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MAR/APR 2012

ARE OUR CAMPUS CLIMATE EFFORTS ENOUGH?

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INSIDE

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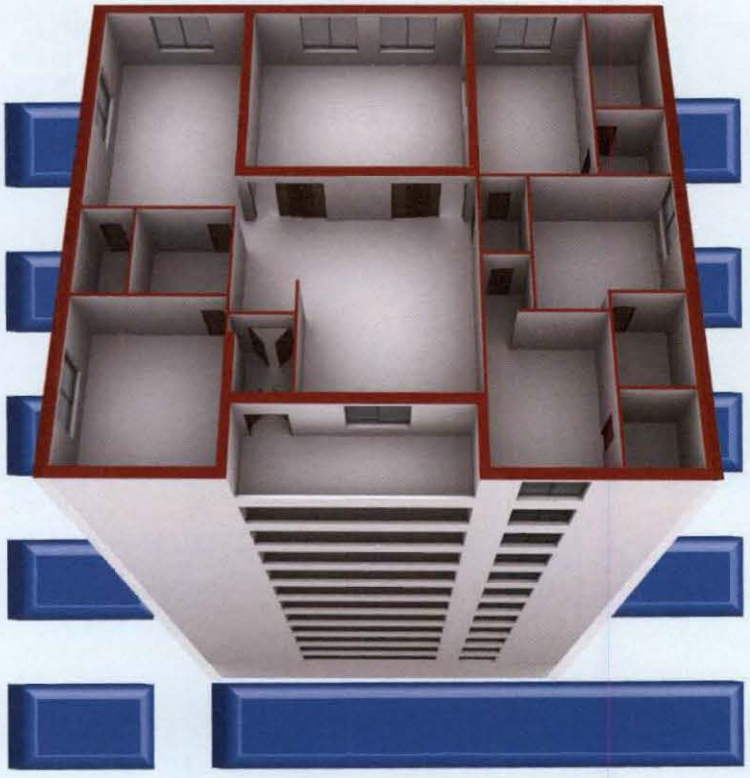

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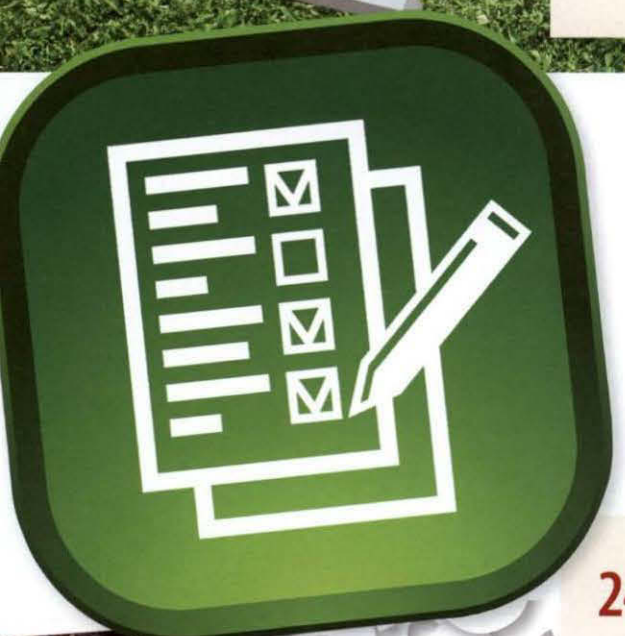

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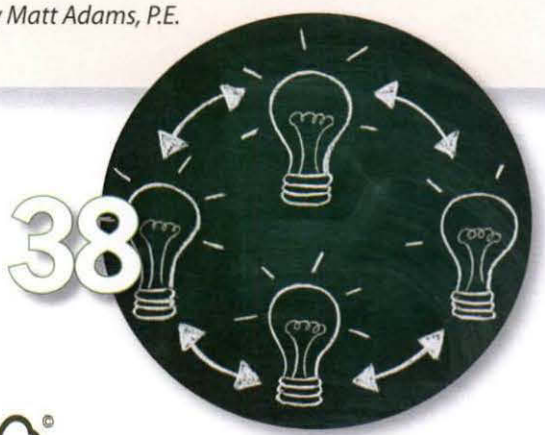

CAN WE MAKE A DIFFERENCE IN CAMPUS SUSTAINABILITY?

It's a question that doesn't have an easy answer. We'd like to think that all of our campus efforts with recycling, energy retrofits, climate action plans, biomass plants and geothermal, solar arrays and wind turbines, would be enough to start to make a difference in our overall improvement to the environment. And realistically, they must be.

But Walter Simpson, former energy officer at the University at Buffalo and author of our cover story, warns that, while these efforts are meaningful and effective, more urgency and intensity of effort is needed by all campuses to truly start making a difference in the long term. At current rates, Walter and other climate experts are not overly positive about our campuses reaching the (sometimes meager) goals we've set for ourselves.

The cumulative portfolio of buildings on college and university campuses, at independent schools, and at public K-12 school districts is massive, and *could* have an impact if more were to make the commitment to affect climate change in a fairly aggressive manner. Unfortunately, too often political polarization or budget constraints or "other" priorities result in an overall diffusing of the ultimate targets. We *can* do more, but will we?

We're pleased that Walter Simpson has agreed to prepare this article for *Facilities Manager*. Our relationship goes back nearly 20 years, when APPA shipped free information on SUNY Buffalo's innovative energy efforts to members via the magazine. Since then we have published a number of articles by Walter, including three that won APPA's Rex Dillow Award for Outstanding Article. The topics included ESCOs and demand-side management, a guide to green building design, and a 1996 article that first introduced the term "environmental stewardship" to APPA.

Walter's more recent articles put forth the discussions on sustainability and climate neutrality that continue with this issue's "Cool Campuses?!" feature. We're also proud of his tremendous efforts as the editor of APPA's popular book, *The Green Campus: Meeting the Challenge of Environmental Sustainability*, published in 2008 and still valuable today.

Readership Survey Coming

We will be conducting a comprehensive readership survey for *Facilities Manager* in the next month or so. If you are asked to complete the online survey, we hope that you will participate and share with us your readership, habits, and opinions of the magazine's content, design, and value to you as a busy educational facilities professional. All survey participants will be entered into a drawing to receive one of three exciting gifts still to be determined.

Thank you in advance for completing the survey. Doing so helps us to continue providing you with the content you need to be most effective in your jobs while serving the goals and missions of your schools.

Coming in May/June 2012

- Finding, Training, and Keeping Your Workforce
- Mentoring through the Fourteeners Program
- Getting to "Yes"

FACILITIES manager

President
David Gray, Middle Tennessee State University

Executive Vice President
E. Lander Medlin, *lander@appa.org*

Editor
Steve Glazner, *steve@appa.org*

Managing Editor
Anita Dosik, *anita@appa.org*

Design & Production
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Printing
Corporate Press, Inc.

Editorial Office
703-684-1446 ext. 237
Fax: 703-549-2772

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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. 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*.

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For the latest on APPA 2012, visit us at **www.appa.org/training/APPA2012/index.cfm**.

TOP 10 Reasons Why APPA 2012 is Just for YOU!

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8. Discover new and innovative ways to manage your team.
9. Rejuvenate.
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Visit us today at **www.appa.org/training/APPA2012/exhibitorssponsorship.cfm** to see why APPA's 2012 Hall of Resources is where you need to be! For additional assistance contact Suzanne Healy at **suzanne@appa.org** or Corey Newman at **corey@appa.org**.

facilities digest

By Anita Dosik

CANDIDATES FOR APPA OFFICE 2012-2013

The APPA Board of Directors is pleased to present the selected slate of officers for the 2012-2013 elections:

PRESIDENT-ELECT:

- Glenn Smith
  Bryn Mawr College

Running unopposed

VICE PRESIDENT FOR INFORMATION AND RESEARCH:

- Darryl Boyce
  Carleton University
- Jeri King
  University of Iowa
- Norman Young
  University of Hartford

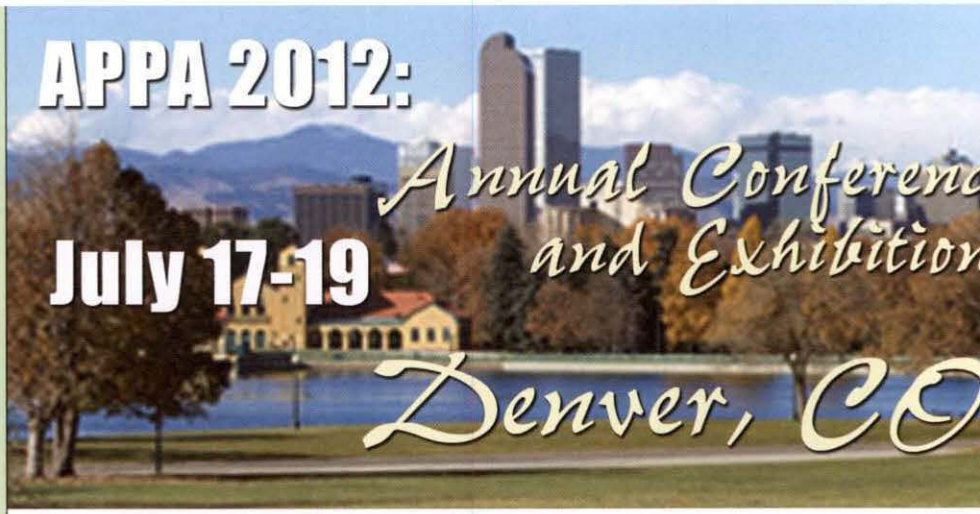
VICE PRESIDENT FOR PROFESSIONAL DEVELOPMENT:

- Glen Haubold
  New Mexico State University
- Robyn Pierce
  Portland State University
- Chuck Scott
  Illinois State University

Voting will begin in March 2012 and will be open to primary/institutional representatives. Those eligible to vote will be able to do so online or via paper ballot. The online ballot will include a link to a video statement from each candidate.

Please note that the primary/institutional representative will have the option of having an associate member vote on their behalf via proxy (only one vote will be accepted from each institution). The associate member with proxy rights has been listed on the dues invoice.

If you have any questions, contact Anita Dosik at *anita@appa.org* or 703-542-3837.



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For the latest on APPA 2012, visit us at *www.appa.org/training/APPA2012/index.cfm*.

APPA MEMBERSHIP RENEWAL NOTICES SENT – PAY BY MAIL OR ONLINE!

The 2012-13 APPA membership year begins April 1, 2012 and runs through March 31, 2013. Dues renewal notices and invoices were mailed in February to all APPA member institutions.

APPA accepts dues payments by major credit card through the APPA website at *www.appa.org* via myAPPA, your personalized APPA website account.

Institutional, International, and Affiliate member organizations should also take note that their membership renewal invoices will identify the names of individuals authorized to vote in APPA's upcoming 2012-2013 officer elections.

Drive-In Workshop Calendar Announced

APPA's Drive-In Workshops are four-hour programs that provide a valuable training and network opportunity at the local level. The workshops allow APPA members to drive in mid-morning for several short educational sessions; advance their understanding of the latest facilities technologies and network with peers; and get back to their work and home quickly and conveniently with little, if any, travel costs.

The training is delivered by an APPA business partner that sponsors the cost of the workshop, while APPA member institutions serve as the host locations by providing sufficient meeting space (up to 70 registrants per location). Drive-In Workshops are scheduled at the following locations:

March 7 – **Skirball Cultural Center** – *Los Angeles, CA*
March 8 – **University of Texas at Austin** –*Austin, TX*
March 16 – **American University** – *Washington, DC*
April 17 – **Washington & Lee University** – *Lexington, VA*
April 18 – **Cuyahoga Community College** – *Cleveland, OH*
April 26 – **Illinois State University** – *Normal, IL*

Each workshop program is strictly an educational event with minimal vendor promotion or advertising. Topics are developed and speakers are identified in consultation with the host institution. For information and to register for the Drive-In Workshops, or to learn how your institution can serve as a workshop host, visit the APPA website at *http://appa.org/Training/Driveinprogram.cfm.*

REGISTER TODAY FOR THE 7TH ANNUAL SMART AND SUSTAINABLE CAMPUSES CONFERENCE

The 7th Annual Smart and Sustainable Campuses Conference takes place April 16 – 17 at the University of Maryland in College Park. Participants will engage in defining, understanding, and creating solutions to sustainability issues facing our campuses – and gain a valuable networking opportunity while doing so. Register today at *www.smartandsustainable.umd.edu.*

EVENTS

Apr 15 Professional Development for Campus Sustainability Practicioners, *College Park, MD*
Apr 16-17 7th Annual Smart & Sustainable Campuses Conference, *College Park, MD*
Apr 17 APPA Drive-In Workshop, *Lexington, VA*
Apr 18 Fostering Sustainable Behavior, *College Park, MD*
Apr 18 From Field to Fork, *College Park, MD*
Apr 18 APPA Drive-In Workshop, *Cleveland, OH*
Apr 26 APPA Facilities Drive-In Workshop, *Normal, IL*
Jul 17-19 APPA 2012 Annual Conference, *Denver, CO*
Sep 23-27 APPA U: Institute & Leadership Academy, *Vancouver, BC, Canada*
Jan 13-17, 2013 APPA U: Institute for Facilities Management & Leadership Academy, *Tampa, FL*

REGION/CHAPTER EVENTS

Apr 10-11 KAPPA Spring Conference, *Hershey, PA*
Apr 14-18 TAPPA 2012 Conference & Business Partner Fair, *San Antonio, TX*
Apr 22-24 WVAPPA 2012 Spring Conference, *Flatwoods, WV*
May 3-4 MD/DC/NJAPPA Joint Educational Program, *Ocean City, MD*
May 14-15 TNAPPA 2012 Annual Conference, *Nashville, TN*
May 24 DFWAPPA 2012 Annual Meeting, *Fort Worth, TX*
May 26-30 GAPPA 2012 Annual Meeting, *Jekyll Island, GA*
Jun 4-7 OAPPA 2012 Annual Conference, *Sudbury, ON, Canada*
Jul 17-19 PCAPPA Conference 2012, *Denver, CO*
Sep 16-19 RMA Conference 2012, *Sheridan, WY*
Sep 30-Oct 2 ERAPPA Conference 2012, *Philadelphia, PA*
Oct 13-16 SRAPPA Conference 2012, *Lexington, VA*
Oct 13-17 MAPPA Conference 2012, *Minneapolis, MN*
Oct 14-17 CAPPA Conference 2012, *Dallas-Fort Worth, TX*

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

FPI REPORT PUBLISHED

The 2010-11 **Facilities Performance Indicators Report** is available at no cost to all APPA members who participated in the FPI survey, and for purchase through the APPA website for all others. The newly enhanced report is based on an extensive data collection effort for the 2010-11 fiscal year.

Tracking Your Facilities Vital Signs

Participants of the 2010-11 Web-based FPI report will be able to view data from previous years, as well as all other report features. Accessing the report allows your institution to identify up to five users who can view your report. In addition, you'll have access to the Executive Level Dashboards as well as the Detailed Reports and Raw Survey Data files.

Costs to receive access to the the Web-based FPI Report are:

- APPA Member Participant – FREE
- APPA Member Non-Participant - $500
- Nonmember Participant - $895
- Nonmember Non-Participant - $1,000

APPA will be hosting new FPI Report webinars, which will help you discover how to access various reports, indicators, and results. Visit *http://www.appa.org/research/fpi/webinar.cfm* to view a complete listing of archived FPI webinars.

You can order the FPI report at *http://appa.org/research/FPI/index.cfm.* For more information, please contact Christina Hills, director of credentialing and benchmarking, at *christina@appa.org.*

The Facilities Stewardship Oversight Role of Governing Boards

By E. Lander Medlin

APPA has been working closely with the Association of Governing Boards (AGB) for the past couple of years providing workshops on "The Campus as a Physical Asset" and "The Physical Plant of the Modern University" in order to increase the awareness of the facilities profession's needs and issues with senior institutional officers. This relationship recently brought the opportunity to assist in rewriting their monograph on Buildings & Grounds to be used by a governing boards' standing committee for facilities. It is in this context that I write about the latest project with AGB.

Harvey Kaiser, a former vice president for facilities at Syracuse University, prolific writer, and now individual consultant, is no stranger to the APPA community. Harvey's accomplishments are many, and he has most assuredly assisted APPA over the years in communicating the needs and issues of the built environment. His latest book through APPA, co-authored with Eva Klein, *Strategic Capital Development: The New Model for Campus Investment*, has been well-received and continues to make its way onto the bookshelves of senior institutional officers. However, it is Harvey's latest monograph written for AGB that is center stage here.

This new monograph was written as an update to the AGB primer for governing boards and trustees and their committee on buildings and grounds under AGB's Effective Committee Series. The purpose of the committee is to strengthen the role of key standing committees of governing boards and trustees in alignment with certain principles, practices, and procedures. AGB states that the focus of committee work should be in alignment with the institution's strategic vision, goals, and priorities, which then translate into annual actions and work plans that would serve to monitor an institution's strategic progress.

STRIKING THE RIGHT BALANCE BETWEEN "TOO MUCH" AND "TOO LITTLE" INFORMATION IS CRITICAL TO AN APPROPRIATE PARTNERSHIP ROLE AND RELATIONSHIP WITH THE INSTITUTION.

Striking the right balance between "too much" or "too little" information is critical to an appropriate partnership role and relationship with the institution. The committee wants to make sound recommendations and ensure adequate oversight by the board and the Buildings and Grounds committee. In the broadest context, this committee has responsibility to oversee an institution's capital assets of buildings, grounds, and infrastructure, stressing the difference between oversight and the actual administrative responsibilities of the institution. What makes this new, updated replacement monograph so important is the context Harvey lays out. "Facilities stewardship as an institutional value," which he further delineates as follows:

> Stewardship of institutional capital asset—buildings, grounds, and infrastructure—is a fundamental governing board responsibility. These assets represent a large share of total institutional assets, possibly even greater than the endowment....The notion of value can, and should, mean financial value. But value has broader implications, which include the value an institution ascribes to the protection of its symbolic campus features and to the continued utility of its buildings and grounds for the functions they serve.

The following, from *Strategic Capital Development*, is guidance for the facilities committee's role in facilities stewardship:

> Facilities stewardship therefore means a high-level and pervasive commitment to responsibility for optimizing capital assets, to achieve a high-functioning and attractive campus. It includes a major commitment to capital asset preservation and quality. Stewardship is about the long view of an institution's past and future. It forms the backdrop for hundreds of discrete facilities investment and management decisions. Ultimately, facilities stewardship is one of the most compelling responsibilities of institutional leadership. And facilities stewardship expresses core values of the institutional culture.

Harvey captures the mission-critical nature of an institution's physical assets and further ascribes their importance to the institution's culture by establishing that compelling sense of place. At SCUP's

summit on the Campus Heritage Preservation Project, Glenn Smith (director of facilities services at Bryn Mawr College) did an outstanding job communicating the importance of physical space in preserving campus traditions, when they are strategically aligned with the organizational culture of the institution. It can be done and done right.

Further on in the Buildings and Grounds monograph, Harvey lays out the macro to micro environmental issues that directly and indirectly affect and/or provide additional challenges for our institutions and facilities in particular. He again brings back into focus the critical notion of stewardship when it comes to the governing board committee's oversight role for campus facilities.

> The stewardship notion, quite simply, is the continued care and management of capital resources for the benefit of future generations. The facilities committee's stewardship role is deeply involved in ennobling the past, enhancing the present, and providing for the future by balancing continuity and change. Oversight to ensure preservation of a historic legacy is a weighty responsibility for committee members...

The context he lays out provides the necessary focus of a long-term preservation view of the buildings, grounds, and infrastructure. With this context and focus, the committee's tasks consisting of long-range planning, capital renewal, operations and maintenance, capital projects, facilities related policies and procedures, and sustainability policies and implementation, when conducted in partnership with the institutional administration, can be enabling for everyone. To this end, he provides an appendix of critical questions within this purview of tasks and responsibilities the governing board committee should be querying in order to carry out their facilities stewardship role effectively and comprehensively.

This monograph revision is timely and spot on. As facilities professionals, we need to be equally aware of and interested in the needs and requirements of our governing boards and trustees. Therefore, I encourage you to secure a copy of this monograph when it becomes available in late April (we will endeavor to carry it in the APPA Bookstore) to keep you abreast of the questions noted in its appendix, as well as the overall issues, needs, and concerns that governing boards and trustees should have. Thus, you'll be prepared to respond and deliver the data and information needed to carry out the facilities stewardship role properly and effectively for your institution.

Lander Medlin is APPA's executive vice president and can be reached at *lander@appa.org*.

My APPA Journey to the Pacific Rim

By Mary S. Vosevich

We often talk about how technology is shrinking the world, and how quickly we are able to acquire information that we are seeking. More than ever we are blasted with the convenience of social media and find ourselves wanting—in fact needing—instant access to information. But every now and then, we have an opportunity to interact face to face with our colleagues, and benefit from the richness of these interactions.

I had such as opportunity when I travelled abroad as one of my duties as APPA President-Elect. I have to admit that I was somewhat apprehensive to take this journey, but it turned out to be not just a travel journey but a journey of profound experiences that will stay with me forever.

My journey took me to Singapore, Australia, and New Zealand. It is not the first time a member of my family had "visited" this part of the world. The first visit was experienced by my father over the Pacific in 1944 in a B-25! Obviously, he had incredible stories, but my journey had other lessons.

SINGAPORE

What a proud country. I was there for their independence day. The progress they have made over the years is extraordinary, and this was especially evident at the National University of Singapore (NUS.) There, I had the opportunity to present the APPA journey, as well as share the University of New Mexico's sustainability program. What a contrast: Singapore, a port city in Asia, lush and green (and, I might add, a little humid), and New Mexico, Albuquerque—where I'm from—5000' in altitude, and this year's rainfall of less than 2 inches. Geographically, a great contrast, but after meeting their facilities staff and discussing the issues, it appears that we are challenged by the same things. I was impressed by the planning that is taking place there, and the importance of funding life-cycle costs of the facilities on their campus. It was quite impressive, and results were obvious.

AUSTRALIA

From Singapore, I attended the TEMC conference in Gold Coast, Australia. What a wonderful place and conference. The conference was well attended by facilities professionals and business officers, with around 700 attendees. My gracious host, Dominic Marafioti, made sure that I met attendees from throughout the TEFMA organization. Australia has a quiet ruggedness and strong people. Everyone I met was committed to their organizations and determined to push the envelope and think outside the box.

The conference sessions were indicative of this: thought provoking and inspiring. I even connected with someone that I had met at APPA's Leadership Academy many years ago! The world is indeed small. Not unlike our colleagues in North America, you could feel the warmth of relationships within TEFMA. After listening to the opening plenary on social media and how it is impacting higher education, I have a renewed interest and hope in exploring its potential and the value it can add to APPA.

NEW ZEALAND

The last leg of my journey took me to New Zealand, and while there I had the

opportunity to visit Auckland and Christchurch. The University of Auckland is a wonderful, vibrant, urban university with a diverse culture that is woven throughout its programs. While in Christchurch, I saw first-hand the devastation of the earthquakes, how impacted the city was, and how the universities are adapting. I actually think "adapting" is not a strong enough term for what I experienced. It was truly one of the most profound experiences that I have ever had.

The university had a well-planned emergency response program. As you may remember, Christchurch and the south island of New Zealand experienced two earthquakes within one year. Everywhere you visited, there was destruction. I spent a day at the University of Canterbury learning about their emergency response and recovery efforts. The damage was severe and their ability to continue their mission came to a halt when the earthquakes struck. But their recovery efforts were nothing short of extraordinary. The turnaround time to construct temporary facilities and get back to campus operations was unbelievably short. It was inspiring they were able

to make such huge strides under devastating circumstances in such a short period of time. Their facilities staff modeled all of the elements that make up a successful TEAM (Tenacity, Experience, Attitude, and Moxie!) TEAM success also requires commitment from each member, and the staff at Canterbury demonstrated this element, because most certainly, some were dealing with their own personal crises.

When I returned home I was researching more of their emergency response efforts and came upon the following statement from a speech by Kohan McNab, president of the University of Canterbury's student association. Following the university's commencement ceremony in temporary facilities, Kohan addressed his fellow graduates:

"This impact was not just from the event itself but from lessons I learned about other humans during this time. Having been involved with University's incident response management team I will remember that teamwork and sacrifice are required to be able to act decisively. Having been a member of the core group of the Student Volunteer Army I will remember the importance of a strong emotional support group when you are in a high-stress situation. From my fellow Canterbury graduates I will remember the perseverance and commitment required to focus on exams whilst in the midst of a natural disaster. I will remember what was required, not only to carry on, but to succeed and enjoy life in the face adversity. I will remember that even in a time of extreme trial and great personal loss, a large number of people will still turn to help others. And I hope I will remember how this action can resonate across the community, the country, and the world….."

LESSONS LEARNED

Here are the lessons I came away with from my travels to our colleagues in the Pacific Rim:

1. In the facilities profession around the world, we are experiencing similar issues, and we have colleagues that we can share and learn from our experiences.
2. That not only in our day-to-day activities, but in severe situations and events, the people in our organizations time and time again demonstrate their commitment to their institutions and fellow man—even when dealing with their own personal losses.
3. And finally, as Kohan McNab stated, that we carry on, succeed, and enjoy life in the face of adversity.

To everyone that was so gracious and took the time to meet with me during this journey, thank you.

Mary Vosevich is director, physical plant department, at the University of New Mexico, Albuquerque, NM, and APPA's President-Elect. She can be reached at *mvosevic@unm.edu.*

Pessimist or Optimist? It's Your Choice

By Thomas Lee

At a CAPPA meeting in Grand Forks, North Dakota, I listened to Vickie Younger talk about radio station WIIFM—what's in it for me—as it relates to our professional development and personal involvement with APPA. I thought about that for a while, and I realized that I have asked myself that for a long time. What's in it for me? What can I get out of all this? Why am I involved with the APPA organization? What have I learned that I can use? What would I tell someone who asks me about APPA?

Whether you are ***pessimistic*** or ***optimistic*** about what you think you can gain from APPA meetings, the choice is yours and yours alone. If you go thinking that you'll learn nothing, then you probably won't be disappointed. I promise you that you will neither learn much nor will you achieve any benefit from attending. I know; I've been there.

FACING PESSIMISM

Pessimism is disastrous and dangerous. It ruins hope and possibilities. If someone is pessimistic, he or she doesn't hope for a better future, and neither do they do something to achieve it. It's a self-fulfilling prophecy. The obstacles along the way seem enormous, and the pessimists doubt they can overcome them. At the end, you will just stay where you are without making any progress. People can waste years, even their whole lives, because of pessimism.

Pessimism is something I face every now and then, and I'm sure there are some of you that do too. You are taunted with people you can't please, last-minute requests, more work to do and fewer people and smaller budgets with which to do it. The future can look pretty bad some times. And that's just at work. Throw in your home life and the load can even get heavier. Ever feel like your hard work is ignored and your devotion goes unrewarded? So what can you do?

OPEN A WIDE EYE

The first thing to remember is that ***attitude is everything***. It is your decision to see the glass half full or half empty. May I suggest approaching everything with an optimistic view? I tried it and I like it. Open a wide eye to new choices, listen to new ideas. Ask yourself, "What can APPA do for me?" Let me answer that question. I think APPA can help out a lot.

Number 1: find a cause you believe in. APPA is an excellent choice. It offers the opportunity to explore new and emerging technologies using active learning strategies. It has a longstanding tradition of leadership. It can recharge your batteries.

Number 2: focus on the possibilities, not the impossibilities. When people focus their minds on the impossibilities, all they see is the enormity of the challenges in their way. Their minds are overwhelmed by difficulties, and they no longer see themselves as winners. APPA, with its wide resources and training opportunities—such as the APPA annual conference, Drive-In Workshops, and Supervisor's Toolkit—can help anyone overcome any difficulties and provide the tools for improvement. Al Stoverink from Arkansas State University says, "I have found the organization to be a great source of information via the Annual Meeting and Conference. APPA provides the opportunity to gain current information on a wide variety of issues and trends in educational facilities management."

Number 3: be part of a team. APPA is a prestigious group that can give you a unique perspective in these challenging times. It can be difficult to face things alone. Most of us can't make it by ourselves. The significance of belonging to APPA is the people you meet and the lessons in life you will learn. I have made many friends in the APPA organization, and I know I can call on them anytime for anything. Just like you, they face enormous difficulties and challenges in their jobs, and the biggest question to be answered is who will help who the most. You yourself can be an inspiration to others, just as some have been to you.

Number 4: networking. Dale Carnegie says, "You must have a good time meeting people if you expect them to have a good time meeting you." APPA offers outstanding opportunities to network with your fellow colleagues, such as at the twice-yearly Institute for Facilities Management and the Leadership Academy. To help you focus on the possibilities,

you can listen to people who have the same concerns and problems about issues that you have (or will have). It can inspire you to know that other people can do it despite the challenges they faced.

The trade shows are another great way to learn from others. The business partners offer new products and ideas to solve old problems and to make your job easier and you will form relationships that will last forever. Getting involved by joining a committee is an exceptional way to learn about APPA. You can have lots of fun and at the same time be a part of something that is outstanding.

Number 5: open your mind to unexpected ways. Take risks. I am intrigued by the idea of doing something differently (even at the same time finding it hard to change). It's inevitable that someone can and probably will come up with a new way to do something you have been doing for a long time. Open up and listen, strip away all the negative thoughts, and give in to learning something differently. Be open to change. I know it's hard, but give it a try. The solution may come in unpredicted ways that never occurred to you before. Open your mind for such unexpectedness.

Number 6: get rid of negativity. Nothing takes away your optimism faster than negativity. Always try to see the positive side of things and speak about the possibilities. Try to think that there is always a positive side in everything you deal with. It doesn't mean you are denying the reality; you just look at it from a different angle.

Number 7: connect to your spiritual power source. Our strength is limited, so you need other sources of power. While your friends can give you some power, a great source of power is spiritual. By praying or meditating or any other way you choose, you connect to a way that can give you strength you need. Count your blessings. Once you realize how valuable you are and how much you have going for you, life is so much easier. You will have the confidence to get the job done.

Which attitude do you choose to embrace? I used to be too pessimistic but have changed over time to choose optimism. Being optimistic is so much more fun and relaxing. Do you choose to step in it or to step over it? I looked for a long time for something to help me and finally realize it was here all along. APPA offers anything and everything to become a success; training, education, networking, and most of all, friends. Never give up and keep swinging and keep going to the APPA meetings. They are great for learning and a lot of fun as well.

Tom Lee is support services supervisor at Southeast Missouri State University, Cape Girardeau, MO; he can be reached at *tlee@semo.edu*.

COOL Campuses?!

THE MOVEMENT FOR CAMPUS CLIMATE ACTION DESERVES HIGH GRADES, BUT A GREATER EFFORT IS NEEDED TO ADDRESS THE GROWING CLIMATE CRISIS

BY WALTER SIMPSON, CEM, LEED AP

When I am invited to speak about climate change, I always make these four basic points:

- Climate change is real and occurring
- It's principally caused by burning fossil fuels, which releases the greenhouse gas (GHG) carbon dioxide
- The consequences are serious
- It's not too late to do something about it

These points are well established by the Intergovernmental Panel on Climate Change, the largest international peer-reviewed scientific exercise in history, as well as by the U.S. National Academies of Sciences and virtually every other prestigious scientific organization. But while we still have time to act, it's very late.

This past December the United Nations climate conference in Durban, South Africa, failed to produce a binding agreement committing the 200 participating nations to reduce GHG emissions, even though conference experts acknowledged that we are on a path to at least 3.5°C (6°F) warming. This is nearly twice the 2°C (3.6°F) threshold most climatologists say we must remain under to avoid runaway catastrophic climate change.[1]

The United States' cumulative CO_2 emissions are far greater than any nation—three times China's, for example, even though China's annual emissions exceeded U.S. annual emissions a few years ago.[2] Meanwhile, the U.S. has yet to enact even minimal national climate protection legislation.

As the Durban conference drew to a close, Canada abandoned its claim to climate responsibility by announcing its withdrawal from the Kyoto Protocol, the 1997 international climate agreement ratified by 191 nations. The United States never ratified the accord.

All of this weighs heavily. Our species is running the risk of irrevocably damaging the natural world, causing massive social, economic, and political upheaval, and leaving a far less hospitable planet to our children and grandchildren.

The good news is we know what to do. According to leading climatologist James Hansen, director of NASA's Goddard Institute for Space Studies, these policies will put the brakes on global warming:

- Stop burning coal, and leave tar sands in the ground
- Put a price on carbon so price signals strongly encourage clean energy
- Accelerate energy conservation, efficiency, and renewable energy

But knowing what to do is not enough. We need to act. We need to quit our extravagant use of fossil fuels and by mid-century be living in a much more resource-conserving world powered by solar, wind, and other carbon-free renewable energy sources. We can meet this challenge but in truth it is of epic proportions.

HIGHER EDUCATION TO THE RESCUE?

Who will lead this energy revolution? One hopeful possibility is higher education. As one example, many institutions of higher education are already involved through the American College & University Presidents Climate Commitment (ACUPCC).

ACUPCC participants promise to develop climate action plans to achieve net-zero greenhouse gas emissions or "climate neutrality" at the "earliest possible date" while comprehensively addressing climate change and sustainability in academic and research activities. This effort has been supported by APPA, the Association for the Advancement of Sustainability in Higher Education (AASHE), the National Association of College and University Business Officers (NACUBO), and other organizations. Other support and involvement comes from the member associations of the Higher Education Associations Sustainability Consortium (HEASC).

An impressive 674 college and university presidents have signed the ACUPCC agreement by the time of this writing (January 2012). As a result, 1,509 GHG inventories and 446 climate action plans have been submitted, and aggressive compliance activities have begun on some campuses. Over 75 percent of participants have adopted new construction green design policies and over 35 percent now meet at least 15 percent of their electric needs

with purchased or self-generated renewable energy. These are landmark achievements.

Each year, the ACUPCC recognizes stand-out efforts. In 2010 and 2011 these included:

- **University of Maryland – College Park.** Anticipated a 20 percent reduction in GHG emissions in just three years. Supports 12 different research centers investigating energy, environmental, and sustainability issues.
- **UC Irvine.** Reported eight new LEED gold buildings, on-site solar annually generating 24 million kilowatt hours of electricity, a cogen plant with 53,000 ton-hours of thermal storage, and an impressive transportation demand management program.
- **Ball State University.** Replacing its coal-fired plant with a giant ground source heat pump system—which could eventually be powered by renewable electricity—serving 45 buildings on its campus.
- **Cornell University, Ithaca College, and Tompkins Community College.** Working with an extensive coalition of community organizations to promote clean energy and address the climate issue throughout the region.

These ACUPCC success stories and many others are inspiring and give us hope. But, in light of the magnitude and urgency of the danger we face, is higher education through the ACUPCC doing enough to demonstrate real leadership and make a critical difference?

A REALITY CHECK

Five years ago James Hansen said we had a ten-year window of opportunity to reverse GHG emissions trends and begin seriously addressing climate change, or else we will leave a severely damaged world marked by runaway catastrophic climate change.[3] That window is rapidly closing and we still are not seeing the kind of action Hansen said was necessary.

As the ACUPCC completes its fifth year, its accomplishments—and those of its individual campus champions—are remarkable. But measured against the "inconvenient truth" of the extreme danger we face and the short time we have for effective action, the ACUPCC, like everything else we are doing, is grossly inadequate. How can this campaign be strengthened to provide vastly greater impact and more effective leadership in this time of urgent need? Perhaps by attending to these critical issues:

Consequences of Climate Change

- Higher temperatures, more frequent heat waves
- More droughts and fires but also heavier downpours and flooding due to intensification of the hydrologic cycle
- Melting of ice sheets, ice shelves, and glaciers, raising sea levels and inundating coastal areas worldwide
- Decreased fresh water supplies, especially in subtropical regions and large areas dependent on runoff from mountain glaciers
- More powerful storms driven by latent heat, including hurricanes and thunderstorms, and thus increased storm damage
- Migration of tropical diseases and pests toward the poles
- Shifting of ecological niches threatening massive species extinction
- Disruption of agriculture and increased risk of famine
- Exacerbation of eco-refugee problem
- Increasing political strife and risk of war

Climate neutrality is the right goal but its challenge should not be understated or undertaken lightly. Given the excitement and rightness of participating in the ACUPCC, there may have been a tendency nationally and on individual campuses to soft-peddle the difficulty and cost of achieving climate neutrality. Now, to get this critically important job done, everyone must recognize the magnitude of the challenge and campus leaders—hopefully with the assistance of government agencies and private sector donors—must provide the abundant support and resources needed.

Climate neutrality dates for most ACUPCC participants are far too late. Given that our entire society must slash GHG emissions by 80 to 90 percent or more by 2050 (with deep cuts in emissions needed very soon), genuine campus leadership means achieving climate neutrality very quickly—say, by 2020 or 2025—through vastly accelerated climate action programs. However, the vast majority of neutrality dates are well past that, many at 2050 or beyond. If these late dates are the best ACUPCC participants can offer, they should stop talking about climate leadership. Leadership demands a much greater effort.

Short-term interim emissions goals must be strengthened. While the climate neutrality date is important, right now we need rapid, significant short-term emissions reductions. Many campuses have structured their climate action plans to postpone the largest reductions to near the end of their plan—exactly the opposite of what is needed.

Deep energy conservation in existing buildings is essential. The cleanest BTU or kWh is the one we don't consume. Thus, deep energy conservation should be the top priority in campus

climate action plans. However, most plans project modest conventional retrofits of existing buildings paired with larger-than-necessary purchases of renewable energy credits (RECs) and carbon offsets to eventually mop up the remaining energy waste. Paying someone else somewhere else to reduce emissions for you—as is the case with carbon offsets—does not model a strategy consistent with the task at hand, essentially quitting fossil fuels within a few short decades. That goal can only be achieved if energy users are successful at sharply curtailing and eliminating to whatever extent possible fossil fuel use on-site. Many tools and strategies are needed to achieve this objective, including submetering of buildings and even of individual building energy systems, so that the real effectiveness of conservation measures is accurately assessed and understood. The cost of submetering can be made up many times by the additional savings it allows facilities managers to achieve.

The LEED Silver standard for new construction should be abandoned. LEED Silver gives the illusion of green building and climate responsibility when neither exists. ACUPCC participants should exceed both LEED Silver and Gold and commit to zero-energy or LEED Platinum new buildings (with maximum Energy and Atmosphere LEED points) while recognizing that the greenest building may be the one not built at all.

Much wider community involvement is needed. ACUPCC participants must dramatically catalyze change as widely as possible or we are cooked. In addition to accelerating and expanding local community initiatives, colleges and universities must lobby for strong climate protection laws, policies, and programs that will help get our country on track while providing ACUPCC schools with the outside support and resources they need to curtail their own emissions.

Scope 3 emissions deserve special treatment. The ACUPCC pledge commits signatories to establishing climate neutrality for three classes of GHG emissions including those associated with campus commuting.[4] The latter disproportionately impact community colleges and other commuter schools which may have no way of mitigating these emissions other than through the purchase of carbon offsets. More schools (including reluctant Ivy Leaguers) might join the ACUPCC if Scope 3 emissions were addressed via a separate commitment.

> "Only the president and board of trustees can insist that climate action become a genuine top campus priority and give it the generous staffing, funding, and empowerment it needs."

BARRIERS TO CAMPUS CLIMATE ACTION

The biggest barrier to creating an effective campus climate action plan—with an appropriate near-term climate neutrality date—is just how difficult and mindboggling this undertaking is in the first place!

But anyone in the trenches—e.g., facilities managers, energy officers, and sustainability staff—knows that doing campus climate action work involves a myriad of other specific barriers, any one of which can damage or sink a program. While a comprehensive discussion of barriers can be found elsewhere,[5] here are some major monkey wrenches that must be addressed for campus climate action to succeed:

Inadequate Top Level Support. This is the most fundamental barrier because significant, visible, heart-felt top level support is absolutely essential to developing and implementing a credible, effective, strong climate action plan. Only the president and board of trustees can insist that climate action become a genuine top campus priority and give it the generous staffing, funding, and empowerment it needs. Yet the vast majority of presidents are not committed environmentalists anxious to provide leadership and full backing. They do not have sleepless nights worrying about the climate crisis. In reality many presidents probably signed the ACUPCC agreement without fully understanding its import or implications. And many will say they are supportive but their support is modest-to-non-existent. There are no easy solutions, though a modest program can be salvaged if the chief business officer and director of facilities are fully on board and can encourage some presidential support.

Inadequate Facilities Support. Nothing less than full support from the facilities director and staff will suffice since climate neutrality involves massive retrofitting of existing buildings and infrastructure. A reluctant facilities director can be pressured from above or below, but if his or her heart is not into it, the program will fail.

Greenwash over Substance. Administrators now understand the public relations value of sustainability. That's good, but it can result in waving the feel-good sustainability banner in lieu of providing real support. And well-intended sustainability program propaganda can convince an entire campus community – including facilities and the sustainability staffs themselves! – that GHG emissions and other environmental impacts are being adequately addressed when in reality

nowhere near enough is being done. Truth-telling, which can be risky, is a corrective.

Politics of Control and Exclusion. Are those most knowledgeable and motivated participating in and leading your campus climate action effort? Is the process open, engaging, dynamic, and exciting? Or has a restrictive process been imposed to control and limit the outcome? Rallying criticism of the process or campaigning for more enlightened leaders may be the only antidotes.

> "A serious climage action plan will identify sources of funding including creative options like performance contracts, utility incentives, solar leasing, special grants, and the creation of sustainability endowments."

Campus Speed Up. As budgets get slashed, remaining staff must "do more with less." That sounds good but eventually it erodes organizational esprit de corps and capacity. For example, a shrinking facilities staff may be unable to optimize the operation of existing buildings let alone assume substantial additional responsibilities associated with credible, effective climate action. Facilities managers must adapt by accepting reduced staffing in some areas while lobbying to increase positions that serve the climate commitment. While consultants can fill gaps, the best climate plans are owned by the institution.

Lack of Money. Climate neutrality is going to be costly. This truth and challenge may seem insurmountable for public schools facing huge budget cuts or private schools already on shaky ground. A serious climate action plan will identify sources of funding including creative options like performance contracts, utility incentives, solar leasing, special grants, and the creation of sustainability endowments. Fundraisers will need to pitch funding for deep energy retrofits of existing buildings.

Commitment to Short Paybacks. To achieve climate neutrality with adequate on-campus emissions reductions, energy conservation and renewable energy projects with long paybacks will be necessary. These paybacks will shrink somewhat when avoided costs from reduced carbon offset purchases are factored in. Nonetheless, ACUPCC participants need new decision-making paradigms for evaluating potential projects given institutional commitments to climate neutrality.

Students Not Engaged Enough. Given the difficulty and costs associated with achieving climate neutrality, success demands constant pressure from students who can ignore bureaucratic constraints and insist that real, transformational action be taken to protect their futures. Unlike staff, students can raise their voices without fearing retaliation, and their enthusiasm can be contagious. But even on campuses where many students are involved, most are not. A much larger student climate movement is really needed.

SOLAR WON'T WORK WITHOUT DEEP CONSERVATION

My last major campus project was a 73 kilowatt photovoltaic array that covered nearly the entire roof of a large classroom building. However, the array met less than 10 percent of the building's electrical needs. That was embarrassing but also instructive. It made clear that a transition to solar energy will require not only much more efficient solar panels and a lot more solar arrays than most of us thought but also much more energy efficient buildings than we now have so the available solar goes further.

Large ground-mounted campus PV arrays offer the same lesson. They may be eye candy, stretching for acres, yet have annual outputs that are a few percent of campus electrical needs! Only much more energy efficient buildings will allow campus solar energy projects to meet significant percentages of campus electrical needs – and thus play a meaningful role reducing campus GHG emissions while minimizing purchases of RECs and carbon offsets.

Thus, the challenge of climate neutrality requires moving beyond campus energy conservation as generally understood, where building retrofits produce energy reductions of 15 to 25 percent, to deep energy retrofits that minimally cut building energy use by at least 50 percent.[6] For climate neutrality purposes, the target should be 75 percent or more. A "pilot-to-portfolio" program can be used to conduct deep retrofits in a handful of representative campus buildings and then apply the findings to all buildings. These pilots could aim at LEED Existing Building Platinum certification though exceed those requirements. The projects should be highly collaborative involving students, faculty, facilities staff, consultants, and community members to achieve the best outcomes.

We face an unprecedented danger in global climate change. It may sound alarmist and it's certainly inconvenient but the

future of our planet and the world we leave children everywhere is really at stake. For good or ill, the outcome is completely up to us. The choice is ours. Through the ACUPCC some colleges and universities have taken steps in the right direction, but much more needs to be done to demonstrate leadership on a large enough scale to effect the wider change we desperately need.

RESOURCES

American College & University Presidents Climate Commitment, *www.acupcc.org*. Site contains full text of the commitment, implementation guide, list of participating schools, greenhouse gas inventories, climate action plans, resource materials, best practices reports, etc.

Association for the Advancement of Sustainability in Higher Education, *www.aashe.org*. Site contains most comprehensive campus sustainability resource listing including sections on energy and climate action.

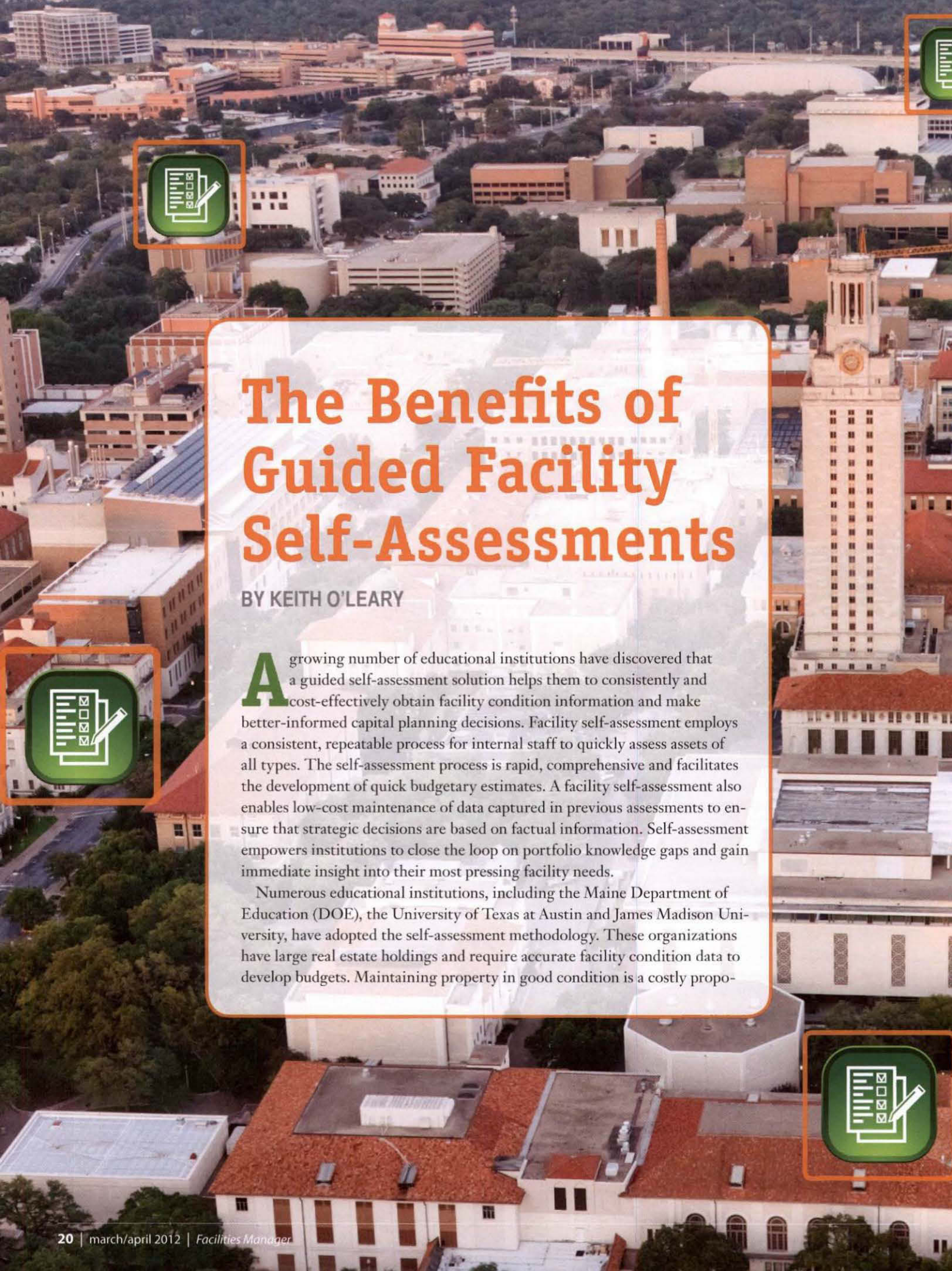
"Cool Campus! A How-to Guide for College and University Climate Action Planning," by Walter Simpson, ACUPCC/AASHE, 2009. *www.aashe.org/files/resources/cool-campus-climate-planning-guide.pdf*. A wiki version is also available on the AASHE site.

"Educational Facilities Professional's Practical Guide to Reducing the Campus Carbon Footprint," APPA, 2009. *www.appa.org/bookstore/product_browse.cfm?itemnumber=519*.

ENDNOTES

1. The 2°C threshold assumes that the atmospheric concentration of carbon dioxide does not exceed 450 ppm. This can be achieved if annual global GHG emissions are reduced by 50 percent by 2050, with industrial countries reducing their annual emissions by 80 percent during that period. Some climatologists disagree with this analysis and have argued that the "safe level" of CO2 is only 350 ppm. If they are right, then greater and faster GHG emissions reductions are needed to forestall runaway catastrophic warming. See the organization *www.350.org* for more information. The current level of atmospheric CO2 is 390 ppm.
2. Once released, carbon dioxide molecules remain in the atmosphere for hundreds of years contributing to global warming. According to climatologist James Hansen, during the period 1751 – 2009 the United States was responsible for 27 percent of all global anthropogenic (human activity-caused) GHG emissions.
3. "Warming Expert: Only Decade Left to Act in Time," MSNBC News Services, Reuters, and AP, September 14, 2006.
4. Scope 1 (all direct GHG emissions, e.g., combustion of fossil fuels on campus), Scope 2 (from purchased electricity), and Scope 3 (from other indirect emissions).
5. See "Accelerating Campus Climate Initiatives" by Michael Kinsley and Sally DeLeon of the Rocky Mountain Institute in cooperation with AASHE.
6. See Rocky Mountain Institute's Retrofit Depot, *http://retrofitdepot.org*, and "Deep Energy Retrofit of Commercial Buildings: A Key Pathway toward Low-Carbon Cities," by John Zhai, Nicole LeClaire, and Michael Bendewald, *Carbon Management*, (2011) 2(4), 425–430. This article describes the "pilot-to-portfolio" approach.

Walter Simpson, retired University at Buffalo energy officer, is a three-time recipient of APPA's Rex Dillow Award for Outstanding Article in *Facilities Manager*. He is editor and contributing author of APPA's *The Green Campus: Meeting the Challenge of Environmental Sustainability*, 2008, and author of *Cool Campus! A How-to Guide for College and University Climate Action Planning*, ACUPCC/AASHE, 2009. His website is *www.energyreallymatters.com*.



The Benefits of Guided Facility Self-Assessments

BY KEITH O'LEARY

A growing number of educational institutions have discovered that a guided self-assessment solution helps them to consistently and cost-effectively obtain facility condition information and make better-informed capital planning decisions. Facility self-assessment employs a consistent, repeatable process for internal staff to quickly assess assets of all types. The self-assessment process is rapid, comprehensive and facilitates the development of quick budgetary estimates. A facility self-assessment also enables low-cost maintenance of data captured in previous assessments to ensure that strategic decisions are based on factual information. Self-assessment empowers institutions to close the loop on portfolio knowledge gaps and gain immediate insight into their most pressing facility needs.

Numerous educational institutions, including the Maine Department of Education (DOE), the University of Texas at Austin and James Madison University, have adopted the self-assessment methodology. These organizations have large real estate holdings and require accurate facility condition data to develop budgets. Maintaining property in good condition is a costly propo-

sition, and it's often difficult to know how best to spend on deferred maintenance. Priorities for spending are almost always based on key organizational goals such as risk mitigation and business continuity. Therefore, having access to comprehensive and accurate condition data that can be used to identify areas of risk and to set objective priorities is critical in making informed facility capital planning decisions.

In 2010, the Maine DOE sought to establish a standard facility condition assessment process in order to calculate maintenance costs, forecast future capital renewal costs and maintain facility data. The Maine DOE began deploying a Web-based guided facility self-assessment solution to empower its School Administrative Units (SAU) to gather the needed facility condition data. Now, the department estimates that updating its facility database takes 25 percent of the time and does so at 20 percent of the cost of its previous approach. The use of self-assessment gave the Maine DOE the ability to assess the overall condition of each building, determine repairs and replacement, and forecast financial needs. The guided self-assessment solution has provided the necessary flexibility for schools to leverage their existing staff, making it easier to obtain the necessary data to defend funding requests for deferred maintenance and capital improvement programs.

Driven by professionally designed building system surveys, guided self-assessments deliver comprehensive facility condition information that includes remediation definition and estimated costs.

The high profile assets of a real estate portfolio often mandate a detailed periodic assessment by seasoned architectural and engineering professionals. However, what about geographically isolated or low-profile assets, or assets that may have undetected issues? In practice, more times than not, these facilities do not undergo detailed facility condition assessments (FCAs). The cost of a full FCA for an entire portfolio can prove to be a dilemma for facility and building managers needing to justify the necessary funds to adequately maintain facilities. Without validated data, cost justification is an elusive target.

In 2011, the University of Texas at Austin, one of the largest public universities in the United States with more than 24,000 faculty and staff, 17 colleges and schools, and more than 51,000 students, wanted to maintain the integrity of its facility condition database, while implementing a schedule of FCAs that are performed each year for 20 percent of the approximate 19 million square feet of facilities. The university has a large maintenance and facilities staff, making self-assessments a feasible solution to complement the five-year FCA cycle. Using a Web-based mobile self-assessment solution, the staff gathers current facility data for both critical and non-critical buildings within its portfolio. A reliable, updated database is vital to the university's ability to make accurate funding decisions.

Technology and experience each play a pivotal role in how facility condition assessments are performed and what data will be collected. Guided self-assessments use Web-based mobile surveys to standardize data collection, reporting and analysis. Driven by professionally designed building system surveys, guided self-assessments deliver comprehensive facility condition information that includes remediation definition and estimated costs. Utilizing existing facility staff or with assistance from maintenance partners, guided self-assessments can be the means to expanded and more cost-effective collection of condition data.

In 2005, the Commonwealth of Virginia mandated that all institutions of higher education must perform FCAs of their facilities and maintain accurate up-to-date information or face a reduction in funding for deferred maintenance projects. James Madison University rose to the challenge by instituting an assessment policy that includes conducting detailed FCAs on the entire JMU portfolio every five years, supplemented with annual guided self-assessments. This information is uploaded to the state's Facilities Inventory Condition Assessment System (FICAS) database. Using self-assessment surveys, JMU personnel developed a consistent repeatable data collection process that leveraged its existing facilities expertise.

A built-in workflow and approval process supports the various roles involved in the assessment process, including evaluators, approvers and administrators, and their activities.

Using this built-in workflow, facilities personnel at James Madison University can now track the effectiveness and benchmark the success of their various deferred maintenance projects. The data collected from the self-assessment surveys have reduced the time needed to create annual budgets, improved the team's ability to accurately forecast facilities needs and provide up-to-the-minute comprehensive reporting.

Organizations adding self-assessment to its data collection toolkit quickly start the process with the use of standard survey question sets about major building systems. These surveys, created using the expertise of professional assessors and industry standard data, provide step-by-step support for users. In addition, these surveys incorporate detailed explanations of systems and related photographs, to help the user identify systems, deficiencies and accurately collect the necessary requirement data.

In addition, these Web-based mobile solutions scale to meet each organization's unique needs. Self-assessment surveys can be customized to focus on specific sites or campuses to meet an organization's objectives. The individual surveys can be tailored to support the collection of other specialized information about a particular site or about specific issues such as fire and life safety, regulatory code compliance, physical security, and energy efficiency. The Maine DOE, for example, as part of its facility condition assessment process, needed to assess energy usage and the adoption of green methods. The Maine DOE configured a green/energy assessment survey to collect data on electricity, water and natural gas costs and usage, as well as assess the use of green building and cleaning products.

Guided facility self-assessment structures and integrates previously disconnected data collection methods, helping the organization to effectively manage the process by which condition requirements are identified, defined and approved as part of the capital budget.

In summary, there are several ways that educational institutions benefit from guided self-assessments:

- *Quick, Cost-effective Budget Estimates.* Facility managers are often faced with the dilemma of justifying budgetary requirements in order to obtain the necessary funds to adequately maintain assets. This can be especially an issue for large and/or geographically dispersed portfolios. But how do you justify the budget without the facility condition data to validate the need? Guided self-assessment is invaluable for quick budgetary estimates. With more accurate data available, facility managers can secure the right funding, respond faster to budget inquiries and funding requests, and make smarter capital planning decisions.
- *Identifying "Hot Spots."* Guided self-assessments are a cost-effective method for helping facility managers identify "hot spots" within an asset portfolio. They can then determine which facilities will require a professionally conducted FCA (which often constitutes approximately 15 to 20 percent of the portfolio). This knowledge enables decision-makers to focus on the most pressing needs.
- *Data Maintenance to Avoid "Stale" Data.* Given that facility condition is constantly changing, it is important to keep information on building assets up to date. Guided self-assessments enable organizations to easily reassess condition and update existing data. In addition, consistent data collection leads to less "stale" data, as well as the validation that previously captured deficiencies have been addressed.

A guided facility self-assessment solution enables an organization to reduce assessment costs, increase data collection and monitor the condition of mission-critical facilities. The solution provides facility management teams with the defensible data needed to justify budget requests and enables them to support the educational mission with facilities that are in good condition.

Keith O'Leary is the director of product marketing at VFA, Inc., a Boston-based provider of end-to-end solutions for facilities capital planning and management. This is his first article for *Facilities Manager*, and he can be reached at *koleary@vfa.com*.

Siemens Strengthens Texas A&M's Tradition of Energy Management

Of the many trends impacting U.S. colleges and universities in the next 10 years, two are converging at a rapid pace. The steady decline in the number of high-school age students, from 21.5 million in 2009 to less than 20 million by 2020, is dove-tailing with the rapidly increasing value 18 and 19 year-olds place on global responsibility. To attract smart, young students, institutions are finding they need to be seen as leaders in energy conservation and other areas of sustainability. Texas A&M University is one institution that has taken this bull by the horns.

As one of the nation's oldest and largest universities, Texas A&M is recognized as a leader in all facets of higher education, from academics to athletics to scientific research. The university has also been a leader in campus energy management, dating back to 1893 when it first began generating a significant portion of its own electricity. Texas A&M continues to look forward, with a new $15 million performance contract and the help of Siemens Industry, to upgrade the efficiency of over 20 campus buildings.

Decreasing Costs While Increasing Enrollment

Texas A&M's proactive approach to managing energy consumption on campus targets two important goals. It wants to further control energy costs and provide a greener, more energy efficient campus for a more environmentally-conscious student body. This effort, spearheaded by the university's Department of Utilities and Energy Management (UEM) team — led by Jim Riley, Director of Utilities and Energy Management, and Les Williams, Associate Director of Utilities and Energy Management — has been a proven success. Since 2002, Texas A&M has been able to reduce energy consumption by 25% despite the fact the campus' total square footage grew by 18%.

Staying Ahead of the Curve

Today, the campus is embarking on an ambitious upgrade of 24 campus facilities to further improve energy management. To do this, it is leveraging a $15 million performance contract made possible through ARRA stimulus funds secured by the Texas State Energy Conservation Office (SECO). The contract allows Texas A&M to fund facility improvements through a low-interest loan paid for by future energy savings.

To implement the performance contract, Texas A&M partnered with the Building Technologies Division of Siemens Industry, Inc. a global leader in building automation and energy efficiency solutions. Siemens was selected in part because of their past successes with Texas A&M energy management initiatives. Additionally, the university felt confident in the ability of Siemens to complete all project work by the end of 2011, a key condition of the funding, according to Riley.

Creating a Better More Efficient Campus

In defining key elements of the building upgrades, Siemens and Texas A&M identified solutions that both reduce energy consumption and create buildings that better meet the needs of its students, according to Williams. The final list of projects calls for improvements to 24 campus buildings. These improvements include:

BAS Building Optimization —
Optimization of the campus' building automation system (BAS) will improve energy efficiency and enable better HVAC control in buildings representing over 1.6 million square feet.

Occupancy Sensors —
Occupancy sensors will be installed in offices, classrooms and common areas to reduce energy consumption and eliminate the wasteful practice of conditioning and lighting spaces when not occupied.

Lighting Retrofits —
Replacing older inefficient lamps will reduce energy consumption dramatically. Texas A&M's 700,000 square foot library will benefit greatly from this upgrade as will campus parking garages, which must remain lit 24/7/365.

Top: Rudder Tower is one of 24 Texas A&M buildings undergoing energy efficiency upgrades.

Bottom, from the left: Jeff Murray, Siemens; Jim Riley, Director Utilities & Energy Management, Texas A&M; Jacob Richardson, Siemens; Les Williams, Associate Director Utilities & Energy Management, Texas A&M

The Impact of Performance Contracting

Once the project is completed in 2011, these building improvements are estimated to generate $1.1 million in annual operations and utility savings. The university and Siemens are working closely with an independent third party assessor, selected by SECO, to ensure performance and savings goals are met. The end result is a more efficient, sustainable campus benefitting the students, budget and the environment.

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A Study of State Tax

Appropriations for Capital Needs in U.S. Public Higher Education

BY DELPHINE HARRIS, DERRICK MANNS, AND STEPHEN KATSINAS

This study investigated the relationship of key issues related to capital and operating budget practices of state tax appropriations and policies at the state level, including new facilities construction, renovation, replacement and renewal which may exist between and among states by governance structure. Recognized "good practices" in capital planning and allocation processes and funding mechanisms recommended by experts were also examined. The statewide governance typology developed by Aims McGuinness that distinguishes between governing and coordinating boards was used to see if tighter state control in the form of consolidated governing boards might equate to higher levels of good practices.

Higher education institutions are complex organizations with many moving parts and functions; the larger the institution, the more moving parts there are. One issue has continually plagued public higher education since its beginnings: adequate funding for facilities, Institutions cannot run first class academic programs in third rate facilities.

In *Educating a New Majority: Transforming America's Educational System for Diversity*, Rendon and Hope (1996) documented the millions of new minority students coming into America's public colleges and universities. In their unpublished study, DeMonBrun and Katsinas (2009) have predicted that in 2013 there will be one million more 18-to 24-year-olds and three million new young adults ages 25 to 34 in the U.S. population than in 2009.

Previously the federal government provided major investments in public higher education facilities. President Barack Obama, in a dramatic speech to Congress on February 24, 2009, proposed that U.S. recommit itself to becoming number one again among industrialized nations in adult baccalaureate degree attainment. He stated, "we will provide the support necessary for you to complete college and meet a new goal: by 2020, America will once again have the highest proportion of college graduates in the world" (para. 1, *http://www.whitehouse.gov/the-press-office/remarks-president-barackobama-address-joint-session-congress*).

Debates occur at the institutional and state level as to whom should fund what activities and how much of higher education the public should be required to support. Capital needs for institutions vary widely; one solution that many financially pressed public flagship universities have pursued has been to consider new self-generating methods to accommodate their needs. According to the *Chronicle of Higher Education* (April 11, 2008) Indiana University of Pennsylvania (IUP) financed $270 million dollar's worth of construction for the replacement of outdated residence halls with bonds issued through its private foundation. The university maintains ownership of the land and leases the buildings from the foundation, which will revert back to university property when the debt has been satisfied.

Other examples include Texas A&M University, Ohio State University, University of Louisiana—Lafayette, Louisiana State University, and the University of Colorado at Boulder. This creative solution was done to create more room on their space-challenged campuses for expanded teaching and re-

search-related activities (*Inside Higher Education*, July 27, 2007). The challenge was best identified by William Zumeta (2001) when he said, "The public and those it employs to make policy decisions expect higher education to be efficient and accountable for its spending and its outcomes" (p. 166).

Two significant major national studies supported by APPA addressed this crucial issue: *The Decaying American Campus: A Ticking Time Bomb* (Rush & Johnson, 1989) and *A Foundation to Uphold* (Kaiser 1996). Rush and Johnson (1989) concluded, based on a survey conducted in 1988 of 700 higher educational institutions, that colleges and universities deferred four dollars of maintenance for every dollar spent. In a follow up study, Kaiser (1996) estimated that $26 billion is necessary to eliminate deferred maintenance, of which $5.7 billion is identified for urgent needs. And APPA extropolated even greater needs in *Buildings... The Gifts That Keep on Taking* (Rose, et al, 2007). Manns and Opp (2001) and Manns and Katsinas (2006) further cautioned against the consequences of not tackling these urgent needs.

The Carnegie Corporation in an Open Letter to President-Elect Obama and His Administration dated December 18, 2008, cited Rush and Johnson (1989) and Manns (2001) to emphasize that access for future students to higher education may be diminished as facilities age and new facilities are not constructed to combat the ever increasing numbers of students. There has been little sustained state level research on the funding of capital needs in public higher education.

Projected Enrollment in All Public Postsecondary Degree-Granting Educational Institutions, 2009 to 2018

Year	Public
Fall 2009	14,523[a]
Fall 2010	14,609
Fall 2011	14,744
Fall 2012	14,882
Fall 2013	15,064
Fall 2014	15,220
Fall 2015	15,347
Fall 2016	15,472
Fall 2017	15,626
Fall 2018	15,764

Notes[a]: Depicted in thousands, Table Data was extracted from U.S. Department of Education, National Center for Education Statistics, Table 3. Enrollment in educational institutions, by level and control of institution; Selected years, 1869-70 through fall 2018.

METHODOLOGY

This study investigated the relationship of issues related to capital and operating budget practices of state tax appropriations and policies at the state level which may exist between and among states, comparing 23 states with consolidated governing boards and 27 states classified as coordinating board and planning agencies for public higher education, identified by McGuinness (2010) using a methodology similar to that used by Zumeta (1996). A secondary purpose was to identify "good practices" in planning and allocation processes and funding mechanisms, as recommended for capital needs for public higher education. Another purpose was to further document if trends can be identified by comparing newly collected data FY2008 to prior surveys conducted by Manns for FY1997 and FY2003 using a revised design. Manns' FY1997 study (Manns & Opp, 2001) and Manns' FY2003 study (Manns & Katsinas, 2006) were quantitative and utilized a survey instrument as the primary data collection method along with the *Grapevine* database of public higher education operating budgets.

SURVEY RESULTS

RESEARCH QUESTIONS

The primary research question was, "With regards to public higher education capital needs and practices, what differences, if any, exist between and among states with consolidated governing boards as compared to states with coordinating governing boards/planning agencies?" The secondary research questions include the following:

1. At the state level, what were the differences, if any exist, with regards to state tax appropriations for public higher education capital needs and how has this changed, if any, from FY1997 to FY2008;
2. At the state level, what observable differences, if any existed, in terms of deferred maintenance to meet funding capital needs for public higher education, if any, from FY1997 to FY2008;
3. At the state level, to what extent were recognized "good practices" in planning and allocation process(es) and funding mechanism(s), as recommended by expert practitioners and scholars for capital needs for public higher education?

SUMMARY OF FINDINGS

Finding One: State tax appropriations for capital budgets have increased as measured by the 18 states that supplied data on capital budgets for both FY1997 and FY2008. Clearly, the kind of broad-scale investment in public higher education facilities construction, renovation, and rehabilitation to meet the

current enrollment boom did not occur at the state level.

Finding Two: No significant differences were observed when changes in state tax appropriations for capital budgets by state governance type are examined in the time period from FY1997 to FY2008. Among the 18 responding states in both FY1997 and FY2008, state tax appropriations for capital budgets by student were higher for states with governing boards then for those with coordinating boards.

Secondary Research Question Two—At the state level, what observable differences, if any exist, in terms of deferred maintenance to meet funding capital needs for public higher education, if any, from FY1997 to FY2008?

Finding Three: The deferred maintenance problem for public higher education facilities clearly worsened from FY1997 to FY2008, as measured by the DMR and FCI, with some variability observed among governing and coordinating board states. The Deferred Maintenance Ratio (DMR) more than doubled from FY1997 to FY 2008. The mean of the DMR escalated from 44% in FY1997 to 57% in FY2003 to 93% in FY2008. The Facilities Condition Index (FCI) also nearly doubled from FY1997 to FY2008. The mean of FCI escalated from 9% in FY1997 to 12% in FY2003 to 16% in FY2008.

CLEARLY, THE KIND OF BROAD-SCALE INVESTMENT IN PUBLIC HIGHER EDUCATION FACILITIES CONSTRUCTION, RENOVATION, AND REHABILITATION TO MEET THE CURRENT ENROLLMENT BOOM DID NOT OCCUR AT THE STATE LEVEL.

Secondary Research Question Three—At the state level, to what extent are recognized "good practices" used in the planning and allocation process(es) and funding mechanism(s), as recommended by expert practitioners and scholars, for capital needs for public higher education?

Finding Four: That only half of the states have a long-range master plan for facilities strongly suggests that at a minimum, a clear information gap if not gap in assigned responsibilities exists, a point reinforced by the low level of broad stakeholder involvement in the capital needs assessment process. Lyman Glenny (1959) noted the lack of master planning as a major oversight in state coordination. St. John (1991) indicated that facilities' planning provides a way that states can control costs, regulate quality, and foster coordination across institutions. The number of states with long-range master plans for facilities has increased slightly from 15 of 41 states in FY1997 to 19 of 38 in FY2008. Stakeholder involvement in master planning was generally not inclusive in FY2008.

Finding Five: The majority of states do not conduct periodic facilities audits. States without regular periodic facilities audits remains almost constant from FY1997 to FY2008.

Finding Six: Information on capital funding of public higher education at the state level is limited. Since many states rely on IPEDS as the backbone of their own state data collection systems, the lack of a federal role in collecting data on facilities is problematic.

CONCLUSIONS

Conclusion One: A major information gap exists in data on facilities funding and there are high variances in the data that are available at the state level. The researchers could not identify a comprehensive national set of data on facilities funding for all 50 states. Information on capital funding of public higher education at the state level is limited.

Conclusion Two: State support for public higher education capital budgets has not increased enough to accommodate the growing need for new facilities brought on by record enrollment increases, while simultaneously addressing the escalating problem of deferred maintenance in public higher education facilities. Increased awareness of facilities issues and the need for planning, state level funding for facilities clearly has not increased at sufficient levels to accommodate the sharp rise in enrollments from FY1997 to FY2008. The existence of state master plans has increased slightly. However, just 4 of 19 states or 21 percent indicated that their master plan had inclusive stakeholder involvement in FY2008.

From FY1997 to FY2008, more states have designated a fund set-aside for facilities renewal and replacement, up from 6 of 41 responding states to 18 of 39, an increase from 15 to 50 percent. The deferred maintenance ratio (DMR) has almost doubled from a mean of 44 percent in FY1997 to a mean of 87 percent in FY2008. The Facilities Condition Index (FCI) has similar indicators of escalation from a mean of 9 percent in FY1997 to 16 percent in FY2008.

Conclusion Three: While state governance structures are stable over time, the practices and policies of capital budgeting

State Boards of Higher Education, by Governance Structure: 1997, 2002, 2010

Consolidated Governing Boards			*Coordinating/Planning Agency*		
1997 (FY1997)	2002 (FY2003)	2010 (FY2008)	1997 (FY1997)	2002 (FY2003)	2010 (FY2008)
Alaska	Alaska	Alaska	Alabama	Alabama	Alabama
Arizona	Arizona	Arizona	Arkansas	Arkansas	Arkansas
Florida		Florida	California	California	California
Georgia	Georgia	Georgia	Colorado	Colorado	Colorado
Hawaii	Hawaii	Hawaii	Connecticut	Connecticut	Connecticut
Idaho	Idaho	Idaho	Delaware	Delaware	Delaware
Iowa	Iowa	Iowa		Florida	
Kansas	Kansas	Kansas	Illinois	Illinois	Illinois
Maine	Maine	Maine	Indiana	Indiana	Indiana
Minnesota	Minnesota	Minnesota	Kentucky	Kentucky	Kentucky
Mississippi	Mississippi	Mississippi	Louisiana	Louisiana	Louisiana
Montana	Montana	Montana	Maryland	Maryland	Maryland
Nevada	Nevada	Nevada	Massachusetts	Massachusetts	Massachusetts
New Hampshire	New Hampshire	New Hampshire	Michigan	Michigan	Michigan
North Carolina	North Carolina	North Carolina	Missouri	Missouri	Missouri
North Dakota	North Dakota	North Dakota	Nebraska	Nebraska	Nebraska
Oregon	Oregon	Oregon	New Jersey	New Jersey	New Jersey
Rhode Island	Rhode Island	Rhode Island	New Mexico	New Mexico	New Mexico
South Dakota	South Dakota	South Dakota	New York	New York	New York
Utah	Utah	Utah	Ohio	Ohio	Ohio
Vermont	Vermont	Vermont	Oklahoma	Oklahoma	Oklahoma
West Virginia			Pennsylvania	Pennsylvania	Pennsylvania
Wisconsin	Wisconsin	Wisconsin	South Carolina	South Carolina	South Carolina
Wyoming	Wyoming	Wyoming	Tennessee	Tennessee	Tennessee
			Texas	Texas	Texas
			Virginia	Virginia	Virginia
			Washington	Washington	Washington
				West Virginia	West Virginia
N=24	N=22	N=23	N=26	N=28	N=27

Note: Adapted from Mcguiness: Authority of State Boards of Higher Education, 1997, p.58, Authority of State Boards of Postsecondary Education, 2002, p.3 and; Authority of State Boards and Agencies of Higher Education, 2010, (p.3).

are varied among states, and tighter state control in the form of consolidated governing boards does not necessarily equate to higher levels of good practices with regards to facilities in public higher education. Governance structures of state public higher education boards and agencies have exhibited little change over time. There were two states listed as consolidating governing boards in 1997 that changed typology according to McGuinness (2010): Florida and West Virginia. It was assumed by this researcher that states with tighter control in the form of consolidated governing boards will be more likely to adopt innovative or good practices than states identified a coordinating/planning service agencies for public higher education.

RECOMMENDATIONS

Recommendation One: Develop a national centralized database to both incorporate existing and add new statewide centralized databases for public higher institutions to enter institutional data on deferred maintenance, facilities conditions and master planning based on "good practices" as recommended by expert practitioners and scholars. Following the earlier surveys in FY1997 and FY2003, respectively, Manns and Opp (2001) and Manns and Katsinas (2006) recommended the development of databases for public higher institutions to enter institutional data on deferred maintenance, facilities conditions and master planning at the state level. A national public higher education database should be developed to include facilities planning by each state higher education board, and it should be maintained by the federal government.

Recommendation Two: Develop of a longitudinal database for capital needs of public higher education,

A NATIONAL PUBLIC HIGHER EDUCATION DATABASE SHOULD BE DEVELOPED TO INCLUDE FACILITIES PLANNING BY EACH STATE HIGHER EDUCATION BOARD, AND IT SHOULD BE MAINTAINED BY THE FEDERAL GOVERNMENT.

sponsored by the federal government. Recognizing that the development of a national database on facilities funding called for in the first recommendation will take time to fully implement, an intermediate recommendation is necessary.

Recommendation Three: Replicate this study to incorporate additional research factors. Two types of factors would add complexity and potentially provide valuable insight into capital budgeting and practices for public higher education institutions: 1) incorporation of the statutory role of McGuinness' typology of governance structures and 2) incorporation of the classification type of public higher education institutions.

While the two primary broad groups of statewide consolidated governing and statewide coordinating boards/planning agencies based on the typology of McGuinness (1997, 2002 & 2010) were used for this study, McGuinness also subdivides states by statutory roles. These include: 1) One Board for All Public Institutions, 2) Two Boards Encompassing All Public Institutions, 3) Consolidated or Aggregated Budget, 4) Budget Review and Recommendation, and 5) No Statutory Budget Role. These statutory roles are an indicator of the relative strength or weakness of statewide governance structure for the state higher education board. A replication of this study to include the classification of public higher education institutions by two-year college or four-year university could add further insight to the discussion.

Recommendation Four: Expand this study using qualitative methods. While this study was conducted using quantitative methods, a future study using qualitative methods, such as a one on one interviews, could be conducted at a statewide level.

CONCLUDING REMARKS

Absent from the recommendations is an amount of funding that the states and /or federal government should provide to address the capital needs concern, there is simply not enough data available to support that recommendation. Certainly, more is needed to address the large amounts of deferred maintenance and accommodate the growing student enrollments. While approximately $23 billion of additional funding to address deferred maintenance needs would bring the 18 states to a recommended DMR (as a percent of operating funds) based on institutional recommendations, this research can only speculate what amount would be needed to provide the safe access to public higher education for all students.

No two states are identical, and any comparisons made between states should recognize such factors as the public and private higher education structure of the state, the political structure of the state, methods used for financing public higher education, and the history of the individual state. However, states could learn innovative good practices from each other as well as longitudinal data analysis of their own state, by reviewing their overall operations.

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Delphine Harris is executive director of business process innovation at The University of Alabama in Tuscaloosa, AL, and can be reached at *dharris@fa.ua.edu*. The research she conducted for this article contributed to her doctoral dissertation at The University of Alabama; this is her first article for *Facilities Manager*. Derrick Manns is the vice president for academic affairs and institutional research at the Louisiana Community and Technical College System in Baton Rouge, LA, and can be reached at *dmanns@lctcs.edu*. Steve Katsinas is a professor of higher education and director of the Educational Policy Center at The University of Alabama in Tuscaloosa, AL; he can be reached at *skatsina@bamaed.ua.edu*.

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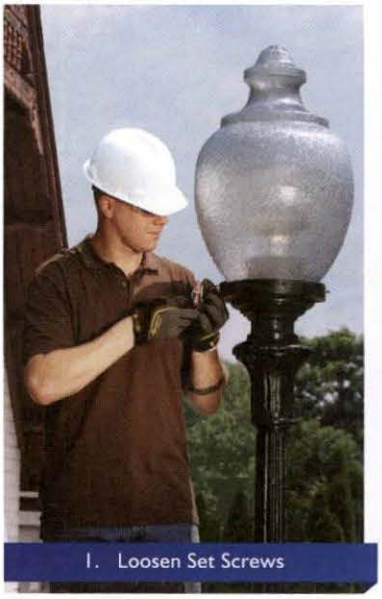

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Implementing Total Cost of Ownership

A CFaR Research Project Update

By Douglas K. Christensen, APPA Fellow

The book by APPA *Buildings…The Gifts That Keep on Taking* answered many questions about what the industry is doing to deal with capital renewal and deferred maintenance. The results suggested that the concept of dealing with **assets as investments** was a critical step. In reality, buildings were nothing more than a group of systems working together to produce a space. That space could be put to many different uses. In fact, space became an asset also supported by many systems. We learned that an asset has many different names and meanings. For example: a building is an asset, space is an asset, systems are assets, and components are assets. Based on what we learned, *all* investments are assets and need all need to be managed to get a return on investments.

The next learning was that assets have three kinds of costs. In every industry we studied, they were taking care of all three costs. The first cost was the Birth & Burial costs, which were non-recurring. There was a beginning and an end. These costs were part of the organization's project delivery system.

The second cost was Maintenance and Operations. These costs were annual recurring costs. Usually a budget or a draw from designated reserves was required to get all of the care needed to keep the assets running. The third cost was Recapitalization. These costs were periodic recurring costs. These capital funds were need as retrofits, improvements, or replacements were needed. They were needed when needed.

These three costs make up the Total Cost of Ownership. Every asset has these three kinds of cost. It was obvious to us that the Total Cost of Ownership was a critical need for the educational industry. The industry needs to master TCO.

From this research we had learned that in order to get a handle on deferred maintenance and capital renewal another study was needed. It was obvious that any change in practice would require policy and/or procedure change. The current paradigm was not producing the right results. To do a research project that would compel educational institutions to change their practices seemed like a daunting a task. Since we did not know what daunting meant, we decided to do a follow up research project and call it "Implementing TCO in the Educational Industry."

Our approach was to survey 25 institutions and get their feedback on two issues. First, collect the kind of data needed to cover the TCO principles, and second, to determine from each institution if TCO should be implemented. We did not ask in the survey if the institution would implement TCO because of the politics. The survey wants to know if institutions thought it would be beneficial to implement TCO in the educational industry.

STATUS

I presented the formal request to APPA's Center for Facilities Research (CFaR) to do the research. I asked Terry Ruprecht and Jack Dempsey to serve as key advisors in doing this research. Terry was a carryover from the previous research. As the management team for

this research we wanted to make sure the vision of what we wanted to accomplish was clear and doable. We have completed the initial steps of setting up the CFaR project as a "Peer Reviewed Research" project. This meant that we were going to do original research that is conceived, conducted, and interpreted specifically for the industry. The research will support or discourage TCO and educational industry. The project received a research grant from ASHRAE to fund the study. ASHRAE is interested in TCO but have very few policies on TCO for equipment, so they asked to partner with the results. The survey will be collecting data for ASHRAE to further study their issues along with ours.

We have completed the development of the survey tools with AgileOAK as our contractor. They have been great in assistance and support. We completed an eight-institution Beta test of the instrument which worked out a lot of problems. We have made the corrections and added tutorials to the survey. Then in September 2011 we organized and launched the survey by sending out invitations to those that had shown interest in being a part of the survey. In addition to APPA members we have had businesses, military bases, federal facilities, and others involved with the survey.

The survey was completed in December 2011, and the data is being scrubbed for the institutional reports. Once the institutions have been addressed, the report will be written and presentations will be made at ASHRAE, IFMA, NACUBO, and APPA 2012.

Doug Christensen is a Past APPA President and Member Emeritus, and can be reached at *doug.christensen@comcast.net*.

UNL Conducts Facility Assessment with Efficiency

By Matt Adams, P.E.

The need for our institutions to conduct ongoing facility condition assessments is ever present. However, the cost can be an obstacle.

Regardless of your approach; contracting with consultants or using in-house staff, an Facilities Condition Assessment (FCA) requires time and resources, which are both in short supply. Some institutions have tried to save funds by using sampling techniques and assessing only a portion of the campus. Others go further and simply apply formulaic analysis to their campuses. Naturally, the latter approaches cost less, but they also deliver less. At the University of Nebraska Lincoln (UNL), the Department of Building Systems Maintenance Services (BSM) has discovered improvements to the FCA process that have resulted in robust results at a significantly reduced cost.

REENGINEERING THE PROCESS

Under the direction of Jim Jackson, the UNL BSM team has essentially reengineered the process of facility condition assessment. BSM established an FCA working group that was charged with two critical goals:
1) design FCA reports with the minimum of data required to support the UNL capital budgeting process, and
2) improve upon current industry best practices in order to delivery only those required deliverables but without any unnecessary cost or overhead in the process.

Put another way, the first task was to redesign industry standard FCA reports to include only that data that is required, and present that data more effectively. Next redesign the assessment process to greatly reduce the cost required to supply the new reporting standards. Without revealing specific budgets, the goal was to reduce the total cost of the FCA process by more than 50 percent of the industry average cost for FCA services.

The first stage of the process was the "top-down" report design process. This group effort, managed by the FCA program manager, Mike Placke, involved a working group with participants from BSM, IT, Facilities Management and Planning, and the Controller's Office. This multidisciplinary team worked to understand the specific capital renewal and facility planning process at UNL in such an acute manner to allow for identification of single data points of criticality. Conversely—and just as important—was the effort to purposefully exclude many data points that are typical within the industry for peer FCAs, but unnecessary for UNL planning purposes.

It was recognized and stated as a business rule at the start of the process, that every extraneous data point cost UNL resources in two ways. The additional cost of assessment and data/report publication of extraneous data points is approximately two hours per assessor per building repeated thorough the entire multi-year process. This waste of resources was compounded by the ongoing update and reassessment process that endures for years. Suffice it to say, when the team recognized the magnitude of the opportunity cost for each selected and rejected data point, great care was taken.

This minimalist reporting model design process could not be achieved using the traditional specification process. Analysis and interviews with the senior facility administrators never included open-ended questions that are heard on other projects, e.g., "What features would you like?" Rather the question is posed as, "How are the budgets and priorities established?" This is followed by an iterative series of proposed data sets starting with too little, and only adding when full justification was proven. This is then contrasted with an industry typical approach of offering the senior administrators anything and everything in an effort to impress and, thus, overdeliver on a task. In the end, the same capital renewal modeling is achieved with about 30 percent less data points than typical FCAs.

IMMEDIATE UTILIZATION

As this process came to a close another benefit was realized. This benefit was one of immediate utilization. Unlike other FCA projects were thick reports are produced in a format unfamiliar to the stakeholders, these reports are directly a result of input from stakeholders and fully usable by them for each planning and budgeting purpose without any translation or reformatting whatsoever. Oddly enough, many peers have experienced a final step once an FCA project was completed. That step was to try to interpret, translate, and eventually utilize the data produced. This is most typically a result of FCA assessors not beginning the process with the "top-down" model and report re-design as utilized by UNL.

Once the refined renewal model and reporting designs were in place, the FCA working group turned its sights

to reengineering of the assessment and data collection process. For UNL, the field assessments are conducted by the BSM trade staff professionals and engineers. Two representatives for most disciplines were chosen for the FCA, and they generally helped each other out as a team but split field assessment responsibility. Despite this being an "in-house" project UNL created new account codes for every aspect of the FCA project and all work was charged accordingly. This is what provides the evidence of success for the initial goals of the project: cost reduction.

BY THE BOOK

Essentially, the primary method of savings for the field assessment phase of an FCA is to reduce field time as subsequent data form population. For UNL, a rigorous analysis of each was conducted and reengineering produced significant results. First of all, the scope of the data set to be collected for the FCA renewal model was already redacted from the top-down process described earlier. As such, there would be cost reductions realized without any change to the field process. However, a key resource was recognized and exploited and this dramatically reduced the total hours of field assessment required. This resource was the profound knowledge of the UNL facilities by the BSM staff.

The theory, now proven correct, was that if properly trained and given a full understanding of the final deliverables of the FCA, the BSM staff could rely heavily on their pre-existing knowledge of the facilities to populate the FCA assessment templates without the field assessment time required by outsiders of new hires unfamiliar with the campus. The one key to the success of the utilization of the knowledge resources was the introduction of a new perspective to the BSM staff. Ongoing meetings provide training and support to offer the perspective not of repair and getting by with less (as if often the mentality on the shops) but to assess as if maintenance and renewal were to occur as they should—by the book! This ongoing reinforcement of a new perspective, one of capital budgeting and renewal and not basic maintenance allows the BSM staff to perform like professional FCA contractors but with the additional profound knowledge of their buildings and respective systems.

RESULTS

The top-down design resulted in highly refined and standardized data collection templates that are easy to prepopulate without field assessment when the information is at hand or "in-the-head" of the assessor. Assessment meetings are held prior to any field time to share multi-trade information and collect and populate as much data as possible prior to field visits. This results in field visits that are basically validation and reinforcement of pre-existing knowledge. In general, each trade representative is utilizing 2 hours of field time for every 8 hours of typical industry best practice. In other words this is a 1 to 4 ratio.

The FCA program is now ten months old and is continually streamlining and costs are at or below targets and gradually dropping further. While still carrying the full burden of BSM responsibilities, the UNL team is working to complete at least 4 million gross square feet of its facility condition analysis each year. The entire general fund campus of 12 million GSF will be completed in three years time and update process will start all over again. The BSM if proud undertake and succeed at this effort in these difficult economic times and keep working on "Important but not Urgent" projects.

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

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Driving New Concepts through the National Electrical Code

By Mike Anthony, Jim Harvey, and Jim Sanguinetti

Fifteen years in the making, the APPA Code Advocacy Task Force has undertaken one of the largest contributions of any industry toward U.S. sustainability ambitions.

Installed electrical supply services at most educational facilities have been at least 50 percent larger than what has been proven to be necessary since at least the 1950s. This excess capacity results in significantly oversized electric service equipment, in the related loss of building enterprise space in electrical rooms, and in waste heat. The oversizing is the result of the build-up of National Electrical Code safety factors that begin at every outlet, lighting fixture, and item of HVAC equipment. Admittedly, the cumulative build-up of safety factors also owe something to the conservative nature of design engineers. An overview of transformer oversizing can be seen in Figure 1.

The underutilization of transformers was recognized in the Energy Policy Act of 2005. Since the U.S. Department of Energy (DOE) understood—correctly—that it would be easier to legislate manufacturers to build more efficient transformers than to change National Electrical Code load calculation methods—the National Electrical Manufacturers Association (NEMA) TP-1 2002 standard became public law. NEMA followed up with its "Premium Efficiency Transformer Program," a program that identifies low-voltage transformers with losses 30 percent lower than TP-1.

Even with transformers built to operate more efficiently, capacity underutilization remains; a condition verified in a data-gathering effort that revealed that most transformers in our industry are only loaded 20 to 40 percent. This represents about $1 billion to $10 billion in annual avoidable cost to our $200 billion industry. Because of APPA's desire to contribute to wide-ranging sustainability ambitions, this issue was made the CATF's highest priority as Issue 11-6 in the Public Policy Agenda.

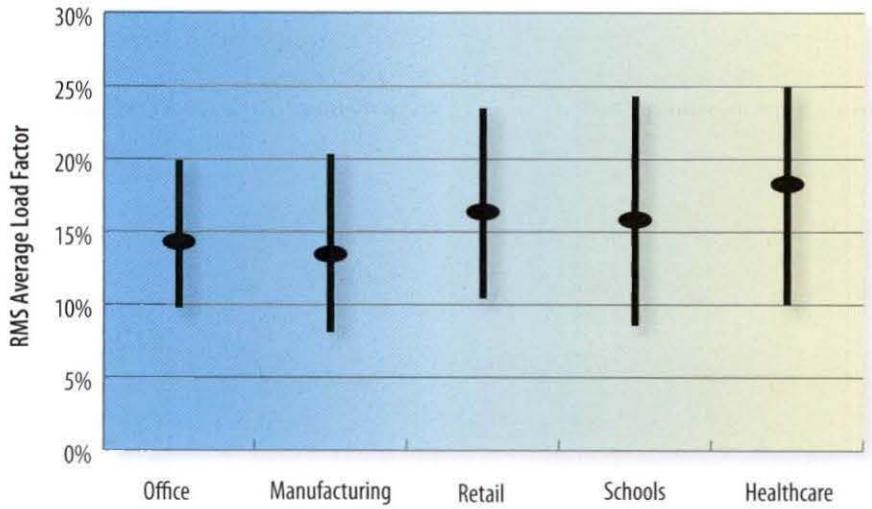


Figure 1: Data from a 1999 U.S. Department of Energy study of building types in the northeast United States

Unwinding the existing NEC calculation methods that bring more energy into a building than necessary, is difficult to handle politically, technically, and economically, for the following reasons:

1. Insurance companies, who project their interests through testing agencies, have not yet rationalized the relative risk of wiring fire safety versus the hazards of electricians working on energized equipment with high-incident energy.
2. Consultant design compensation is based upon construction costs. The larger the equipment specified, the larger the design fee.
3. Utility tariffs—designed for an economy that grew 7 percent annually—contain incentives for larger services to accommodate future load growth assumptions.
4. State and local enforcement authorities base their inspection fees in proportion to the ampere load. A 1200A service inspection brings in more revenue than a 600A service, for example.
5. Section 90.8 of the NEC which asserts conditions for "future expansion and convenience" is broadly inter-

preted by designers; typically upward to design in 10 to 15 watts per square foot when, in fact, our industry only sees 3 to 5 watts per square foot.

6. Labor unions benefit from higher wage electricians through dues and training programs for workers who do riskier work on medium voltage systems.
7. Transformer and switchgear manufacturers have no incentive to sell smaller equipment, period.

Now there are many cases where transformers with redundant capacity is necessary. Double-ended substations in healthcare facilities, laboratories, and critical processes, for example. In high-rise facilities large fire pumps may require larger transformers to protect contingencies. These are a minority of cases, however, and many transformers already have significant overload capability already built into them. No one knows how many transformers overload their continuous rating. No catastrophic or "marquee" disasters are recorded in the media or trade journals; however, IEEE literature reveals that some service substations are so large that they cannot be worked on live. Anecdotally, it is assumed that overloads are rare—certainly infrequent compared to the frequency of electricians working on live equipment—and that overcurrent devices deenergize transformers before they are damaged.

Within this context, at the January 2012 meeting of the 2014 NEC technical committee meetings, the authors set the agenda with a group of 19 proposals aimed at reducing transformer sizes. The proposals integrated two years of discussion and data contributions from APPA member institutions and business partners. Because of the complex interdependencies of the NEC, the concepts underlying our proposals spanned a range from small concepts (that can be accomplished in one revision cycle) to disruptive concepts (that can be accomplished in multiple revision cycles). Figure 2 is a reproduction of the presentation slide that builds a case for a win-win-win scenario for all interest groups.

Win-Win-Win

1. Adoption of education facilities industry Article 220 proposals sets in motion project financing architectures that draw from sustainability and workplace safety resources to help fund electrical upgrades.

2. Replacement of oversized medium voltage installations with smaller transformers or low voltage services mean that less energy is brought into a protected premises with corresponding reduction in fire and arc flash hazard. Majority of general commercial buildings can be supplied at about 5W/SQFT instead of the present 10W/SQFT required by the NEC.

3. Switchgear replacement with lower voltage and ampere ratings recover transformer space for the building program for Owners and leave more working space in legacy electrical rooms.

4. Reduced transformer no-load losses will be on the order of $43,800 per 10,000 kVA, connected.

5. Release of funding for new services will accelerate Smart-Grid. Engineers an specify services with energy management equipment that controls feeder load, and provides for future interactive-distributed resource equipment that deploys renewable energy sources and increases power reliability.

Figure 2: The win-win-win scenario

The committees responded with acceptance of two of them involving Table 220.12; the design requirements for lighting load calculations. It represents a provisional, code "win" for APPA because it permits a partial, though significant, reduction in the transformers sizes.

GOING FORWARD

The authors would like thank the electrical professionals, APPA executives, and business partners that have supported this effort. While the 2014 NEC revision process is only in the first of three stages, it is a solid start. In the second stage of NEC revision we will redouble our effort to see similar reductions in transformer size carried into load calculations for HVAC equipment. Our hope is that when the 2014 NEC is adopted as public law, APPA members will immediately see $10,000 to $100,000 of first-cost savings for every new building, and $1,000 to $10,000 per year annual avoided losses throughout the life cycle of the building. When coupled with the consortia of education healthcare and government (ex-military), this code change will significantly affect the energy and material cost of 5 percent of the $15,000 billion U.S. annual gross domestic product.

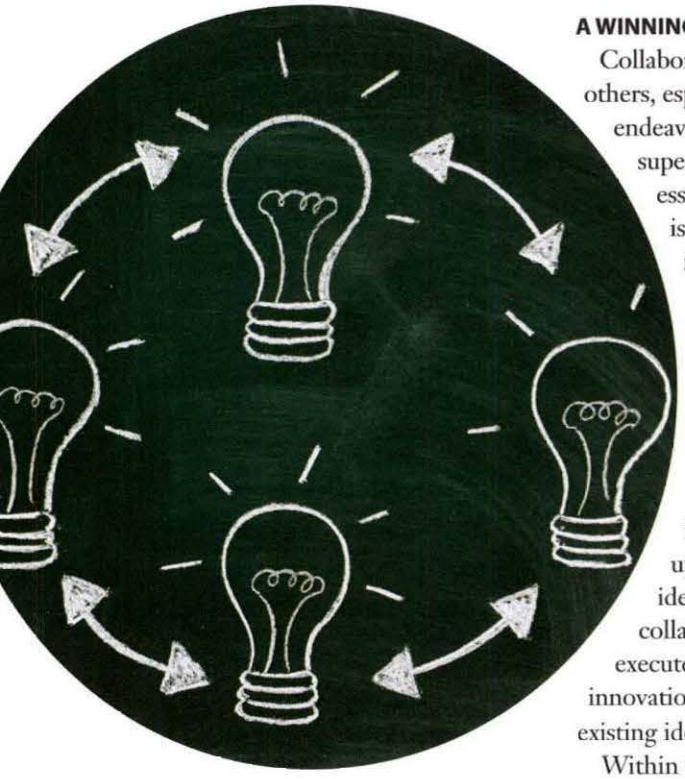
Further information about the subjects covered in this column are available at *www.appa.org/standardscatf.cfm.*

Mike Anthony is regulatory advisor to the University of Michigan Plant Operations, and a member of the APPA Code Advocacy Task Force and can be reached at *maanthon@umich.edu*. Jim Harvey is manager of electrical engineering, facilities planning and development, at the University of Michigan Hospitals and Health Centers. He can be reached at *jharvey@med.umich.edu*. Jim Sanguinetti is a facilities engineer at the University of Nevada, Las Vegas. He can be reached at *jim.sanguinetti@unlv.edu*.

Collaboration: The Benefits and Challenges of Working Together

By Joe Whitefield

Wilbur and Orville Wright, Steve Jobs and Steve Wozniak, and Ben Cohen and Jerry Greenfield—what do these men have in common? Of course, they are examples of great collaborators. As a result of their great work together, today we enjoy flight, advanced personal computing, and delicious ice cream. These are just a small sample of the number of great products and innovations that have resulted from serious collaborative efforts. And yet they highlight the tremendous achievements that happen when people work together toward a common goal.



As I survey my work environment, I see many positives things that were either born of or enhanced by some form of collaboration. Likewise, I see many things that could be improved had more (sometimes any) collaboration taken place. I suspect you can see similar conditions where you work. With that as a backdrop, let's consider this topic of collaboration within our institutions.

C Completion
O Organization
I Innovation
N Being Nice

A WINNING STRATEGY

Collaboration—working jointly with others, especially in an intellectual endeavor—produces results that are superior to individual efforts. This essentially occurs because there is the opportunity to aggregate ideas derived from diverse experiences, expertise, and skills to improve a singular idea or product—no matter how great it may be to begin with. Equity of ideas is not even required for success. A great idea or product that is only marginally improved upon (even 1 percent) by a lesser idea is still better. Simply stated, collaborative efforts, effectively executed, can produce wonderful innovations as well as enhancements to existing ideas and products.

Within facilities management, collaboration is critical. Given that we design, construct, clean, operate, and maintain facilities and grounds for others to occupy and use effectively for decades, it is obvious that many people are involved in these integrated endeavors. The degree to which they collaborate in these endeavors can vary quite a bit. This can have a direct impact on the quality of the functionality, cleanliness, and safety of the campus built environment.

If collaboration is so necessary and beneficial, then we must ask: why is it so hard to achieve? There are probably several legitimate reasons, but I want to focus on only a couple.

COMMON GOALS A MUST

The first major roadblock is having a common goal. With many diverse participants, this task is more important and more elusive than we realize. For example, think about the myriad of goals and agendas that are present when you program, design, and construct a new building on campus. In general, the future occupants have to have maximum functionality and comfort; facilities has to have maximum operability and maintainability; and everyone is concerned with aesthetics and economics.

All of the criteria for each of these areas must be put on the table, evaluated, and usually require trade-offs for the project to have the *best combination* of features provided at the maximum value. The evaluation and negotiation processes are always difficult. But they are much easier and more effective when a common goal or performance standard

is established and adhered to properly. As it turns out, the establishment of common goals in many endeavors is an uncommon occurrence.

NEVER ENOUGH TIME

The second major deterrent to people working together collaboratively is time. No one seems to have enough of it. Sharing of ideas, interests, needs, etc., requires time from multiple parties. Even when the principal players have time, it typically does not align with the availability of others to produce a common schedule. Therefore, meetings do not take place, and collaboration is stunted. Therein lies one of the major issues involving time—people often consider collaboration to be synonymous with meetings.

Typically, the process requires you to be physically present at the discussion and decision tables, or your interests are not represented or incorporated. This does not need to always be the case. There are many creative ways to have someone's interest represented besides being present at a meeting. One primary way is to establish and document effective campus standards for the different disciplines. Whether they are prescriptive- or performance-oriented, they can be presented and included in most discussions involving budgets, relative value, and trade-offs. I have seen many good examples of campus standards and process best practices from APPA members that can aid the "too many meetings" virus that is going around.

Implementing standards and best practices work best when each party has a healthy understanding of—and respect for—the other parties' needs and goals, in addition to their own. This process of collaboration is made or broken on trust. Seek to spend time on documenting interests and standards, understanding others interests and standards, establishing common goals, improving communication systems, and building trust. An hour spent in any of these areas can yield many hours saved and fewer headaches.

As it is for every great organization in any industry, collaboration is essential to our work in facilities management. It draws on the best ideas and practices, and combines them in a way to produce a product that is better than it would be otherwise. Innovation, efficiencies, and better-best practices are the byproduct of these efforts.

So, the next time you are on a plane, watching a movie on your computer or smart phone, or simply eating ice cream, just remember how important and innovative collaboration can be. And when you land, you might want to try some collaboration of your own. This can be time well spent.

Joe Whitefield is executive director of facilities services at Middle Tennessee State University, Murfreesboro, TN. He can be reached at *joe.whitefield@mtsu.edu*.

Professional Development

WRAP-UP

APPA U—NETWORKING, LEARNING, AND COLLABORATING

By Suzanne Healy

Nestled in the Lowcountry of South Carolina, Hilton Head played host to the January 2012 offering of APPA U. Our winter professional development gathering, of the Institute for Facilities Management and the Leadership Academy, brought colleagues from across the continent to learn, network, and collaborate. We are grateful for the dedicated faculty who make these offerings such a success. A special note of thanks goes to Institute Deans: **Mary Vosevich, Jay Klingel, Lynne Finn, and Don Guckert**; and our Academy Deans: **Glenn Smith, Michelle Frederick, Ann Jenkins, Shawna Rowley, Matt Adams, David Judge, Doug Christensen, and Jack Hug**. APPA would also like to extend a special thank you to **Randy Ledbetter and Steve Stephens** of UGL Services who supported the revised offering of Track 4 of the Leadership Academy as well as hosted two open forums during the week-long program for all attendees. These evening events allowed for additional networking possibilities.

Throughout the week, students had the opportunities to interact with experts who brought their knowledge and experiences from vast backgrounds, providing a rich environment for all attendees. As the week drew to a close, we celebrated with graduation ceremonies for the Class of January 2012.

A big kudos to all those institutional leaders who supported the professional development of their staff! The professional development of any individual must be as customizable as the individuals themselves—and APPA is here to help everyone achieve their personal, departmental, and institutional goals.

Please visit *www.appa.org/training* for more on all of APPA's program offerings. NOTE: Our next APPA U will be held in Vancouver, BC, Canada—so make sure your passport is valid! If you don't have a current passport, start the process now. We look forward to seeing you and your staff at the next APPA event!

Suzanne Healy is APPA's director of professional development and can be reached at *suzanne@appa.org*.

Photos by Rhonda Hole

Academy Graduates

Griffin Avin, *East Carolina University*
Dean Burke, *Embry-Riddle Aeronautical University*
James Chodak, *University of Rochester*
Jim Davis, *Florida International University*
Barbara Gainey, *UNC/Greensboro*
Kevin Gibson, *Eastman School of Music*
Rodney Hull, *Western Kentucky University*
Leslye Kornegay, *University of Vermont*
Pamela Reno West, *Western Kentucky University*
Mark Rhoades, *University of Colorado/Boulder*
Brenda Seaworth, *University of Puget Sound*
Michael Williams, *UNC/Greensboro*

Institute Graduates

Suzanne Alchin, *Michigan State University*
Jerry Alexander, *Florida State University*
Mary Alford, *University of Colorado/Boulder*
Joseph Almeida, *The Gordon School*
Fred Best, *University of New Mexico*
Allyson Biro, *University of Guelph*
Terry Bozeman, *Emory University*
Jessica Bradley, *University of Colorado*
Cindy Brewer, *University of Texas at Austin*
Mark Bristol, *UNC – Chapel Hill*
Steve Burgess, *Washington Community College*
Woody Burkhead, *UNC – Greensboro*
Christopher Cisternino, *Northeastern State University*
Mary Coughlin, *University of Maryland*
Thomas Davis, *University of New Mexico*
Victoria Drummond, *Montana State University*
John Duvall, *Carnegie Mellon University*
Thomas Elliott, *University of Rochester*
Brad Evenger, *University of Montana*
Gary Evans, *Purdue University*
Larry Fairbank, *Brigham Young University/Utah*
Lynn Fletcher, *University of Colorado/Boulder*
James Garcia, *University of Mary Hardin Baylor*
Rick Gavin, *University of New England*
Bob Gooden, *Northland Community Technical College*
Brian Guns, *UNC – Charlotte*
Clint Halcom, *Arkansas State University*
Hazel Hall, *Cornell University*
Steven Hampsey, *University of New Brunswick*
Charles Harrison, *Western Kentucky University*
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Jim Jackson, *University of Nebraska/Lincoln*
Bill Johnson, *University of Florida*
John W. Krantz, *University of Michigan*
John Krause, *Pennsylvania State University*
Sandra Lelleck, *Southeastern Louisiana University*
Boyd LeeMaster, *Brigham Young University*
Cynthia Lockwood, *Cornell University*
Jennifer Marcotte, *Smith College*
Kimberly Maxey, *University of Rochester*
Terry McGillicuddy, *Cal Poly San Luis Obispo*
Steven Moorshead, *University of Texas*
Joshua Oropello, *University of Mary Hardin Baylor*
Carly Perin, UNC – *Chapel Hill*
Steve Pflipsen, *University of Colorado Boulder*
Kathy Pope, UNC – *Chapel Hill*
Zainudeen Popoola, *University of Nebraska/Lincoln*
Steve Porter, *Bethel University MN*
Michael Ramirez, *Michigan State University*
Mark Roach, *University of Virginia*
Patrick Robinson, *Oregon State University*
Mary Romano, *University of Colorado/Boulder*
Gina Kay Romero, *Baton Rouge Community College*
Ivan C. Rosado, *East Stroudsburg University*
Lynn Rotoli, *University of Pennsylvania*
Jacob Sabins, *Michigan State University*
Catherine Schainman, *The Catlin Gabel School*
Mark Seal, *Woodward Academy*
Bob Shrauner, *Metropolitan Community College Kansas City – Blue River*
Michael Simpson, *Potomac State College of West Virginia University*
Wayne Sippola, *Fanshawe College of Applied A & T*
Bill Skov, *Montana State University/Billings*
Zoe Stevens, *University of Michigan/Ann Arbor*
Bob Stilson, *University of Utah*
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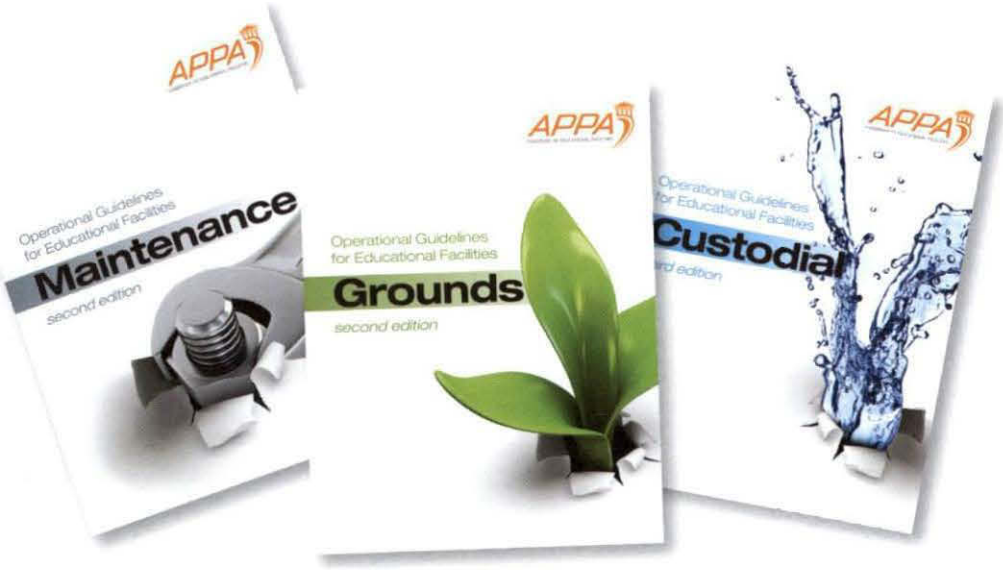

Most readers know that APPA publishes several books on subjects that are not available from any other source, and as such, are often recognized as authoritative works. This year, APPA published an update on their three staffing guidelines: Together, they are referred to as "The Trilogy."

As I was not directly involved in the editorial efforts, I feel sufficiently independent to review them. Of course, if you're looking for a completely unbiased perspective, you'll have to write your own review, which I will gladly accept and publish.

OPERATIONAL GUIDELINES FOR EDUCATIONAL FACILITIES: CUSTODIAL, THIRD EDITION

Alan S. Bigger, editor-in-chief, Casey J. Wick, Custodial Task Force Chair, APPA, Alexandria, VA, 2011, 356 pages, softcover, Member $85; Nonmember $110.

OPERATIONAL GUIDELINES FOR EDUCATIONAL FACILITIES: GROUNDS, SECOND EDITION

Alan S. Bigger, editor-in-chief, Thomas Flood, Grounds Task Force Chair, APPA, Alexandria, VA, 2011, 225 pages, softcover, Member $85; Nonmember $110.

OPERATIONAL GUIDELINES FOR EDUCATIONAL FACILITIES: MAINTENANCE, SECOND EDITION

Alan S. Bigger, editor-in-chief, Thomas Becker, Maintenance Task Force Chair, APPA, Alexandria, VA, 2011, 297 pages, softcover, Member $85; Nonmember $110.

All three guidelines have been updated to reflect recent issues such as sustainability, green practices, and benchmarking. Several of these topics were driven by reader feedback or the passage of time. Ten years ago, sustainability and green practices were not recognized topics despite APPA's leading efforts to accomplish essentially the same thing.

As with every new edition and changes in contributors, there are improvements to the previous materials. As I used the original guidelines (prior editions), it took some time to get oriented and understand the examples sufficiently to apply them to real-world conditions. Additionally, it was not as easy as I would have liked to refine the staffing recommendations from the guidelines for unique campus conditions, or to address special spaces that weren't specifically identified or described. In these new editions, however, the examples and materials to refine the results of the staffing tables for the unique conditions of each campus or facility are superior.

The new guidelines address the unique conditions that exist on every campus, and the contributors have provided numerous tools and examples to refine the analytical results from the staffing tables. For instance, if a campus does not have custodial staff relamp fixtures or dust blinds, there are clear examples of how to utilize the tables and make the customized adjustments for unique campus conditions. These adjustment methods have always been possible with the tabular information available, but these new examples make it clearer. There's less of a reason to hire a consultant to decipher the guidelines for specific, unique campus conditions.

The first difference I noticed between this edition of the *Custodial* guidelines and the previous one, were changes to the staffing matrix. Cleanable areas per custodian have increased by 10 percent or more. In at least one case, the increase has been 50 percent. While not addressed in detail, the changes in the cleanable areas is the result of the increased experience of the contributors to the guide, and changes in equipment and techniques. I didn't notice many changes in the staffing matrices for the other two guidelines.

New material on scientific methods to measure the effectiveness of custodial services is presented in a new chapter. While it is good to have the subjective evaluation materials provided in the appendix, discussion about objective tools to verify cleanliness helps a great deal when opinions vary, or when attempting to verify the effectiveness of new cleaning products.

The *Grounds* guideline provides significant new information about sustainability as well as green practices. Different approaches to reduce/reuse/recycle campus waste are presented. In addition, there is significant discussion about low- and zero-emission vehicles that can be used across the entire facilities organization, not just in grounds.

The *Maintenance* guideline changes are notable in the improved clarity of the analytical portions and in human resource management issues. While there are changes to the zero-based budget (ZBB) approach to determining staffing needs, the square-foot based approach is much clearer, with many more examples. These examples address a wide variety of facilities and configurations. They provide significant guidance to develop staffing needs down to the individual trade level for a single building. This new material should be helpful for anyone needing to answer the question, "How many more people will be needed to maintain a new facility?"

The position descriptions provided follow a uniform, clear format that focus on duties and qualifications that should be easily transferable to any campus. In addition, there's a section on career ladders for trades employees. For those of us with an interest in employee development, the chapter on career ladders is very helpful. This section is applicable across all portions of the facilities organization, with minor adjustments to address custodial and grounds needs.

Overall, all three guidelines represent a significant improvement over previous editions, and reinforce APPA's leadership in providing resources to facility officers that are not available elsewhere. These guides can provide any facility officer with sufficient fact-based information to describe to a supervisor, customer, or entire campus the 'what,' 'why,' and 'how much' of facility operations. The previous edition of the *Custodial* guidelines was recognized as an authoritative document by the USGBC (U.S. Green Building Council) because it is a reference for LEED-EB (Existing Building) certification. I assume the new edition will be recognized, as well. They all form an important addition to a facility officer's toolkit/bookshelf. These guides should not get dusty. Instead, I expect they will get dog-eared from lots of use.

Ted Weidner is assistant vice chancellor of facilities management & planning at the University of Nebraska – Lincoln; he can be reached at *tweidner2@unlnotes.unl.edu*.

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Editor-in-Chief: Alan S. Bigger, APPA Fellow

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Task Force Chair: Casey J. Wick, American International School/Dhaka

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Task Force Chair: Tom Flood, Elon University

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Task Force Chair: Tom Becker, Philadelphia University

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Diversey, Inc. introduces the TASKI(r) Swingo 150 an ultra-compact, upright auto scrubber ideal for congested areas and daytime cleaning. Because floors dry immediately with this machine, the risk of slip and fall accidents are significantly reduced, and high hygiene standards are maintained. It is an ideal replacement for manual floor mopping—handy like a mop, effective like a machine. For more information, please visit Diversey at *www.diversey.com/taski.*

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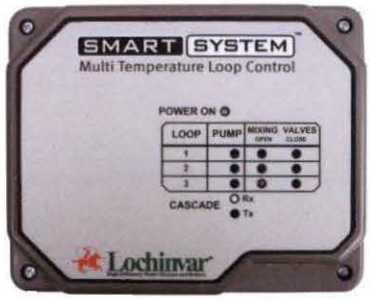
Kasco Manufacturing announces the new Herd Model 2011SCP Skid Steer Mounted Scoop & Spreader. This salt/sand scoop features a unique agitator system for efficient deicing and effectively spreading any combination of wet or dry sand, salt or calcium chloride. Handles capacities of 1200 lbs. wet sand or 12 cubic feet of material. The 2011SCP is easy to use; simply tilt the hopper forward, push it into the sand or salt until full, tilt back and spread the sand or salt. The salt/sand scoop features a universal skid steer attaching design for easy compatibility and security. Additional features include hydraulic motor drive with cable controls, 10 gauge steel heavy duty hopper with powder coated finish, 3/8" x 4" durable cutting edge and rugged top bar grate. For more information, please visit Kasco Manufacturing at *www.kascomfg.com.*

Calpipe Security Bollards has developed a line of lighted security bollards that provide illumination to direct vehicles, guide pedestrians and light walkways but are strong enough to prevent vehicle incursion. Calpipe Security Bollards offers customization of the lighted security bollards, making them for low to high security applications, and collaborates with project managers, architects and contractors from the design and specification stage through installation. Designated the SSL Series, the lighted security bollards

are constructed of an inner core of carbon steel to withstand high-speed impacts and an outer sleeve of Type 304 stainless steel for aesthetics and durability in harsh environments. For indepth information contact Calpipe Security Bollards at *www.calpipebollards.com*.

Lochinvar's latest innovation is the SMART SYSTEM™ Multi Temperature Loop Control (MTLC). Designed to simplify the integration of KNIGHT Heating Boilers into multiple temperature hydronic heating systems, this compact and attractive accessory accurately controls up to three separate space heating loop temperatures, while maximizing the efficiency of the heating boiler as a primary function. The new MTLC works in conjunction with the on-board SMART SYSTEM Control on all second generation floor-standing and wall-mount KNIGHT Heating Boilers for residential applications as well as KNIGHT XL Commercial Heating Boilers. For more information about Lochinvar and SMART SYSTEM™ visit *www.lochinvar.com*.



New Products listings are provided by the manufacturers and suppliers and selected by the editors for variety and innovation. For more information or to submit a New Products listing, e-mail Gerry Van Treeck at *gvtgvt@earthlink.net*.

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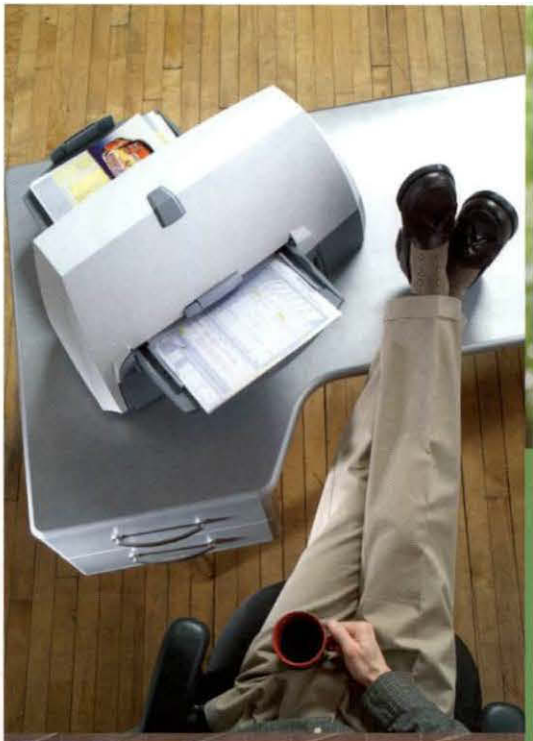

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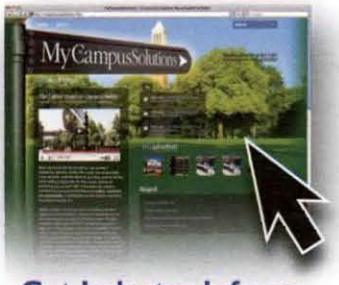

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