cleanser with the additional cleaning power of grit. The result is a powerful cleaning product that requires less product, less



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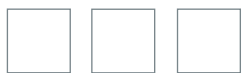
ways. Unlike gasoline, propane does not degrade over time, virtually eliminating performance problems related to fuel quality. Propane also emits fewer carbon dioxide emissions and toxic pollutants than gasoline, improving the air quality for the crew on the job site. Finally, in many cases, propane fuel costs less than gasoline, providing savings. For more information about the Propane Educational & Research Council visit [www.buildwithpropane.com](http://www.buildwithpropane.com).

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