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INSIDE

Policy-Based Green Criteria

EPA's GHG Reporting Rule

NFPA's Churn Testing

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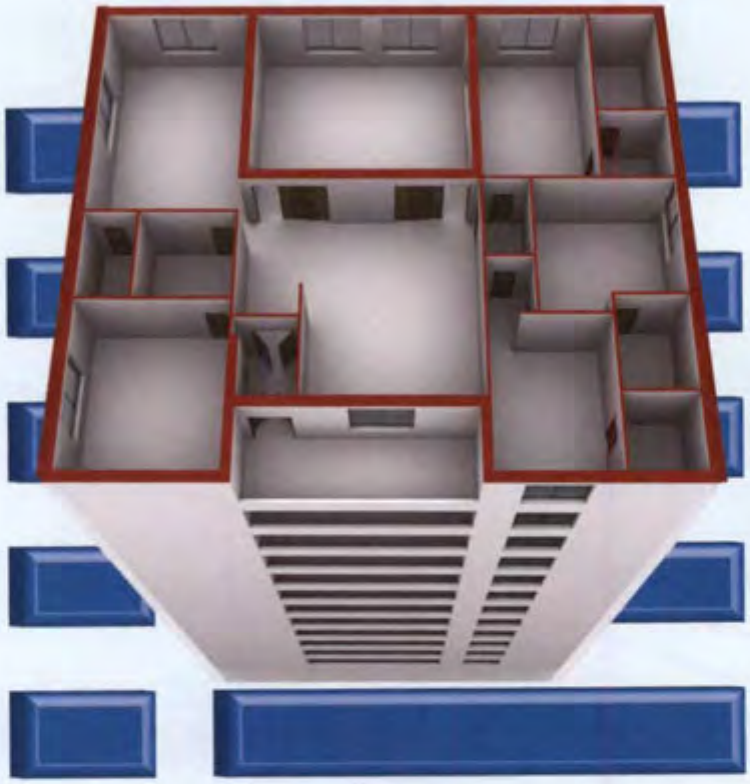

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POLICY & COMPLIANCE
for a Cleaner Campus

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The journey to a greener, more sustainable and energy-efficient campus includes student recycling programs, improved facility design standards, building metering systems, energy conservation efforts, food service modifications, and a greater awareness in general of the myriad ways to improve our campus environment.

But the journey also requires the setting of policy at the institutional, state/province, and national levels, as well as creating the legal mandates and code-required standards that we might otherwise decline to perform. Whether the reasons are budgetary, political, personal preference, or lack of knowledge, any number of environmental standards and polluting restrictions would simply not be followed if the rule of law did not require us to do so. You may quibble with specific laws and government regulations, but environmental progress in all areas won't occur voluntarily.

This issue of *Facilities Manager* takes a brief look at a couple of discreet areas of concern. Tony Cupido reports on his study of "green" policies from the institutional standpoint and shows that college and university administrators are still in the early stages of solid policy-making. Mitchell Wurmbrand and Thomas Klotz provide an in-depth assessment of the recent EPA Greenhouse Gas Reporting Rule and offer useful insight and recommendations. John Saidi and Rich Davis discuss the weekly churn testing requirement of the NFPA 25 standard for fire pumps.

Our final feature is a fun and informative history lesson from Fred Gratto on the development of the U.S. higher education system. In addition, we include an especially strong lineup of columnists on a variety of meaty subjects: Jack Hug on the "creeping crisis" of succession planning and leadership development within our organizations; Matt Adams on the "perfect university employee"; Michael Anthony and Jim Vibbart on innovation in code advocacy efforts; and Ted Weidner with another excellent slate of book reviews.

Finally, we want to remind you that the APPA 2010 conference will take place July 14-16 in Boston, Massachusetts. It promises to be an excellent program, and we urge all educational facilities professionals to join us in Boston. To register, visit *www.appa.org/training/APPA2010/index.cfm*.

Steve Glazner

Coming in May/June 2010

- Ethics in Campus Facilities
- Personal and Professional Accountability
- Scandal and Headlines
- 2009 Thought Leaders Report (Part 1)

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About APPA

APPA promotes leadership in educational facilities for professionals seeking to build their careers, stakeholders 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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Dues Notices

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The 2010-2011 APPA membership year begins April 1, 2010 and runs through March 31, 2011. Renewal notices and invoices were mailed in February to all APPA international and regional members. Please note that APPA now 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 2010-2011 officer elections.

Order BOK

APPA Institutional, Business Partner, Affiliate, and International members, please take note: Your dues renewal invoice includes an option to add a 12-month subscription to the APPA Body of Knowledge (BOK). This exciting new online service from APPA provides 24/7 access to the ultimate source of information and learning for the education facilities professional. The basis for the BOK is the popular APPA publication entitled *Facilities Management: A Manual for Plant Administration* – APPA's major reference books published in three editions since 1984. The paid subscription makes the BOK accessible to anyone at your institution or organization for 12 months. Please visit *http://appa.org/bok/* for more information about this new APPA resource.

2010-2011 CANDIDATES FOR APPA OFFICE

The Nominating Committee, led by Immediate Past President Bill Elvey, is pleased to present the selected slate of officers for the 2010-2011 elections:

President-Elect:

David Gray
Middle Tennessee State University
SRAPPA

David Millay
University of Arkansas at Little Rock
CAPPA

VP for Information and Research:

Darryl Boyce
Carleton University (ON)
ERAPPA

Randolph Hare
Washington & Lee University (VA)
SRAPPA

VP for Professional Development:

Shawna Rowley
Weber State University (UT)
RMA

Glenn Smith
Bryn Mawr College (PA)
ERAPPA

Dr. Jewell Winn
Tennessee State University
SRAPPA

Voting is scheduled to begin in early April 2010 and will be open to primary/institutional representatives. Those eligible to vote will be able to do so online, or via paper ballot.

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 notice. If you wish to change the person listed, contact Santianna Stewart, membership & outreach manager, at 703-684-1446 ext. 246, or at *santianna@appa.org*.

Additionally, APPA is scheduled to hold a webinar, allowing the candidates more exposure and interaction with the members. Please look for details, updates, and additional information on the APPA website, via e-mails, and in *Inside APPA*, APPA's biweekly e-newsletter.

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

APPA'S NEW ONLINE DIRECTORY

APPA's new online membership directory is updated on-the-fly so you'll always have the latest and most current contact information on your friends and colleagues.

The directory is accessible online to all members, and includes links to all of the information you're used to accessing through the prior directories, such as APPA programs, leadership information, APPA awards, and staff contacts. Search the directory by logging into myAPPA at *www.appa.org*.

BOK – APPA'S BODY OF KNOWLEDGE NOW AVAILABLE!

BOK

Body of Knowledge

The BOK [*pronounced B-O-K, not Bock*] is APPA's ongoing Body of Knowledge project, and we are excited to announce that the BOK has been released digitally through the APPA website.

A body of knowledge is the collected wisdom, experience, processes, and facts that both inform a profession and provide the solid foundation from which continuous improvements and innovative change can occur. APPA's Body of Knowledge updates and builds upon the contents of *Facilities Management: A Manual for Plant Administration* — APPA's major reference book published in three editions since 1984 — and makes them available in a searchable digital database at *www.appa.org/bok*.

Editor-in-chief Maggie Kinnaman is overseeing dozens of writers, editors, and peer reviewers as they revise, update, and enhance the APPA body of knowledge. The project is ongoing, and updated sections will be posted as soon as they are peer reviewed and approved. Access to the Body of Knowledge is through an annual subscription. Member institutions of APPA pay a discounted price, and the subscription price is reduced after the first year. Your subscription allows BOK access to anyone in your organization. In addition, you will be automatically subscribed to receive *BOK Update*, a periodic e-newsletter that will include highlights and topics of focus from the BOK's editor-in-chief and content coordinators, announcements of new or revised BOK chapters, and much more.

- $199 - APPA member institutions, organizations, and business partners
- $499 - Nonmember institutions, organizations, business partners, and individuals

APPA 2010 – REGISTRATION NOW OPEN

Join your facilities colleagues for the annual industry event presented by APPA that you can't afford to miss. Visit us today at *www.appa.org/training/APPA2010* for the latest on speakers, programming offerings, and check out the business partners are supporting us this year!

Remember July 14-16 Boston, Massachusetts – The Seaport Hotel – register today and book your travel early. For questions and inquiries, contact the Professional Development team at *education@appa.org*.

APPA EVENTS – 2010

Apr 18-19 Selling Yourself and Your Organization, *Colorado Springs, Co.*

Apr 18-22 Leadership Academy, *Colorado Springs, CO*

Apr 18-22 Supervisors Toolkit, *Colorado Springs, Co.*

Apr 22 Execution at the Speed of Trust, *Colorado Springs, Co.*

Apr 23 EFP Prep Course, *Colorado Springs, CO*

Apr 23 EFP Exam, *Colorado Springs, CO*

Apr 23 CEFP Exam, *Colorado Springs, CO*

Apr 24 EFP Examination, *Colorado Springs, CO*

Jul 14-16 APPA 2010, *Boston, MA*

Jul 17 EFP Prep Course, *Boston, MA*

Jul 17 EFP Exam, *Boston, MA*

Jul 17 CEFP Exam, *Boston, MA*

Jul 18 EFP Examination, *Boston, MA*

Sep 12-16 Institute for Facilities Management, *Scottsdale, AZ*

Sep 17 EFP Prep Course, *Scottsdale, AZ*

Sep 17 CEFP Exam, *Scottsdale, AZ*

Sep 17 EFP Exam, *Scottsdale, AZ*

Sep 18 EFP Exam, *Scottsdale, AZ*

OTHER EVENTS

Mar 21-23 Smart & Sustainable Campuses Conference, *College Park, MD*

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

THE 2008-09 FPI REPORT & EXECUTIVE LEVEL DASHBOARDS ARE SOON AVAILABLE!

The 2008-09 Facilities Performance Indicators Report is available at no cost to all APPA members who participated in the survey, or for purchase through the APPA website for all others. The newly enhanced report is based on an extensive data collection effort (over a 75 percent increase over last year) for the 2008-09 fiscal year. Anyone with access to the 2008-09 Web-based FPI report will be able to view data from 2008-09, 2007-08, 2006-07, 2005-06, and the new set of Executive Level Dashboards.

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

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 newly created Executive Level Dashboards as well as the newly enhanced Executive Level Presentation and Report Dashboards. The report will be available this spring.

FPI

Tracking Your Facilities Vital Signs

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 existing and upcoming FPI Report webinars.

PROFESSIONAL DEVELOPMENT

Supervisor's Toolkit (Cosponsored by RMA)

April 18-22, 2010
Tuition: $825 per person
CEUs: 3.0 Units Available
PDHs: 30 Hours Available

The educational facilities workplace has been transformed in recent years by a variety of forces. Intense competition, advancing technology, changing values, and a global economy have created new possibilities as well as challenges. This transformation is changing the nature of management and the roles of supervisors. Supervisors must develop a systematic approach toward organizing, managing, motivating, and meeting customer expectations. The traditional role of the supervisor/manager is no longer adequate. The new business environment demands leadership. Register your employees today for this ever popular professional development offering that give a supervisor at any level exactly what they need!

Selling Yourself & Your Organization

April 18 – 19, 2010
Tuition: $395 Members / $595 Nonmembers
CEUs: 1.25 Units Available
PDHs: 12 Hours Available

Learn how to get to "yes" with your requests. Whether it's trying to convince your board of directors that deferred maintenance is really a big deal or that additional money spent on the new science building's HVAC system will have a significant life-cycle payback, or trying to convince your boss that additional grounds keepers will boost admissions, getting your point across clearly, succinctly and convincingly is critical to the success of your department's efforts. Just how do you go about identifying needs and perceived/real benefits? How can you be convincing, presenting information that your boss and your board will relate to? Who are your sponsors and champions? What is "board speak"? Come to this highly interactive day and a half session. Learn from the trainers and yourselves and contribute your insights about getting to "yes" with your requests. It won't be dull!

Execution at the Speed of Trust

April 22, 2010
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Trust-related problems like redundancy, bureaucracy, fraud, and turnover put the skids on productivity, divert resources, squander opportunities, and chip away at a company's brand. On the other hand, leaders who make building trust an explicit goal of their jobs elevate trust to a strategic advantage—accelerating growth, enhancing innovation, improving collaboration and execution, and increasing shareholder value. Join us for this highly interactive workshop that engages leaders at all levels in the real work of identifying and closing the trust gaps that exist in your organization. This one-day session will allow you to:

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APPA BOOKSTORE

New APPA Publication! Coming in April!

Strategic Capital Development: The New Model for Campus Investment

by Harvey H. Kaiser and Eva Klein

APPA's newest book, *Strategic Capital Development: The New Model for Campus Investment*, presents a bold approach for planning capital investments from a strategic and long-range perspective. The authors combine their extensive higher education experience, and their specific work of the last decade to improve capital planning and decision-making, to make a case for a new model in which they seek to balance idealism with pragmatism. They define stewardship principles necessary to create and sustain a physical plant that is responsive to institutional strategies and functions; remains attractive to faculty and students; and optimizes available resources.

The book is organized into three parts:

- Part 1—provides a summary of how capital planning and funding practices in higher education have evolved from the late 1940s to the present—including case studies of relatively more effective planning models.
- Part 2—makes the authors' case for why change is needed, based on examination of environment/context factors, and articulates six key principles for 21st century facilities stewardship—the foundation for the model.
- Part 3—provides the proposed model, based on the observations and conclusions in Parts 1 and 2. Following the model overview, Part 3 provides practical, hands-on, how-to details of methodologies and data requirements, along with illustrations of many of these elements.

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Professional Development Through APPA's Facilities Management Evaluation Program

By E. Lander Medlin

In a striking metaphor, the French philosopher Antoine de St. Exupery wrote: "If you want to build a ship, don't drum up men to go to the forest to gather wood, saw it, and nail planks together. Instead, teach them a desire for the sea." This is exactly what APPA offers its qualified evaluators who provide an institutional assessment utilizing APPA's Facilities Management Evaluation Program (FMEP) review criteria. By becoming a qualified FMEP evaluator, they understand what comprises an excellent facilities organization. The evaluator gains an in-depth knowledge and understanding of the seven-section criteria and its 57 subsections, which are all part of an integrated system to optimize organizational performance. These criteria not only provide a tool for organizational continuous improvement, they serve as a compelling leadership development tool essential for today's facilities management professional.

The facilities management profession has become more complex than ever before and the challenges of meeting—better yet, exceeding—customer demands 24/7 seem daunting at times. We are living in an environment of increasingly, if not rapidly, diminishing resources that will require our best efforts to do our work as efficiently and effectively as possible. And we need not only to do things right, but consistently and predictably to do the right things.

The problems surrounding our institutions and the facilities organizations themselves are mounting and we must be part of the solution. This will require increased levels of productivity and accountability that are in alignment with the institution's vision, mission, and strategy. Ernest Boyer (a former higher education institution president) once stated, "Good facilities are essential to good learning." Therefore, as leaders in educational facilities, it is incumbent upon us to demonstrate that enhanced facilities positively impact the retention and recruitment of students and faculty. Assessing how a facilities organization measures up is captured in the FMEP set of criteria. Whether engaging in a formal FMEP or not, utilizing this set of criteria for developing strategic action plans and annual assessments is critical.

IF ORGANIZATIONS ARE TO CONTINUOUSLY IMPROVE OVER TIME, THEY NEED A SET OF CRITERIA ESTABLISHED BY A THIRD-PARTY ORGANIZATION, SET AS A PROFESSIONAL GUIDELINE OR STANDARD FOR EXCELLENCE.

THE FMEP – A CUSTOMIZED EVALUATION

So what is a FMEP and what does it seek to achieve? The APPA FMEP is a comprehensive evaluation of the quality of the facilities organization and its delivery systems at educational institutions performed by high quality educational facilities professionals. Thus, the FMEP provides institutions with a customized evaluation conducted by a team of institutional peers across a comprehensive, defined set of criteria. The evaluation team is hand-picked so that each institution is evaluated by a select group of peers from campuses sharing similar education, financial, and physical characteristics. Because each FMEP is customized and tailored to the specific institution for which it is conducted, the resulting report consists of feedback and recommended actions that are personalized to each institution and designed to help transform participating educational facilities programs into those worthy of international recognition. Further to the point, the FMEP criteria and the criteria that are utilized to evaluate institutions that apply for the APPA Award for Excellence in Facilities Management are the same.

If organizations are to continuously improve over time, they need a set of criteria established by a third-party organization, set as a professional guideline or standard for excellence. In the private sector, the Baldrige National Quality Program Criteria for Performance Excellence is well known as such a tool. APPA has patterned its evaluation criteria after this model encompassing similar core values and concepts such as: visionary leadership, customer-driven excellence, organiza-

tional and personal learning, valuing employees and partners, agility, focus on the future, managing for innovation, management by fact, social responsibility, focus on results and creating value, and a systems perspective.

The FMEP represents a system approach whereby all 57 performance-oriented requirements are incorporated within a set of seven criteria or categories:

- leadership
- strategic and operational planning
- customer focus
- information and analysis
- development and management of human resources
- process management, and performance results.

This integrated system embraces the central idea that "it is not possible to achieve excellence by only doing some of the things that are easy and ignoring the rest." These core values and performance criteria describe the organizational environment that we must create today and they are comprehensive enough to cover all aspects of leading and managing in the facilities management profession.

ACTIVE INVOLVEMENT AND SITE VISITS

When an institution chooses to undertake the Facilities Management Evaluation Program, they generally form a team representing a broad spectrum of their staff to assist in the development of their self-assessment/self-evaluation report. This is an important element in the overall success of the review. When individuals within the organization are actively involved in the process of formulating the department's initial self-assessment, they have a greater understanding of the importance of the criteria and its associated processes, are more engaged during the site visit interviews, and are more apt to buy into implementing the organizational changes identified within the final report. In addition, the self-assessment report serves as the basis for the FMEP evaluation review team to conduct their site visit.

The site visit allows the team the opportunity to assess first-hand how well the organization is performing against their own self-evaluation and conduct interviews with a broad range of the department's stakeholders. Once the site visit is completed and an exit interview occurs with the institutional contact(s), the evaluation team prepares a thorough, final report that provides recommendations for strategic organizational improvement in the department's program delivery and core business processes. Most organizations take the recommendations from the final report and formulate a departmental strategic plan to progress the facilities function in alignment with the recommendations and APPA standards.

www.appa.org/fmep

Again, it takes excellent leadership and professional management by facilities professionals to achieve this end. Clearly institutions continue to have challenges recruiting quality, multi-talented staff. Yet, at a minimum, we must ensure that our existing staff is well-trained and developed. What better way to do this than utilizing the FMEP criteria.

There are a number of ways the FMEP can offer the organization's existing staff with opportunities for growth and development. First, engage APPA to perform an FMEP for their organization. Second, seek to become a qualified evaluator by attending APPA training workshops (offered next at the APPA 2010 conference in Boston July 14-16, 2010) and agreeing to be a team evaluator when called upon to do so. Third, utilize the FMEP criteria as a tool for internal organization analysis and assessment. In other words, the senior facilities officer can utilize this well-designed set of performance criteria, measures, and metrics to establish a pathway for staff development and organizational continuous improvement whether formally delivered or informally applied. Utilizing the FMEP throughout the organization helps the SFO engage their staff in professional development opportunities necessary to their growth and development by virtue of their engagement in the process and seeking the desired outcomes to achieve overall success.

PEOPLE MAKE IT HAPPEN

Further, without good people it is practically impossible to ensure good facilities. Someone recently said to me, "It's the human networks, not the computer networks, that make things happen." Indeed, the delivery of good facilities management is enhanced by powerful computer-based tools and techniques. However, it takes good, well-trained facilities professionals with strong management and leadership skills training and development.

Ultimately, it is a facilities professional's role and responsibility to provide stewardship of the physical assets entrusted to him or her. Stewardship defined as "the conducting, supervising, or managing of something, especially the careful and responsible management of something entrusted to one's care." We talk about stewardship a great deal, but it is really not well-understood by the institutional leadership, much less regularly practiced. Improving this understanding of the criticality of everyone's responsibility for stewardship of our facilities starts with education and constant communication by the facilities professional and ends with delivering the goods—well-managed, well-maintained facilities performed by facilities professionals. Utilizing the FMEP criteria to establish solid organizational performance will go a long way to establish your organization as that credible steward of the institution's physical resources.

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

How Big Are Your Shoes?

By Suzanne Healy

"After 25 years of service to our university community, today we thank Martin for his dedication to the department, university and the community. He has worked with his staff to ensure a solid seamless transition. For a number of years the department has been benchmarking development opportunities to capture the skills needed for the next five to ten years. His team is well positioned to succeed as changes are on the horizon. Martin, on behalf of the university we wish you much health and happiness as you move onto your next adventure."

Hmmm .... What will they say when it is your turn? How prepared is your team to be able to lead when you are ready to start your next adventure? Do you have a plan in place? Are you ensuring that your team is positioned to handle the changes that are on the horizon? **How big are your shoes?**

Every organization knows that the key to their success is the people that make up the team. The leaders of these successful organizations know that one of their critical tools to ensure a top notch team is to have a solid succession plan in place, and understand the various elements that comprise this plan. In today's environment, the most critical element of succession plans is to maximize the value of industry standards such as the Educational Facilities Professional (EFP) and Certificated Educational Facilities Professionals (CEFP) offered by APPA. The successful facilities leader will embrace the value of these industry setting credentials and ensure that they become the fabric of their department's succession plan for success.

Individuals who are provided the opportunity to participate in a certification program such as APPA's EFP and CEFP position themselves to demonstrate their knowledge of the facilities industry standard. Department leaders can see that earning these credentials allow individuals to demonstrate the foundational knowledge, talent, and skills that they have in the profession; demonstrate their commitment to growth and the value seen in the importance of preparation to exhibit their mastery in the profession; and reminds leaders that credentialed employees are more competitive and desirable. Investment in certification by you, the leader, is the most important decision that can be made to implement a successful succession plan, and ensure your team is positioned to handle challenges after your new adventure begins.

MAKE THE INVESTMENT IN PROFESSIONAL DEVELOPMENT, THUS ALLOWING THE RETENTION OF GOOD EMPLOYEES.

But with all the 'important' and 'critical' needs that go into the creation of a good implementable succession plan, where to do you begin? Begin at the beginning. Assess your aging workforce and identify your current leaders. Develop a benchmarking tool that allows these upcoming leaders to develop as qualified employees, and assess their skills. Make the investment in professional development, thus allowing the retention of good employees. Remembering that one of the easiest tools to capture it all, is setting the benchmark – EFP or CEFP: where are your staffers making the grade?

Assess – Develop – Implement. You are at the crossroads. It is your time to take ownership in the development of a succession plan, by setting an example for your colleagues. You must establish a professional development plan that ensures the success of your employees. It's the commitment that speaks volumes – certify your staff today!

"Today's meeting is meant to allow me to share with you that changes are on the horizon. After 24 years at the university, I have decided that this will be my last year. As we begin this final chapter together here on campus, we will begin to make changes in training, departmental positioning among our colleagues, and we will begin to participate in the APPA EFP and CEFP program. I have conferred with some of the other directors and we have produced the following list of those who we feel should begin to pursue this newly formed industry credential. Let's begin ...."

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

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Using FPI Survey Results to Paint a Picture of our Profession

By Maggie Kinnaman

Tracking Your Facilities Vital Signs

As we become more mature in our data collection, we are constantly reviewing and correcting prior logic. One such correction affects the previously published Knowledge Builders article published in the September/October 2009 *Facilities Manager* magazine. In that article we reported the following:

IS MY INSTITUTION MAKING THE RIGHT INVESTMENTS IN OUR EXISTING BUILDINGS, INFRASTRUCTURE, AND ACADEMIC PROGRAMS?

The average useful life of our buildings is 54 years for the 225 participants of the 2007-2008 Facilities Performance Indicators (FPI) survey. This is how long our buildings support the academic programs. This would require a minimum investment of 1.85 percent of CRV each year in order to properly invest in our facilities. Our institutions invested 1.9 percent of CRV for a net positive investment of .05 percent.

Our participants Facility Condition Index (FCI) is 9.4 percent and the Needs Index is 20.4 percent. Remember that the difference between FCI and Needs is the inclusion of renovation, modernization and plant adaptation in the Needs Index. As a profession, our 2007-2008 survey results are telling us that 20.4 percent of our campus space does not optimally support the academic program.

In the process of designing the 2009 FPI survey we found an error in calculation that affects the formulas used in generating the FCI index. FCI Index should include all of the plant related needs for an institution and this was not the case. The FCI formula moving forward has been corrected and therefore in order to get the trends for our profession correct, we want to correct our article and the FCI reported. Instead of 9.4 percent as reported that number should be 15.6 percent. The Needs Index of 20.4 percent remains unchanged. So what this tells us is that on average 15.6 percent of our institutions backlog (76 percent) is related to plant and 4.8 percent is related to academic program.

Due to the publishing deadlines we were not able to correct our article in time, but the correction is so-noted moving forward. We regret the need for this correction but wanted to ensure that we got our baseline FCI correct so that we're able to track our progress moving forward.

Past APPA President Maggie Kinnaman is the editor-in-chief for APPA's Body of Knowledge (BOK). She can be reached at *maggiekinnaman@comcast.net*.

2008-09 FPI Report Available at:
www.appa.org/research/fpi.cfm

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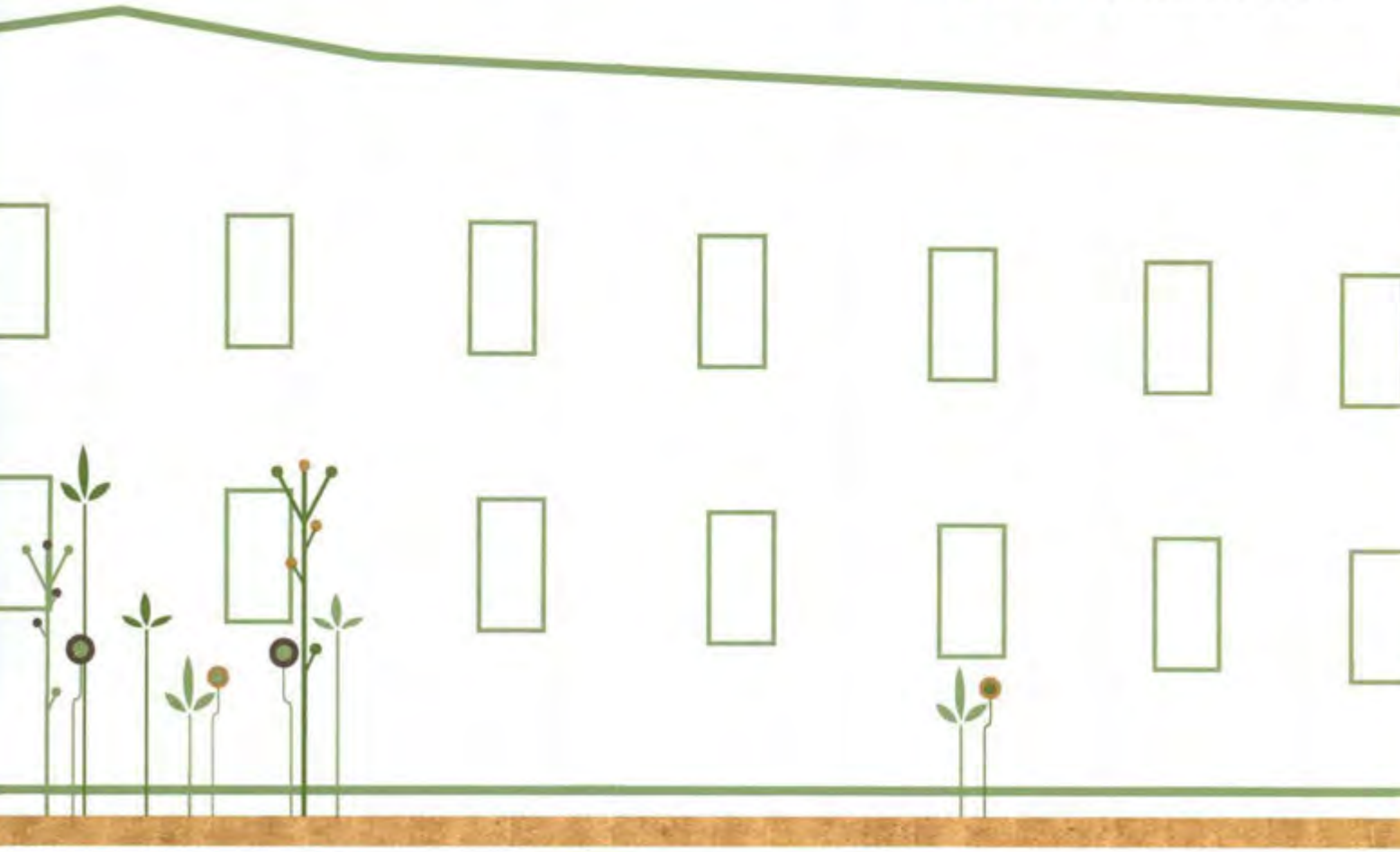
the development and application of policy-based tools for institutional

GREEN BUILDINGS

By Anthony F. Cupido, P.Eng.



IN 2008, APPA forwarded a Web-based survey on my behalf to all designated representatives of APPA member institutions. The purpose of the survey was to determine if institutional policies are an important criterion for an institution's sustainable building practices and the use of Leadership in Energy and Environmental Design (LEED®). Initiating this survey through APPA's Center for Facilities Research (CFaR) provided an opportunity to expand and strengthen the facilities body of knowledge, as well as engage members in groundbreaking research regarding green building policies in the United States and Canada.

The research consisted of the comprehensive quantitative survey and qualitative follow-up interviews with 24 individuals who volunteered to participate with additional detailed questions. The number of interviewees was selected to ensure that four members in each of APPA's six regions were chosen to give a geographical balance across the United States and Canada.

The survey evaluated the institution's use of a policy, guideline, standard, law, or goal related to sustainable building practices and the interviews provided an opportunity for the researcher to qualitatively explore and supplement components of the survey and to gain greater insight as to the strategic application of sustainable facility initiatives at their respective institutions.

It is recognized that senior facility professionals, by the very nature of their position and its corresponding autonomy and authority, provide leadership and play a key role during the planning, design, and construction of new buildings and major renovations at their respective campuses. They perhaps have the most strategic impact and influence on the achievement of sustainable outcomes for these new facilities and are charged with the ongoing operation and maintenance of the building after the construction process.

While there has been excellent research on policy options in the broader public sector in the United States, to date no overview has been conducted within higher education applications amongst senior facility professionals in the context of green building policies and their development and application along with the corresponding use of LEED.

PRINCIPLE FINDINGS AND OUTCOMES

Facility Leadership

In a recent case study on green buildings at an Ontario university, it was concluded that strong university leadership is necessary to champion green buildings and this leadership needs to come from those on campus who have decision-making authority for new building construction. As well, this leadership is tied to the successful implementation of green building policies and it was acknowledged that if the administration at this particular campus looked at green buildings as an opportunity to showcase its innovation to incoming students, this may attract and retain additional students and faculty to the campus.

The following principle research findings and outcomes are noted:

- Follow-up interviews confirmed that senior facility professionals are playing a key role in policy and non-policy development at their respective institutions. As well, they are becoming more informed about the benefits related to sustainable initiatives and building operating costs.
- Respondents also recognized the important role that students are playing by influencing administration to move toward more sustainable initiatives.
- An outcome of the qualitative follow-up interviews was the acknowledgment by the participants that when asked about the development of their institution's tool or instruments for green buildings, 19 of the 24 participants indicated that they were either the driving force or major influence behind the document.
- This fact speaks to the leadership provided by these senior facilities officers. As well, many indicated that they were active members and participants in administrative committees for sustainability, environmental and/or a green building team.

POLICY AND NON-POLICY COMPLIANCE

A specific focus of the follow-up interviews was to ask participants whether or not their institution was complying with their sustainable policy or their guideline, standard, law, or goal. Nine of the participants work with institutions that are guided by state or provincial legislation, while 15 are not. In each case, an institution that is guided by policy or legislation has complied with the policy or legislation (and reached their LEED target) for their new buildings or have acknowledged that they are utilizing the policy or legislation for the first time on their first building and intend to comply.

Ten institutions reference or are impacted by state or provincial legislation. With the exception of one state, all legislation originates from "western" states or provinces.

As well, the fact that ten institutions are seeking their first LEED certification is testimony to the newness of the process for many.

BARRIERS TO ADOPTING A POLICY

A key research initiative for this paper was to identify barriers to adopting a sustainable building policy. While most of the respondents are taking some initiative to promote sustainable buildings and practices, they are doing so with non-policy tools or instruments that are not mandatory at their institution. When asked in their opinion what the barriers to adopting a policy were and to what extent did they agree or disagree with a list of possible barriers, the following principal responses were received in the rank order:

- Consulting and other costs to apply for LEED registration and designation
- Green buildings are more expensive than traditional buildings
- A guideline or standard is sufficient to meet the intent
- A policy would limit their flexibility on a given project
- No one has taken the time or made the effort to draft a policy
- State or provincial law supersedes a need for a policy.
- Follow-up interviews reinforced these results amongst those institutions that did not have a policy.

WHILE MOST OF THE RESPONDENTS ARE TAKING SOME INITIATIVE TO PROMOTE SUSTAINABLE BUILDINGS AND PRACTICES, THEY ARE DOING SO WITH NON-POLICY TOOLS OR INSTRUMENTS THAT ARE NOT MANDATORY AT THEIR INSTITUTION.

GREEN BUILDING COSTS

The cost of incorporating sustainable design features in building projects has been a subject of discussion and argument amongst institutional facility professionals on both sides of the U.S.-Canadian border for many years. Several survey respondents, who participated in the follow-up interviews and have been in their roles as facility professionals for more than a decade, and acknowledged that the cost of providing sustainable design features into their new buildings has been offset by improved operating costs since the late 1980s. These costs not only included energy costs but maintenance costs as well.

POLICY TEMPLATE

A second research objective for this paper was to develop a sustainable building policy template for other institutions to utilize for their policy development process. A review was performed of eight sustainable policies gathered from interview participants who indicated that their institution had such a policy. As well, a review was completed of 33 known sustainable/green building policies, guidelines, and/or standards of institutions that have these documents identified through the listings of the U.S. Green Building Council and the Association for the Advancement of Sustainability

in Higher Education. Almost 90 percent of the survey respondents acknowledged that a green building/sustainable building policy template would be considered a valuable tool for implementing a policy at their institution. Interview participants without a policy also acknowledged their desire for such a template.

CONCLUSION

Using a mixed-methods approach has provided clear evidence that higher education institutions are contributing to the growth in sustainable practices in higher education and that the facility professionals are contributing to the much needed leadership in this field. Campus sustainability should not be an isolated initiative divorced from such areas as facility operations, maintenance, and capital renewal. The integration and balancing of these areas are often overlooked pieces to sustainability. Facility professionals should be major contributors to developing any large-scale sustainability program on campus.

Previous research, along with the findings in this paper, indicates that policy development and application is an important component of sustainability in higher education. Institutions that have implemented sustainable/green building policies for their new buildings or major renovations are exhibiting policy compliance and meeting their LEED targets, while some institutions that utilize non-policy practices are not complying.

Provincial and state legislation appears to support higher education sustainable initiatives and is the catalyst to compliance for some as exhibited in the western regions of APPA. The findings also confirm that the motivator for many institutions with a policy is assured lower building operating costs. It is hoped that the developed policy template will provide some institutions with the incentive and framework to move forward with the creation of their own sustainable building policy and the use of the LEED building assessment rating system. The high percentage of participants requesting a policy template is testimony to the need for such a template.

Tony Cupido is the assistant vice-president of facility services and a Ph.D. candidate with McMaster University in Hamilton, ON. He can be reached at *cupidot@mcmaster.ca*. His research has been peer reviewed through CFaR, and the research paper has been approved for publication in the Winter 2010 edition of the *Journal of Green Building*. The author thanks APPA for its cooperation regarding this research initiative and to the members who contributed to the data. His full research report can be found at *www.appa.org/research/cfar/completed.cfm*.

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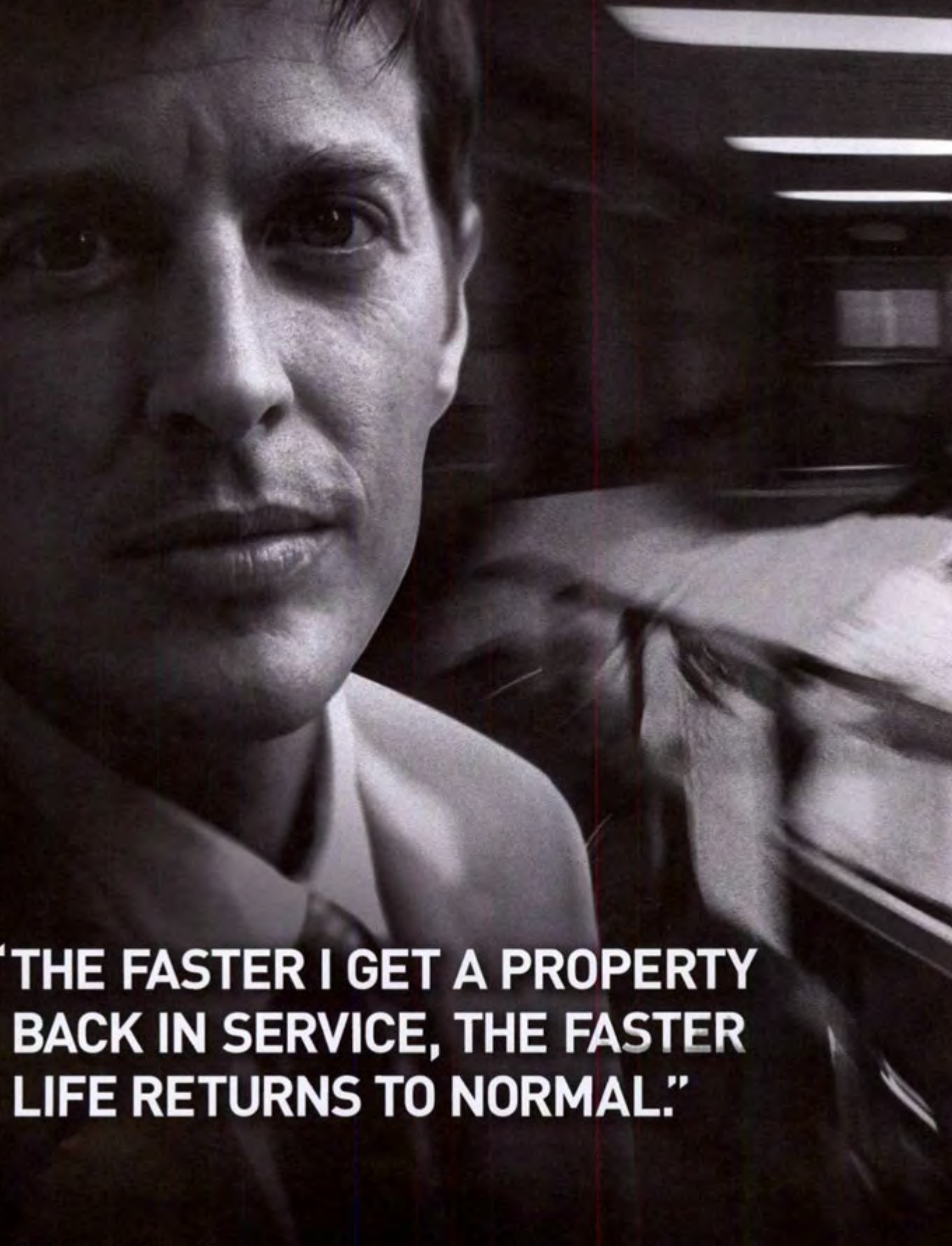
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Greenhouse Gas Emissions

from Educational Facilities and the EPA Greenhouse Gas Reporting Rule

Actions You Need to Take Now

By Mitchell M. Wurmbrand, CCM & Thomas C. Klotz

On September 22, 2009, The United States Environmental Protection Agency (EPA) issued its final rule on greenhouse gas (GHG) emission reporting. The informational literature that EPA has published to support the rule clearly states that EPA believes the vast majority of smaller GHG-emitting facilities, such as educational facilities, will not be required to report. Is EPA's assertion correct? Well, maybe. Before we attempt to answer that question, let's discuss how this rule came to be.

RULE DEVELOPMENT

Hidden away in the fiscal year 2008 Consolidated Appropriations Act, signed on December 26, 2007, was a provision for funding for EPA to develop a rule "to require mandatory reporting of greenhouse gas emissions above appropriate thresholds in all sectors of the economy of the United States." On April 10, 2009, EPA proposed the mandatory GHG reporting rule. During the official 60-day comment period and beyond, EPA held public hearings, received nearly 17,000 written comments, and met with 4,000 people and 135 groups. A little over five months after publishing the proposed rule, EPA issued its final rule on mandatory GHG reporting on September 22, 2009. The rule was published in the *Federal Register* on October 30, 2009 and went into effect 60 days later. The details of the mandatory GHG reporting rule can be found at 40 CFR 98.

The purpose of the rule is to provide EPA with the data needed to make future policy decisions regarding GHGs and climate change under the Clean Air Act. Accordingly, we expect that there will be a whole host of EPA regulations governing GHG emissions to follow. Some of these likely future regulations and legislative initiatives will be discussed later in this article.

RULE APPLICABILITY

Reporting requirements under the final rule will apply to certain fossil fuel and industrial gas suppliers, manufacturers of vehicles and engines outside of the light-duty sector, and certain downstream facilities that emit greenhouse gases (facilities emitting 25,000 metric tons per year of carbon dioxide equivalent ($mtCO_2e$) of GHG emissions). EPA estimates that at the 25,000 $mtCO_2e$ threshold approximately 10,000 facilities and 85 percent of total U.S. GHG emissions will be covered by the rule.

The rule defines a "facility" as "any physical property, plant, building, structure, source, or stationary equipment located on one or more contiguous or adjacent properties in actual physical contact or separated solely by a public roadway or other public right-of-way and under common ownership or common control, that emits or may emit any greenhouse gas." An educational institution that consists of several structures is considered a single facility if the structures are located on contiguous or adjacent properties and are under common ownership or common control. Note that the buildings do not have to be connected by walkways, tunnels, or pipelines to be considered a single facility. Even if the structures are separated by a public road, they would still be considered to be contiguous. This definition certainly broadens the scope of the reporting rule and differs from how a facility may be defined under other environmental and Clean Air Act regulations.

Nowhere in the rule are educational facilities specifically mentioned as being subject to reporting requirements. So where's the catch? Clearly, educational facilities are not among the source categories listed in Part 98.2(a)(1) or (2) of the rule. It is likely, however, that many educational facilities operate stationary fuel combustion units that are listed in Part 98.2(a)(3) of the rule. And that's the catch! A stationary fuel combustion source is a device that combusts any solid, liquid, or gaseous fuel generally to produce electricity, steam, useful heat, or energy for industrial, commercial, or institutional use or reduces the volume of waste by removing combustible matter. These devices include, but are not limited to, boilers, engines, process heaters, combustion turbines, and incinerators. The rule excludes portable equipment, emergency generators, emergency equipment, agricultural irrigation pumps, hazardous waste combustors (except for co-fired fossil fuels), flares, and research and development activities. EPA has not set a minimum heat input capacity level below which a stationary fuel combustion unit does not have to be included in a facility's calculation of annual GHG emissions. As a result, every piece of non-excluded, fossil fuel-fired stationary equipment, regardless of size, must be accounted for. This includes devices such as space heaters and rooftop units that burn fossil fuel.

Table 1. Annual GHG Emissions by Fuel Type and Quantity

Fuel Type	Annual Fuel Consumption	Annual GHG Emissions
Natural Gas	459,000,000 scf	25,018 $mtCO_2e$
No. 2 Fuel Oil	2,450,000 gallons	25,027 $mtCO_2e$
No. 6 Fuel Oil	2,220,000 gallons	25,029 $mtCO_2e$

For educational facilities that operate stationary fuel combustion sources, the rule requires the facility to determine if it emits 25,000 $mtCO_2e$ or more from stationary combustion in any calendar year starting in 2010. If so, the facility must report emissions from stationary fuel combustion devices only. However, if the maximum rated heat input capacity for all stationary fuel combustion equipment combined is less than 30 million British thermal units per hour (Btu/hr), then the facility is presumed to emit less than 25,000 $mtCO_2e$, and the facility does not have to calculate or report emissions. If a facility has an aggregate maximum rated heat input capacity equal to or greater than 30 million Btu/hr, then the facility will need to complete further calculations to determine if it meets the threshold for reporting. It is likely that many educational facilities operate stationary fuel combustion equipment that have a combined maximum rated heat input capacity that is greater than 30 million Btu/hr. This

means that those facilities will, at a minimum, have to calculate their historical annual CO_2e emissions to see if the facility can be expected to exceed the GHG threshold.

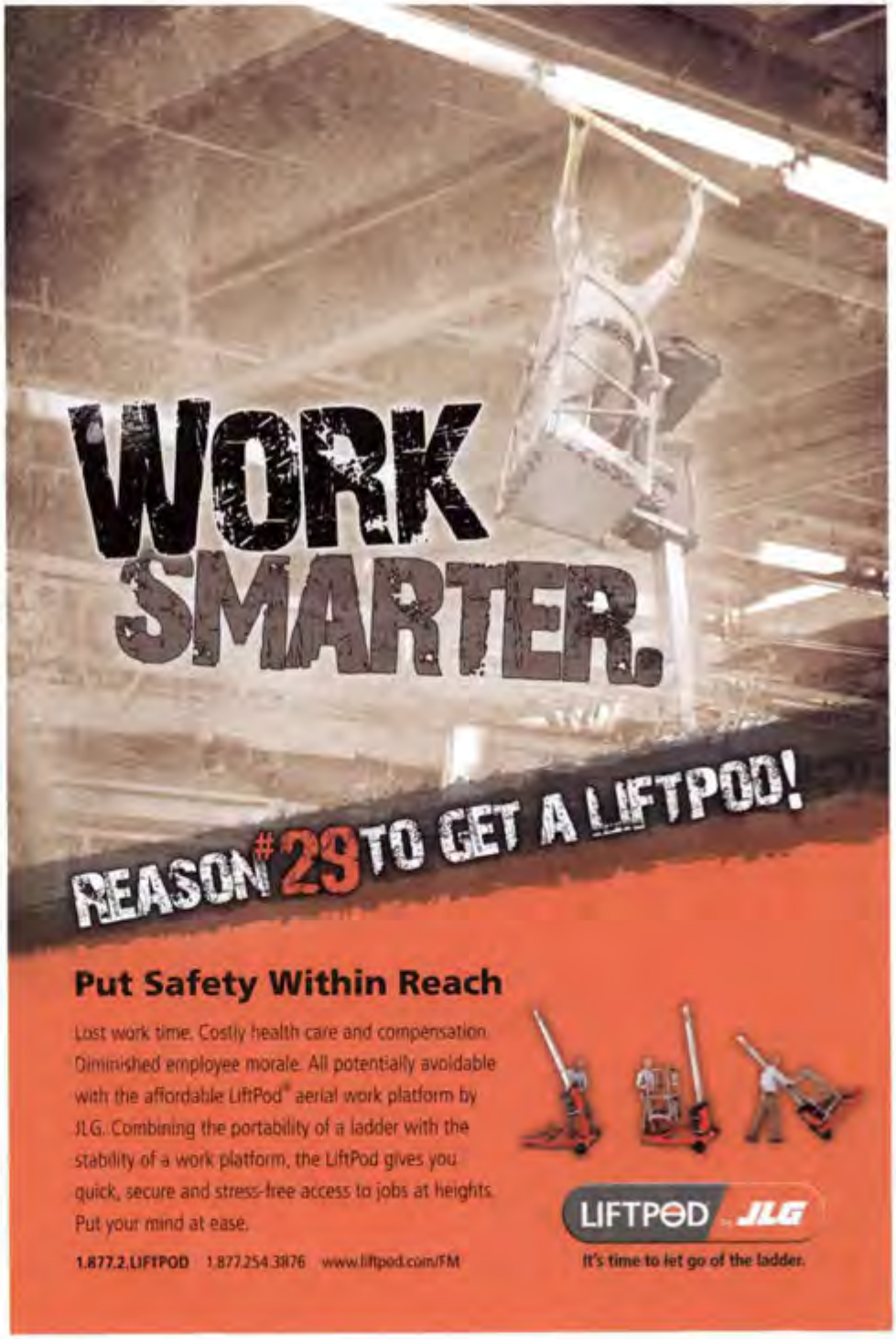
Let's assume you know that your facility operates stationary fuel combustion sources that, in the aggregate, exceed 30 million Btu/hr heat input capacity. How much fuel must a facility consume on an annual basis to exceed 25,000 $mtCO_2e$? Table 1 provides "rule of thumb" guidance for certain fuels.

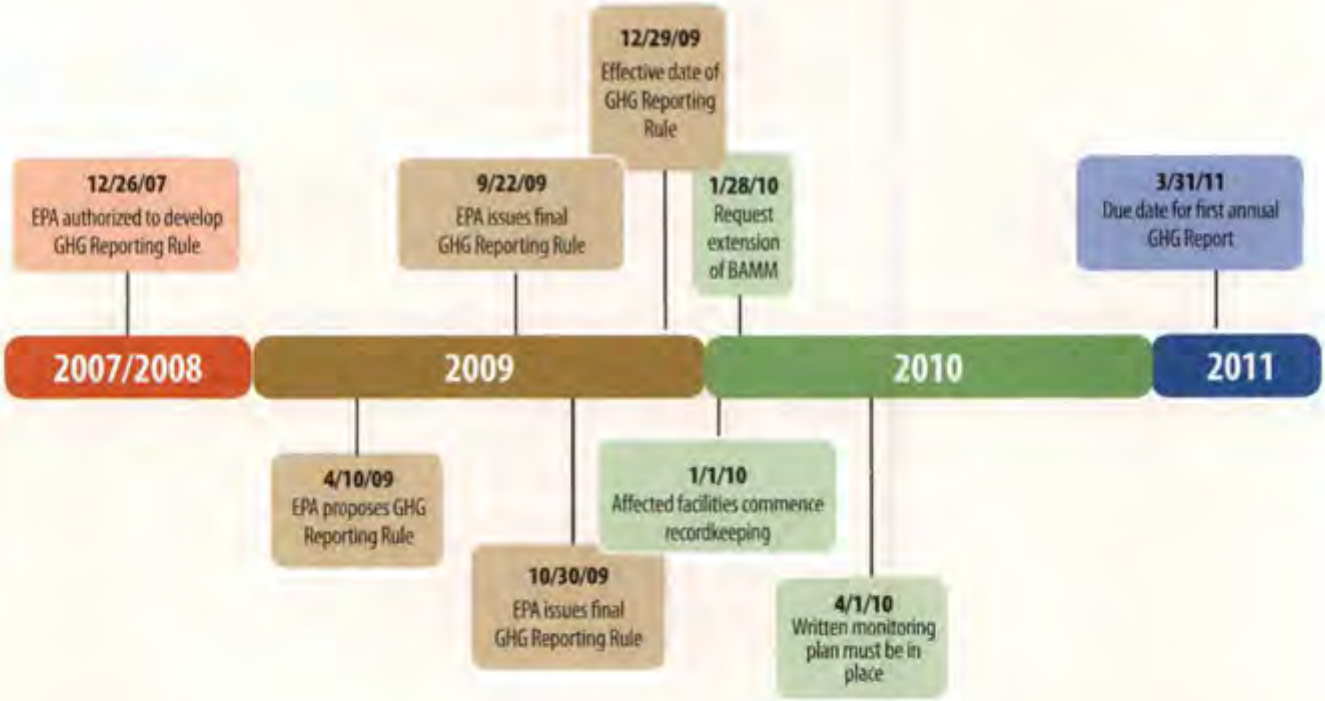
To assist facilities determining whether the reporting rule is applicable, EPA has provided an "Applicability Tool." The Web-based tool may be used by facilities as an initial review to determine the reportable source categories present at the facility and emissions from some of these sources. While a more thorough analysis may be necessary for many entities, this particular tool can help many others with a simplified, straightforward approach. The tool can be located at the following website: *www.epa.gov/climatechange/emissions/GHG-calculator/index.html.*

Assuming that you've determined that your facility is subject to the GHG reporting rule, the rule contains specific reporting dates, monitoring, recordkeeping and reporting requirements, and calculation methodologies that must be followed.

ESTIMATING AND REPORTING EMISSIONS FROM FUEL COMBUSTION SOURCES

At educational facilities, the most prevalent sources of GHG emissions are stationary fuel combustion sources. For these emission sources, facilities must report annual emissions of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) for each fuel combusted. EPA has prescribed specific calculation methodologies within the reporting rule for estimating emissions. To address the proper level of reporting rigor, EPA developed four calculation tiers that may be selected based on combustion unit size, type of fuel burned, and other factors. Tier 1, for example, represents a simplified calculation methodology where company records may be used to determine fuel use and default emissions factors and fuel high heating values may be used to estimate emissions. Tier 4 methodology presents the opposite end of the spectrum and requires the use of a continuous emission monitoring system (CEMS) for estimating emissions from certain units. Tiers 2 and 3 entail a combination of simplified and complex approaches to estimating GHG emissions. These particular calculation methodologies may require a facility to periodically measure fuel heating value and carbon content.





Generally, all units rated at a heat input capacity of 250 million Btu per hour (mmBtu/hr) or less are allowed to use the simpler Tier 1 or Tier 2 calculation methodologies. Certain units rated over 250 mmBtu/hr that combust pipeline quality natural gas and distillate oil are also allowed to use Tier 2. However, units rated above 250 mmBtu/hr that combust residual oil, other gaseous fuels, and solid fossil fuels will need to apply the Tier 3 or Tier 4 methodologies.

As can be seen, an affected facility must closely evaluate the appropriate calculation methodology based on the combustion equipment characteristics to ensure that additional requirements do not apply. Affected facilities also need to consider the requirements for conducting fuel sampling and analysis, installing monitoring devices, as well as calibrating monitoring devices (e.g., fuel flow meters). These considerations should be addressed well in advance of April 1, 2010 when EPA begins to enforce the use of required monitoring methods rather than "best available monitoring methods" (BAMM) allowed during the first quarter of 2010 (discussed later in this article).

EPA did anticipate the difficulty of reporting emissions from individual stationary combustion units. As an option, EPA will allow many facilities to aggregate emissions reporting from individual units with maximum rated heat input capacities less than 250 mmBtu/hr. Units may also be aggregated based on the use of a common fuel supply line or pipe or a common stack or duct configuration where CEMS are used. Additionally, EPA has exempted fuel billing meters from the calibration requirements which should allow some affected facilities to avoid the calibration accuracy requirements.

While aggregated reporting will likely provide some relief for many reporters, there are a few particularly burdensome requirements that remain. These requirements include the obligation to report an identification number for each combustion unit reported in a group and the cumulative maximum rated heat input capacity of the group (mmBtu/hr). As a result, regardless of whether a facility elects to report by individual unit or multiple units aggregated by group, the facility will likely need to prepare a comprehensive stationary fuel combustion equipment inventory for all non-excluded combustion units. The development of a combustion equipment inventory could be complicated for certain facilities that may employ the use of many smaller combustion units that have been traditionally excluded from other regulatory initiatives (e.g., air permitting).

A Monitoring Plan is expected to identify individuals responsible for the collection of emissions data, explanation of the processes and methods used to collect data and perform GHG emission calculations, and a description of the procedures and methods used for quality assurance, maintenance, and repair of monitors and other instrumentation.

MONITORING PLAN PROVISIONS

One particularly time-sensitive requirement within the reporting rule entails the development of a written GHG Monitoring

Plan. Affected facilities are required to have a Monitoring Plan in place by April 1, 2010. Among other features, a Monitoring Plan is expected to identify individuals responsible for the collection of emissions data, explanation of the processes and methods used to collect data and perform GHG emission calculations, and a description of the procedures and methods used for quality assurance, maintenance, and repair of monitors and other instrumentation.

The Plan may rely on references to existing company documents (e.g., standard operating procedures, quality assurance programs, etc.). As such, EPA has not prescribed a specific format for the Monitoring Plan in order to allow facilities flexibility to rely on existing documents. Facilities are not required to submit the Monitoring Plan to EPA for approval, but must retain the Plan in accordance with the recordkeeping requirements.

OTHER KEY ASPECTS OF THE REPORTING RULE

Upon determining that your facility is subject to the GHG reporting rule, there are a number of general provisions and other key aspects of the rule that apply. The following key aspects should be carefully considered by affected facilities:

- Records must be retained for at least three years in an electronic or hard-copy format. Records must be made available to EPA for review upon request.
- Affected facilities must establish a single designated representative who will be responsible for certifying, signing, and submitting GHG emission reports.
- Revisions to a report submitted to EPA must be submitted within 45 days of discovery or notification by EPA.

Facilities must continue to report each subsequent year once a facility is subject to the reporting rule even if the facility is not subject to the rule during future reporting years. EPA allows facilities to cease reporting after five consecutive years if reported emissions are less than 25,000 mt-CO_2e or after three consecutive years if reported emissions are less than 15,000 mtCO_2e.

EPA reserves the ability to verify the completeness and accuracy of the GHG emissions report and may take enforcement action for any violation of a reporting rule requirement. It is expected that GHG regulatory enforcement will be a high priority at EPA in the short term.

SPECIAL PROVISIONS FOR 2010 REPORTING

Due to the relatively swift finalization of the GHG reporting rule, EPA has provided flexibility for compliance with certain provisions for the 2010 reporting year. A brief summary of the 2010 reporting special provisions is provided below.

- Abbreviated report content for facilities only subject to the stationary fuel combustion source category. Provision also allows for the use of simplified emission calculation methods.
- Use of BAMM through March 31, 2010.
- Option to request an extension to use BAMM through December 31, 2010. The extension request was due by January 28, 2010.
- Delay of equipment calibrations beyond April 1, 2010 in some cases.
- Monitoring plan completion by April 1, 2010.

REPORTING SCHEDULE

Facilities expected to be subject to the GHG reporting rule should have initiated data collection and recordkeeping activities on January 1, 2010. The first annual GHG report is not due until March 31, 2011. The following timeline shows the history of the development of the GHG Reporting Rule and the important milestones that facilities must achieve to comply with the rule.

FUTURE GHG POLICY DECISIONS

EPA's mandatory GHG reporting rule will likely be the first of several GHG rules that EPA will issue in the months ahead. In addition to EPA rulemaking, there are many regional and state GHG programs already in existence. Some of these programs are voluntary (e.g., The Climate Registry), while others are mandatory (e.g., Regional Greenhouse Gas Initiative (RGGI)). Some states have mandatory GHG reporting rules that are more stringent than the EPA rule. For example, Massachusetts's mandatory GHG reporting rule (310 CMR 7.71) requires facilities to report if their CO_2e annual emissions exceed 5,000 short tons. Furthermore, Massachusetts requires that the reporting facility's GHG emissions report be verified by an approved verification body (accredited by the American National Standards Institute) on a triennial basis. The EPA mandatory GHG reporting rule does not preempt the rules contained in existing regional and state programs.

It appears that the EPA mandatory GHG reporting rule is just a precursor for a suite of future policies and programs that will address climate change and GHG emissions. On the Congressional side of the ledger, the House has passed (June 26, 2009) H.R. 2454: American Clean Energy and Security Act of 2009 (aka Waxman-Markey climate and energy bill). Incorporated in this bill is a cap-and-trade program for GHG emissions. On September 29, 2009, Senators Kerry and Boxer introduced the Clean Energy Jobs and American Power Act (S. 1733). The Kerry-Boxer bill does not contain a cap-and-trade program; however, it does have a greater GHG emission reduction goal than the Waxman-Markey bill (20 percent vs. 17 percent by 2020 based on 2005 emissions).

The floodgates to EPA GHG rulemaking were opened when the Supreme Court (in Massachusetts v. EPA, 549 U.S. 497 (2007)) ruled that the current provisions of the CAA provided EPA ample authority to regulate GHG emissions. If EPA elected not to regulate GHG emissions, the Court required EPA to demonstrate that GHG emissions would not "endanger" the public health and the environment. On April 29, 2009, EPA proposed its

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"endangerment finding" for public comment. The proposal stated that GHGs posed an endangerment to public health and the environment. Based upon this finding, it was now abundantly clear that EPA was intent on regulating GHGs. EPA went final with its endangerment finding on December 15, 2009 (74 FR 66496-66546).

On September 15, 2009, EPA proposed for public comment new GHG standards in the form of fuel efficiency standards for automobiles and light duty trucks. This was the first time EPA proposed a rule that would require control of GHG emissions. When the fuel efficiency standards ultimately go into effect (March 2010), GHGs will then be treated as pollutants regulated under the CAA. This means that GHG emissions may be subject to existing EPA CAA programs such as New Source Review (NSR)-Prevention of Significant Deterioration, the Title V Operating Permit program and New Source Performance Standards.

Faced with a dilemma of how to regulate GHG emissions using the stringent applicability thresholds that are inherent with these existing programs, on October 27, 2009, EPA proposed its "tailoring" rule (74 FR 55292-55365). Under this rule, EPA is proposing to apply much higher applicability thresholds for GHG emissions in its existing regulatory air permitting programs (for some unknown reason, EPA proposed 25,000 short tons as opposed to 25,000 metric tons of CO_2e annual emissions). If the tailoring rule does not become effective by the time GHG emissions are regulated under the CAA, permitting activity under federal and state NSR programs and Title V programs could come to a grinding halt. Thousands of relatively minor emission sources will instantly be faced with permitting obligations and compliance issues. It is not difficult to imagine that legal suits against EPA on these GHG issues will abound in the very near future.

Stay tuned. The landscape of GHG regulation is subject to change.

Thomas Klotz is a project engineer in the Livonia, MI office of GZA GeoEnvironmental, Inc.; he can be reached at *thomas.klotz@gza.com*. Mitchell Wurmbrand is an associate principal and Certified Consulting Meteorologist in GZA's Bloomfield, CT office; he can be reached at *mitchell.wurmbrand@gza.com*. This is their first article for *Facilities Manager*.

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Invited Speakers: **John Peters**, President, Northern Illinois University; **Frank DeAngelis**, Principal, Columbine High School; **Mark James**, Chancellor, Metropolitan Community College.

ADDRESSING THE HERE AND NOW

The education community faces continuous and rapid change. Technology advancements, spiking enrollments and other factors are shifting the way in which educators deliver instruction in the 21st century, and the manner in which students learn. How are administrators addressing the increasingly diverse learning needs of today's students? What changes, if any, are occurring within educational facilities and the campus infrastructure to address change? And are we gaining or losing? This session will provide you the unique vantage points of accomplished education leaders, including college administrators, educational facilities officers, and K-12 school system superintendents, as they share their perspective on "The Here and Now."

Invited Speakers: **Larry Eisenberg**, Executive Director, Los Angeles County Community College; **Vi San Juan**, Assistant Vice Chancellor, California State University System.

I'M SEEING GREEN

Since the launching of the Presidents Climate Commitment Act, we have seen reactions that are as vast as the universe we support as professionals. We invite you to hear from one of the founding members of the American College & University Presidents Climate Commitment (ACUPCC) who will provide their view point on the importance of responding to this call. We will also hear from the 'grassroots' individuals – students — who are the movers and shakers of tomorrow and the true driving force behind change. This session closes with a panel of invited experts who share their perspective on how to balance the ever changing expectations of the whole campus community.

Invited Speakers: **Norb Dunkel**, University of Florida; **Ted Weidner**, University of Nebraska-Lincoln; **Scott Hurst**, USGBC.

INVENTING OUR FUTURE

The economy notwithstanding, education facilities departments must seek to thrive and not "just survive." In an age of diminishing endowment returns and reduced state and local spending, facilities administrators much not forsake the long view for the short view.

What are we learning in the present, and how will we use what we learn in these uncertain times to effectively prepare our institutions for the future? How can the education facilities community invent – and plan – for the future of higher education? What will our future look like? Hear from an illustrious group of invited experts who will share their wisdom as we look into the crystal ball.

Invited Speakers: **Dr. Jill Biden**, White House; **Lander Medlin**, Executive Vice President, APPA; **Dave Button**, Vice President, University of Regina; **Thomas Vautin**, Acting Vice President for Administration, Harvard University.

TOP 10

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The creation of the new senior Facilities Officers Program grew out of the desire for professionals in any facilities organization to prepare themselves as they advance into a new level of leadership. Explore vast array of issues that a facilities officer is exposed to on a daily basis, and examine the complexities of campus leadership in this interactive workshop.

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We understand that justification for attendance to professional development offerings can be difficult in times like this. APPA is here as a resource to assist in this process. To request a sample letter of justification, please contact Katy Theranger at *ktheranger@appa.org*.

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FREEDOM TRAIL

The Freedom Trail is a 2.5 mile red-brick walking trail that leads you to 16 nationally significant historic sites, every one of them an authentic American treasure. Preserved and dedicated by the citizens of Boston in 1958 (when the wrecking ball threatened), the Freedom Trail today is a unique collection of museums, churches, meeting houses, burying grounds, parks, a ship, and historic markers that tell the story of the American Revolution and beyond.

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For a more complete listing of activities, please visit *http://www.appa.org/training/APPA2010/activities.cfm* or the Boston Convention and Visitor's Bureau at *http://www.bostonusa.com/index.php*.

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New! Full Registration w/SFO Track (APPA Members Only)	$1,295	$1,395
Spouse/Guest Fee	$175	$175
Non Member Fee Full Registration Fee	$1,495	$1,695
Single Day Pass Fee	$525	$625
Single Day Hall of Resources Only Fee	$125	$125

Cancellation Policy

APPA will refund the full cost of registration for cancellations received on or before April 1, 2010. Cancellation requests received after April 1st but before June 1st will be refunded but assessed a 25% administrative fee. Absolutely no refunds will be issued for cancellations received after June 1, 2010. APPA is not responsible for any travel or lodging charges incurred.

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All APPA 2010 events will take place at The Seaport Hotel & World Trade Center. APPA will be using the following hotel for lodging:

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Travel

Boston International Airport (BOS) is your final flight destination. For more information on this airport please visit: *www.massport.com/logan.*

Ground Transportation

Taxis charge a metered rate based on time and distance traveled, the approximate fare from the Boston Logan Airport to The Seaport Hotel is approximately $10 (inclusive of all taxes). For additional information on taxi or shuttle service you may visit suggested listings at *www.massport.com/logan/getti.html.*

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REGISTRATION QUESTIONS AND ASSISTANCE

Contact Katy Theranger, Professional Development & Certification Manager, at *katy@appa.org* or 703-542-3828.

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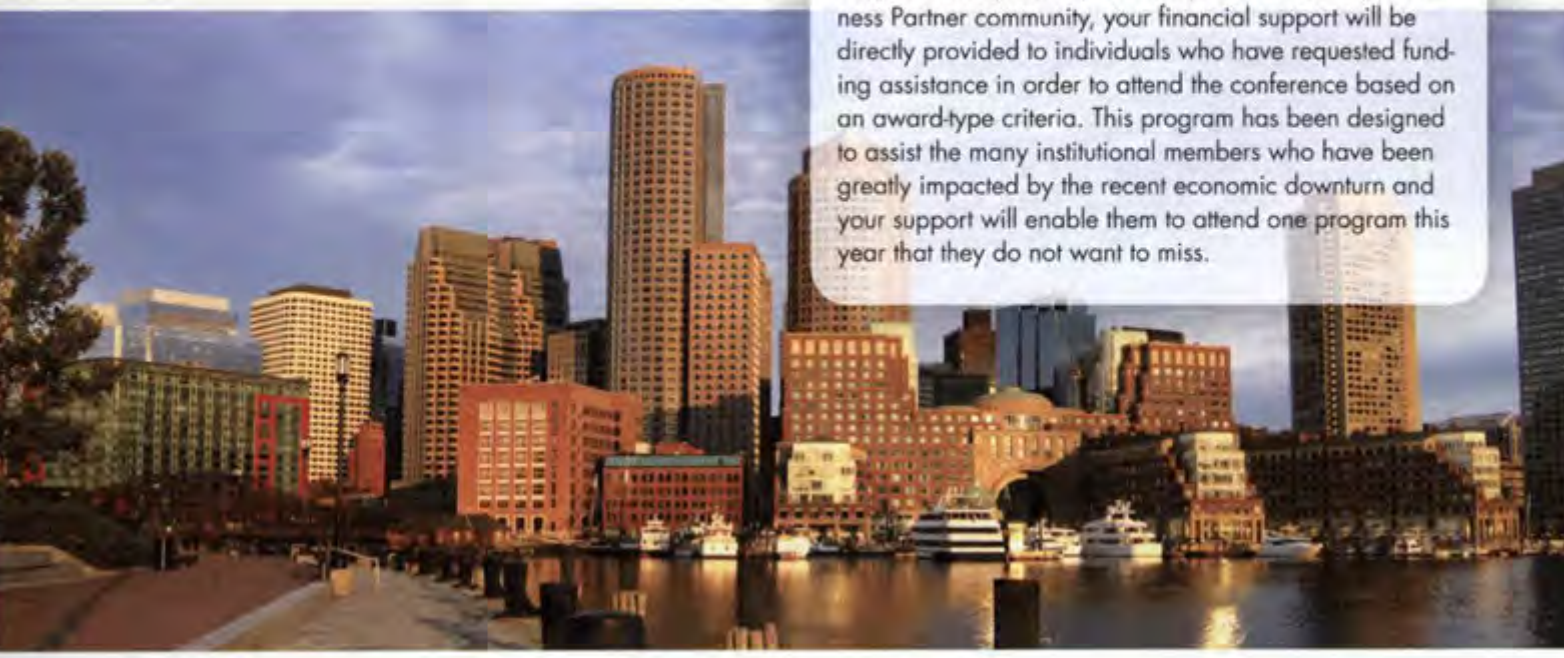
NEW – Ambassador Program

NEW this year for APPA 2010, is our Ambassador Program. Designed in partnership with the Strategic Business Partner community, your financial support will be directly provided to individuals who have requested funding assistance in order to attend the conference based on an award-type criteria. This program has been designed to assist the many institutional members who have been greatly impacted by the recent economic downturn and your support will enable them to attend one program this year that they do not want to miss.



FIRE PUMPS:

BY JOHN F. SAIDI, P.E., AND
RICHARD J. DAVIS, P.E., J.D.

TIME TO CHANGE NFPA 25 WEEKLY CHURN TESTING

APPA, through its Code Advocacy Task Force (CATF), is active with code organizations such as the National Fire Protection Association (NFPA). This article reviews some of the recent work on NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, by the CATF and some members of the NFPA 25 Technical Committee.

The current (2008) NFPA 25 requires weekly tests of fire pump assemblies to be conducted without flowing water, sometimes referred to as a "churn test." During the current review cycle of NFPA 25 we submitted several proposals to decrease the "no-flow" test frequency for all fire pumps from weekly to monthly, and one proposal to decrease the churn test frequency for electric motor driven fire pumps. As of this writing, the latter proposal has made it through several processes to final balloting, although we remain unsure of the final outcome of the proceedings.

This CATF work continued an effort begun by Mike Anthony, a senior electrical engineer at the University of Michigan, whose goal is reducing testing cost without compromising safety. We believe that weekly testing is an undue burden while providing no appreciable benefit. Indeed, weekly testing might be so frequent as to cause a decrease in system reliability. It should be abandoned for the reasons discussed below.

RELIABILITY OF ENGINE DRIVEN PUMPS

Reliability testing of components is commonly done by suppliers, whether for electronic devices for space craft or for mechanical parts on construction machinery. Predictions concerning the reliability of an engine driven fire pump, or any assembly, are related to the reliability of the individual components when new. The reliability of the system is no greater than the reliability of the least reliable critical component. In addition, the reliability is related to the product of the individual component reliabilities, expressed as a fraction of one.

For example, a machine comprising two parts, each with a 90 percent chance of surviving for the life of the product, will have an 81 percent chance of performing without failure. The probability of failure is 19 percent. With an engine driven fire pump that is already in service, many other factors must be considered. The number of starts, the hours of operation, the load on the engine during operation, the speed of the engine, the characteristics of the environment where the system is installed, the corrosive and erosive effects of the water, the age and condition of the battery, the knowledge and skill of the maintenance personnel, and the quality of the fire pump's controls all affect reliability.

Frequent testing has both beneficial and negative consequences. A key benefit is the opportunity to find equipment that is malfunctioning on a schedule that corresponds to the testing, at least weekly in the case of NFPA 25. Another advantage is that the engine cylinder walls and bearings are likely to have thicker coatings of lubricant with weekly operation. However, this latter benefit probably is a stronger factor in the life of the equipment rather than the likelihood of the pump starting when needed.

There are some problems with frequent testing, too. The probability of failure with many components tends to increase with the hours of use and the number of starts. Examples are fatigue failures of cyclically loaded metal parts, wear failure of moving parts, catastrophic failure of bearings, and arcing failures of magnetic solenoids. We have searched for reliability data for fire pumps without success. It is likely that reliability data for fire pumps are proprietary, owned by the manufacturers, and not available to the public.

In the absence of concrete data, you might ask why the Code Advocacy Task Force and some Technical Committee members have advocated reduced testing frequencies. Some of the reasons are:

- We found no data supporting the testing intervals established in NFPA 25 when it was first issued in 1992. Our evidence today indicates that the original testing protocols were merely based on the judgment of the Technical Committee. Yet, changing the current weekly test frequency to monthly appears to require new data to justify the change based on published comments of the current Technical Committee.
- The Technical Committee has favored short testing intervals. Possible reasons are a reluctance to change long established requirements and the fact that many committee members in the fire protection and insurance industries are not directly impacted by the cost of frequent testing.
- NFPA standards are by definition minimum standards. As currently written, the weekly test requirement appears to deviate from this rule and represents a near maximum requirement. Even if the test frequency is increased to monthly, property owners, AHJs (Authorities Having Jurisdiction), and insurers will continue to have the option of increasing requirements, if warranted.
- In communities that have adopted NFPA 25, owners wishing to reduce the testing frequency required by NFPA 25 may not often do so, even after following a documented formal alternative pump testing program. AHJs don't generally permit deviations to existing standards, perhaps to avoid the potential liability.
- According to a casing relief manufacturer, poorly set casing relief valves can cause irreparable damage to gaskets and o-rings such that excessive pump testing can actually be more detrimental to a pump than less frequent testing.
- Many owners have redundant fire pumps, each capable of sustaining the design load. Redundant system design is an accepted engineering solution for critical systems. The capital expense of redundant systems improves reliability, and can prevent the replacement of functioning components during the life of the equipment, lowering preventive maintenance costs. An example can illustrate the design benefit. If the probability of a fire pump failing is 2 percent, two redundant pumps each have a 98 percent chance of starting and operating. The chance that neither starts is the product of the two failure rates, (0.02) (0.02) or 0.04 percent. There is a 99.96 percent chance that at least one of the engines will start. This example uses a low reliability for the individual pumps to illustrate the remarkable benefit of redundant design. NFPA 25 should at least consider the effect of redundancy on test frequencies. It does not.
- The U.S. Department of Defense (since 2001) permits monthly testing of diesel engine and electric motor fire pumps; Australia (since 2005) permits electric motor fire pumps to be tested monthly.

PREDICTIONS CONCERNING THE RELIABILITY OF AN ENGINE DRIVEN FIRE PUMP, OR ANY ASSEMBLY, ARE RELATED TO THE RELIABILITY OF THE INDIVIDUAL COMPONENTS WHEN NEW.

DIFFERENCES IN RELIABILITY BETWEEN ENGINE AND MOTOR DRIVEN FIRE PUMPS

The reliability differences between electric driven and engine driven pumps has not been acknowledged in NFPA 25. A weekly churn test is required for both, despite the greater complexity of the engine driven systems. Electric motor driven pumps can fail due to bearing failures, winding defects, and starter failures. However, most engineers and operators understand the inherent greater reliability of an electric motor driven system.

NON-COMPLIANCE WITH STANDARDS AND REGULATIONS THAT OWNERS AND LOCAL ENFORCEMENT PERSONNEL DEEM UNREASONABLE OR ONEROUS

Large universities, research facilities, and government facilities can have dozens or hundreds of fire pumps. We have found, through informal polling of several colleges and universities, that none were in compliance with NFPA 25. This suggests that fire marshals and others who enforce the NFPA 25 may consider the testing excessive, or have decided that their efforts are better expended on issues with greater nexus between their efforts and the safety of building occupants and the public generally.

Noncompliance with a national standard fosters a general lack of respect for standards and regulations affecting building operators, with managers and owners deciding what should and should not be done. Noncompliance creates an effective tool for plaintiffs' counsel to argue negligence in the event of loss, despite the fact that the standard was not established scientifically or based on actual field data.

SUMMARY

The NFPA provides an excellent service by producing consensus standards. The codes it publishes represent the collection of many industry experts using a fundamentally democratic process replete with due process protections including public comment to arrive at codes that promote safety. The codes also provide national uniformity and quality in fire standards.

In addition, the codes are instructive to the reader and user. This is a great help to young engineers who are called upon to design systems for which they may understand the fundamental principals of operation but are completely naïve about the current standards in the industry for the solution to their design problem. This educational function of the codes, in helping train the next generation of designers and mechanics, is an important ancillary benefit of NFPA's work.

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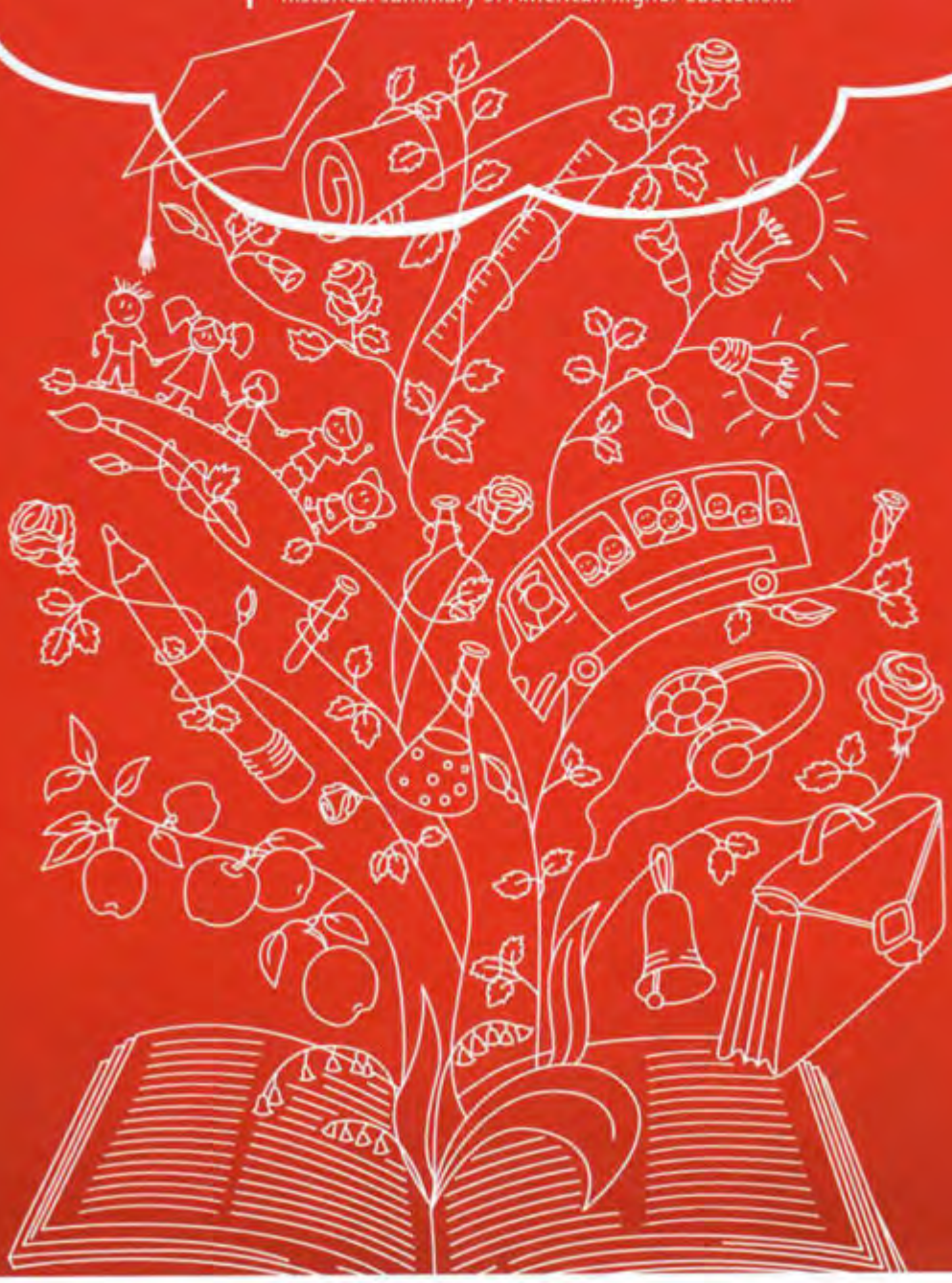
SO THAT'S WHERE WE CAME FROM!

A SHORT HISTORY OF HIGHER EDUCATION

BY FRED GRATTO

Working on a college campus is pretty special. There is always something fun going on, sporting events to watch, lots of interesting opportunities to help people, and the setting to do work that really matters. Colleges are complex organizations, so it is good to have a broad institutional perspective to better understand what people do and why they do it. Do you ever wonder how and why your wonderful campus became what it is today. . . ever stop to think about the history of your institution? If so, you might enjoy this brief historical summary of American higher education.



A CITY UPON A HILL

While at sea on the ship *Arbella* in the spring of 1630, John Winthrop borrowed an analogy from Matthew 5:14 in the Bible when he preached to future leaders of the Massachusetts Bay Colony: "Men shall say of succeeding plantations: the Lord make it like that of New England: for we must consider that we shall be as a city upon a hill and the eyes of all people are upon us" (Lucas, 1994, p. 103). The Puritans were convinced that God would bless them and that the world would notice their endeavors.

After building houses and finding a way to eat every day, they had three priorities in the new world: building churches, securing a stable form of government, and finding a way to provide learning for future generations. This third goal set in motion the creation of colleges in what became the United States.

Nine colleges were founded before the American Revolution: Harvard, William and Mary, Yale, University of Pennsylvania, Princeton, Columbia, Brown, Rutgers, and Dartmouth. They all shared the same two purposes: educating civic leaders and preparing a learned clergy.

SO MANY COLLEGES!

In 1819, the Dartmouth Case had a significant impact on higher education. Dartmouth College was originally chartered by the English Crown. This deed of trust provided a self-perpetuating board of trustees and authorized the president to appoint his own successor. When the first president Eleazor Wheelock died, his son John became president. A short time later, the new president was rebuked by the board for what they considered to be an erratic administration, and they voted to dismiss him. He responded by challenging the board's authority to meddle in his affairs. The New Hampshire legislature supported him when they amended the original charter to create a reorganized Dartmouth University. The original board did not accept this, of course, so at that point Dartmouth College and Dartmouth University began to operate in legal competition with each other.

The original board took their case all the way to the United States Supreme Court. The basic issue was whether the college was a public corporation whose charter could be amended by the State of New Hampshire, or a private corporation whose charter the legislature could not change. Two famous Americans fought this battle in court. Thomas Jefferson argued on behalf of the state's right to change the charter and Daniel Webster represented the original board. First Chief Justice of the Supreme Court, John Marshall, ruled in favor of the original board, prohibiting the state from exercising direct control over Dartmouth College. This decision established the distinction between public and private colleges. The result was a proliferation of private colleges during the next several decades.

There are other reasons so many colleges were created. They were a source of income and pride, so every state wanted one. Vermont in 1819, for example, estimated that $14 million had been lost to neighboring states because there was no public institution of higher learning in the state. Moreover, colleges aspired to be something special. Princeton, for example, wanted to be the "Athens of America." It is no coincidence that Ohio University and the University of Georgia are located in Athens. Regarding name recognition, consider also the University of Mississippi in Oxford, Mississippi and Miami University in Oxford, Ohio. There were nine colleges at the time of the American Revolution and 250 by the Civil War. Today, there are more than 3,900 colleges and 17.5 million students in the United States.

I NEED HELP!

In colonial colleges, character development was emphasized as much as learning was. In 1887, President W.W. Strong of Carleton College in Minnesota commented: "The grand aim of every teacher, from Socrates to Hopkins, has been the building of character" (Lucas, 1994, p. 168). Likewise, Harvard's first president stressed to his faculty: "You shall take care to advance in all learning, divine and humane, each and every student who is or will be entrusted to your tutelage, according to their several abilities; and especially to take care that their conduct and manners be honorable and without blame" (Lucas, 1994, p. 104).

In addition to making sure that he and the faculty were enhancing the character of every student, presidents also had to teach, register students for class, keep students entertained and out of trouble, raise money, provide food and shelter, communicate with parents, and repair buildings that were usually too hot or too cold. The job of college president was demanding and time consuming. No longer could presidents know everyone's name, greet each student at the door, and monitor the academic progress of everyone on campus. The big job got bigger as time passed and there was only one thing to do, get help. As duties were divided and delegated, the world of student affairs, as we know it today, began.

Character development of students is still a priority, but it is a more difficult challenge these days. Consider this assessment by Dr. Martin Luther King: "We must work passionately and indefatigably to bridge the gulf between our scientific progress and our moral progress. One of the greatest problems of mankind is that we suffer from a poverty of the spirit which stands in glaring contrast to our scientific and technological abundance. The richer we become materially the poorer we have become morally and spiritually" (Willimon, 1995, p. 55). College students on campus today need and expect a great deal of help and care. Consider your campus, where all of these support groups are a major part of the collegiate experience: dining services, residence life, Greek affairs, career resources, disability services, financial aid, freshmen orientation, student healthcare, student activities, and counseling services. There is a big world beyond physical plant, and now you know a little bit about how it came to be.

BLACKS AND WOMEN ON CAMPUS

These minority groups are relative newcomers to the world of higher education. Almost all students at the earliest colleges were young white men. However, in 1826 Amherst College in Massachusetts and Bowdoin College in Maine became the first institutions to award a bachelor's degree to African-American students. There is an interesting but awful page of American history, however. Blacks were not considered equal to whites, and this seriously limited their access to higher education. Certainly, this view died hard. For example, a few years after the Civil War, New Yorker Lucy Spelman was traveling in the south and observed the struggles of people trying to teach young black girls to read and write. She convinced her husband John D. Rockefeller to contribute money to the Atlanta Baptist Female Seminary, and the school's name was changed to Spelman College in 1884.

During the antebellum period, people of color were a rarity on campus, and in the south there were few chances of a black person being admitted to a white college. The situation did not get any better in 1896 when the Supreme Court handed down its historic decision *Plessy v Ferguson*, affirming separate but equal rights. The problem lingered for decades, culminating in the race riots of the 1960s. On some college campuses, the situation was rough, a sad time in our history. Many of us remember Governor George Wallace in 1963, trying to stop blacks from being admitted to the University of Alabama. It has been a long hard struggle.

Women also had difficulty gaining access to higher education. Not until 1841, at Oberlin College in Ohio, did a woman earn a bachelor's degree. The problem, of course, was access, greatly limited by the prevailing perspective of the times. Consider this comment about women from President Benjamin Wheeler at the University of California in 1904: "You are not like men and you must recognize this fact. You may have the same studies as men, but you must put them to different use. You are here for the preparation of marriage and motherhood" (Lucas, 1994, p. 158). At the University of Florida and at many institutions there is a Center for Women's Studies. Now I know why.

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to earn a living with. The problem was that classical learning on campus was not meeting the needs of society and students, according to the prevailing sentiment of the times. Critics asserted that a college curriculum ought to offer something more than personal discipline, culture of the mind, and the study of dead languages. The solution was set in motion in 1859 when Congressman Justin Morrill of Vermont sponsored a bill to create a college in every state, institutions where the curriculum would help students learn agricultural and mechanical skills.

The Land-Grant bill was signed into law by President Abraham Lincoln in 1862. It provided to every state, the donation of 30,000 acres of federal land for each state senator and representative. Some of the land was intended to be sold to raise money for buildings, faculty, and anything else needed to create a college. The purpose of these institutions was threefold: teach agricultural and mechanical skills, create new knowledge, and disseminate new knowledge. Long-term consequences of the land-grant act are many and include creation of the cooperative extension service, the preeminence of research on college campuses, and thousands of inventions and advances that changed the world and improved the quality of life for millions of people. A few of the earliest land-grant institutions include these world-class universities: Iowa State University, Michigan State University, Pennsylvania State University, Cornell University, the University of Wisconsin, the University of Minnesota, and Texas A&M University.

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GI JOE

At the conclusion of WW II, 15 million American soldiers returned home. Many returned to a normal life and about two million of them went to college, which was not normal. Prior to the war, higher education was elitist and discriminatory with respect to race, sex, and religion. For these and lots of other reasons, most people did not go to college. "Before WWII, most people had not gone beyond elementary or secondary school; a high school diploma was a rare achievement, earned by less than 25 percent of the population" (Greenberg, 2004, p. B9).

The Servicemen's Readjustment Act of 1944, better known as the GI Bill, was intended to help with the dislocation of human capital and serve as a reward for military service. Tuition, books, fees, and supporting stipends were available for up to 48 months for those wanting to pursue a college education. These generous benefits ushered in a new era on campus. The immediate change was marked by overcrowded classrooms and a serious lack of housing. The long-term change was significantly increased access to higher

education. Thousands of people were the first ones in their family to ever attend college.

Also, diversity increased as women and minorities arrived on campus and the median age of students increased. No longer, was there such thing as a normal student. Traditional age students, 18 to 22 years old, shared their campuses with thousands of others. For example, the number of part-time students increased exponentially. Moreover, the curriculum changed and expanded as well because older, experienced, impatient, veteran students wanted more practical learning as they prepared for work after graduation. The GI Bill, an historical event, meant the world of higher education would never be the same.

ARE YOU READY FOR SOME FOOTBALL?

In 1869 Rutgers and Princeton played the first college football game, which was organized by the undergraduates themselves. It was a harbinger of things to come because the fervor of the sport caught on. Soon, college administrators noticed the valuable publicity so football games became sanctioned and managed by the university administration. By 1881 when Michigan played Harvard, football had become a regular weekend diversion for dozens of colleges around the country. Excitement surrounded the game, crowds became larger than anyone could believe, and alumni began returning to their alma mater to cheer on the home team. Football became a colossus, something for students to rally around, and a mechanism for accessing potential donors. The incorporation of football on campus is a defining moment in the history of American colleges and universities. It transformed campuses in ways that are hard to describe, especially on game day.

TAKING CARE OF BUSINESS

This summary of higher education has provided a glimpse of a few of the major events in American higher education. Even now, we are in the throes of events that are changing and shaping the way colleges do business, events that will in hindsight someday, be regarded as milestones. Consider, for example, the impact of the September 11, 2001 attacks and the 2007 deaths of 32 students and faculty at Virginia Tech on the ways facility managers deal with security on campus.

Another challenge and opportunity is sustainability. As managers of facilities, we have found ways to contend with and embrace this approach to design and construction because it is the right thing to do for the environment. "In a world where the U.S. is losing its competitive advantage in computer science, engineering, and research science, the nascent fields of environmental architecture, sustainable engineering, and ecological science provide a new universe for innovation and training for the jobs of the future. U.S. colleges and universities, acting in concert, can lead the world by training the corps of professionals whose ideas and actions will save the natural world" (Marthers & Rahnamay, 2006, p. 1).

We will help save the world because facility managers are proactive and resilient. We always find ways to accomplish tasks and take care of business. We do this by being aware of trends and advances in society that impact what happens on campus. In my view, another way to understand what is happening on campus is to have some understanding of the past...to know what happened, and why.

NOTES

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You first have to know what type of information is needed for capital planning. Proper planning includes capturing information on all structures, building components and systems. An accurate facility needs assessment must identify building deficiencies and project the cost to repair or replace those deficiencies. Historically capital planning has involved an in-depth facility condition assessment (FCA). This approach can be both time-consuming and costly.

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Technology assisted renewal analysis (or TARA for short) can be used to accurately calculate maintenance needs at a much lower cost than an FCA. While the assessment approach averages approximately 15-cents per square foot, the cost of using technology assisted renewal analysis is less than 1-cent per square foot. Once the life cycle model is implemented, an assessment can be done annually—or at any desired cycle—so that data remains current. Link this data to an automated work order management and preventive maintenance system and the result is an ongoing process of facilities maintenance and capital planning.

A Winning Combination

Another option is to create a hybrid method that incorporates both the life cycle modeling and FCA approaches - the best of both worlds. While a full FCA can be cost-prohibitive, once a specific area of need is identified by technology assisted renewal analysis, a more targeted FCA can take place. Using this approach, an institution can obtain more detailed insight for specific priority needs.

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PERSPECTIVE

ON THE PROFESSION

Cracks in Our Future: The Monster Under the Bed

By Jack Hug, APPA Fellow

The need is clear; the facilities management profession has a creeping crisis. Many people believe we are living through a crisis today but it is slow moving so its critical impact does not capture our priority attention. Facility managers on many campuses are too slow in tackling the challenges and even slower yet in taking the essential integrated actions required to solve this creeping crisis; namely, the actions necessary for succession planning, replacement management, and leadership development.

In every region, facility managers and other professionals are talking about the changing workforce, how difficult it is to find and retain competent people for all parts of the organization, and especially how daunting a task it is to find replacements for leadership positions. Facility managers are belatedly waking up and realizing that they have very little bench strength and backup personnel for critical positions. More and more they routinely scramble to find replacements when essential positions become vacant.

This exodus is resulting in a serious talent shortage, substantial knowledge drains, leadership gaps, and, in numerous cases, profound loss of critical institutional memory. Also gone will be those extremely valuable personal networks; the critical relationships that every successful facilities organization enjoys; both internal and external that are vital to getting things done. This is the *monster under the bed* that will likely grow into an even bigger *ogre* before we can do enough to stop it. This is the living nightmare: that one day we will wake up are all alone—sitting at the top of the organization managing alone because we failed to develop other leaders.

Retirement is looking attractive again for many, and in the months and years ahead, we can expect to see the number of retirement elections increase. The demographics guarantee it. It's just a matter of time. On the national stage, more than 70 million baby boomers (born between 1946 and 1964) are eligible to retire between now and 2023, and during this same time period only 40 million people will enter the workforce. No one knows the specific numbers for retirement eligible staff in higher education facilities departments, but it's a fair bet that the number of those eligible for retirement during this same timeframe is substantial. The many institutions that have not performed a demographic study of their facilities workforce will be in for a surprise.

THANKS FOR EVERYTHING, BUT I'M LEAVING

This context and reality of the workplace is now forcing institutions to recognize that a workforce transition of significant proportion is taking place. Reality bites and hits home when a simple analysis of the workforce determines the likelihood of who is moving out; who (potentially) is moving up; and who is moving in. Collectively, these multiple moves will have a significant and profound impact on the organization's capabilities. There is a noticeable absence of any significant amount of well-planned and disciplined process for succession planning, replacement planning, and leadership development.

During the early 1990s this was particularly true in the State of California which was experiencing a pretty serious recession the belt-tightening resulted in layoffs, multiple years of early retirement incentives, and wiped out layers of middle management positions. Consequently these actions severely depleted the talent pool. During those years, planned management development slowed drastically or stopped totally.

Although the economic circumstances are not the same today as they were in the 1990s, (some say much worse at least in California) many of the same belt-tightening strategies are being deployed today across our campuses. These strategies include layoffs, furloughs, early retirement incentives, and the cutting or elimination of travel and training expenditures. It amounts to an unintentional reduction of institutional commitment to the development of future leaders. Furthermore, one

of the most serious unintended consequences is a decrease in *ready-now* replacements to fill critical skilled positions, including many leadership positions.

Leaders and skilled technical workers can not be developed overnight. It takes years of experience, practice, and study. Not to mention the need to find those who have the desire and the will to work hard over a period of a lifetime, to manage, and accept the obligations and sacrifices that go hand-in-hand with being a facility management leader today.

A SOBERING REALIZATION

The need for leadership talent is one thing to be concerned about. But also sobering is the realization that there are many more critical needs for pending replacement of large numbers of people who over the years have developed deep smarts, wisdom, expert or master status in a particular trade, profession, domain or functional area. So many of us have benefited and enjoyed success partly because of others in the organization who achieved the "go-to-guy" status. It is only fair to acknowledge that many facility management organizations have considerable expertise in functional areas, domain experts, skilled trades and requisite specialists.

But in many instances we have also fallen into the trap of developing domain experts—people who are too good at what they do for us to risk upsetting our comfort, and therefore we have not done enough to encourage their broader leadership development opportunities. This happens even though we instinctively know that managing a functional area or a single business unit of a facilities department is markedly different than having responsibility for leading and managing an entire facilities management organization.

The point is that leaders of the magnitude and quality needed in our facilities departments today are not immaculately conceived and it takes years of experience to develop leadership competencies. Relevant progressive experience remains the primary basis for developing leaders. Just as there is no such thing as a free lunch, there is no such thing as a free employee fully loaded with all the skills and abilities necessary. An investment and commitment is required from both the individual and the facilities department. Top management priority and commitment to leadership development is needed. Campus facility management departments clearly are behind the curve.

LEADERS AT ALL LEVELS

John Gardner, in his book *On Leadership*[1] was on-point when he wrote, "To exercise leadership today, leaders must institutionalize their leadership. The issues that leaders are facing are too technical and the pace of change too swift to expect that a leader, no matter how gifted, will be able to solve personally the major problems facing the organization over which she or he presides."

Stop and think for a moment about what happens on most campuses. We design a facilities organization to provide services and to solve facility problems—we select a leader who has the capacity to preside over and to strengthen the organization. Some leaders no doubt are quite gifted in solving problems themselves, but if they fail to multiply their leadership, or fail to develop other leaders for potential replacement of themselves and leaders for other critical position throughout the organization, then their departure leaves the organization crippled. They have failed to create and strengthen the organization that will survive them. We should all be concerned that far too many facilities organizations are totally dependent on a single individual at the top, and at essential and critical operating and skilled service positions.

Today, facility managers across the nation are admitting to themselves and to others just how difficult and challenging the job of a Senior Facility Officer really is. The pace and quantity of change; how things are growing increasingly complex, how the job today demands a host of new skills and

abilities; and how the need for a continual replenishing of knowledge has increased because as we are faced with a fresh menu of new success factors are all being discussed. This is an important and encouraging dialogue. It is time indeed to acknowledge the harsh reality that much of what many of us learned occurred in a world that no longer exists. It's time for facility professionals to hold themselves accountable for not only their own continuous learning but also for the timely identification of leadership potential, and for the active development of others.

AN UNDERSTOOD PATHWAY

There is a need for an "understood pathway" in our facility departments for the purpose of providing clarification to the frequently asked question: "How do I get ahead in this organization?" The APPA training, education, leadership development and certification programs, along with its annual conference, and regional meetings, provide a practical framework for outlining clarity of a facilities management context-specific pathway for future facility leaders. It is a pathway that has gained currency with many campus leaders. It begins with the Supervisor's Toolkit, a leadership foundational cornerstone; then onto the Institute for Facilities Management, a significant ascent up the ladder; and then the climb through the four tracks of the Leadership Academy, all the while honing a deeper understanding through experience on the job. The summit or the peak—leadership mastery—is a tough slog and requires life-long hard work and continued practice of both the art and the skills of leadership.

Given the mysteries of leadership development, one cannot make any confident generalizations about leadership development. Given the many paths that one can take, it is unlikely that we will ever succeed in devising the single program of training and development with certainty that will turn a promising youngster into a leader. We can, however, improve the production of a substantial cadre of potential leaders. A larger talent pool, from which the next generation of leaders will emerge.

Being *APPA active* and an engaged professional is one sure way to add to our capacity to lead, and will augment our ability to develop future leaders. Truly, leadership development is a process that extends over many years. Those bold enough to venture in, through partnership with the profession, will be able to slay the dreaded *monster under the bed*. Collectively for the profession, this is a *call to action* for us to improve and accelerating the development of talent in our facilities management organizations before it is too late.

NOTES

1. John W. Gardner, *On Leadership*, 1990. The Free Press, A division of Macmillan Inc. New York, New York 10022.

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The Perfect University Employee

By Matt Adams, P.E.

If you have been working in this industry for at least a few years it must be clear how many shining stars there are among us. It doesn't matter how high or how low morale is at your institution at any given time, there are those plant staffers who seem to thrive regardless. Sometimes it seems that we pay too much attention to those who don't "shine," or seem disgruntled under all circumstances. Why is this? I hope we haven't lost sight of what makes educational institutions so great: the people that they comprise. When you step back and take a look at work life within our profession, it is really something pretty incredible regardless of the obvious difficulties. We should pay closer attention to those among us who have long ago figured this out, and perhaps rethink our perceptions of our contribution to the institution.

WE ARE DIFFERENT

In every industry there is often the perception that there is some big entity, such as a corporation or senior management, which makes decisions selfishly, keeps all the profits and stifles the "little man." Perhaps in some industries this can be true, but at universities? I don't think so.

Coming from someone that has seen many, many universities from just about every viewpoint, I can tell you that there is no conspiracy or plan to take advantage of the very individuals who keep each institution alive. The leaders of our institutions are doing their level best to nurture the university and its staff, faculty, and students. The stars of our departments have figured this out and see the institutions for what they are: learning, educating, and researching entities that represent something much bigger than just their name. They represent the thoughts and efforts of those who work, learn, and grow there. These stars know that to believe anything less short-changes the true meaning of university culture, and even discredits those who have and continue to invest so much into the cultural equity of the institution. For that matter, if you really don't feel like you are contributing to part of something greater than your daily task and pay, why bother staying? You can make more money working for the corporations that might actually live up to your fears regarding profits and the sacrifice of the employees.

> PART OF THE COMMON EXPERIENCE THAT BINDS US TOGETHER ARE THE INTER ACTIONS AND RELATIONSHIPS WITH THOSE FACULTY AND STAFF THAT MAKE UP THE INSTITUTION.

EQUALS

The stars of our profession have a role that equals that of the teaching faculty. Part of the common experience that binds us together are the interactions and relationships with those faculty and staff that make up the institution. As I have written about several times, many of the stars within the housekeeping, grounds, plumbing, and other shops are a significant source of interaction and ultimately a connection to the institution.

It's no surprise that most housekeepers prefer to work in residence halls. The feeling of connection to and from the students reminds each employee of their role in this larger purpose. Have you noticed that the stars of our departments always know some students by name? Coming from someone who rarely meets any students while on campus, I am impressed with these individuals and their connections to the students.

Oddly enough, it's relatively easy to avoid any meaningful interaction with students on campus. You can complete your job and stay as detached as you want and miss one of the "connections" that reminds us of what the larger purpose of our job is. In fact, I have made an effort to meet the students who work within plant departments or attend committee meetings. Without this I tend to forget just how mature and clever these young people are. Their spirit and energy is easily absorbed and certainly sparks my loyalty to the institution. If you are not already one of the stars that actively engages the students, become one. It is a part of the process of reconnecting with the meaningfulness of your profession.

WHO'S WATCHING

It can be said that we are best defined by how we behave when nobody is watching. Here too, there are many within our plant departments who work the same way when seen or unseen. It's common and inspiring to see individuals or small teams of trade staff working alone in mechanical rooms for long periods without anyone noticing. These people demonstrate a dedication to their

trade, as well as the university, that is much more meaningful than simply trading time for money.

Regardless of what we do for work, there are times when we make decisions that can make a small, incremental difference in quality, savings, or service that might not ever be noticed by others. The shining stars of our profession make these little efforts many times a day, week, and month. This is one of the many ways that we keep our institutions going within ever decreasing budgets. It makes sense to feel and work this way, and we should all respect those that have this ethic.

If you were working for your family, you would work this way out of a sense of loyalty, love, and purpose. As they say, two out of three isn't bad, and this is why so many of our peers make the extra effort in small unnoticed ways. If you don't feel a sense of loyalty and purpose with your institution, you are missing perhaps the most meaningful part of your career.

IF YOU ARE A SHINING STAR, OR THE "PERFECT UNIVERSITY EMPLOYEE," YOU HAVE DECIDED TO EMBRACE THE IDEA THAT YOU ARE A PART OF SOMETHING BIGGER AND MORE IMPORTANT THAN YOURSELF, YOUR DEPARTMENT, OR THE MONEY.

EMBRACING SOMETHING BIGGER

You can really boil it all down to a simple test. If you are a shining star, or the "perfect university employee," you have decided to embrace the idea that you are a part of something bigger and more important than yourself, your department, or the money. Some students only spend four years on campus, yet feel like they were a part of something great and stay connected in many ways for the rest of their lives. Why wouldn't those of us who work at a campus for years choose to participate in the same esprit de corps? Some around us do, and they have chosen to embrace what distinguishes our career choice from so many others.

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

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Innovation and Regulation: The Social Negotiation of Technical Change

By Michael A. Anthony and Jim Vibbart

APPA executives can drive innovation in technologies that reduce the total cost of facilities ownership. After all, a $100 billion industry—one that is frequently used as a lever in implementing public policy—should have some influence in the facilities supplier market. It means getting into the mix where leading practice documents characterize risk and establish regulatory frameworks.

In this issue's feature article by Rich Davis and John Saidi, we learn about how an industry wrote itself a revenue stream. A two-year effort begun by the University of Michigan Plant Operations, carried forward by APPA's Code Advisory Task Force, and merged with other, like-minded organizations[1], resulted in successful regulatory intervention in NFPA 25[2]. The result: a 75 percent reduction in fire pump testing costs that saves $10 million annually to the educational facilities industry alone.

Many regulations intended to solve one problem create another as they scale up. The current Green Energy zietgiest, is an example. Speculators are eager to write checks in the tens of billions when what is actually needed is a multitude of smaller checks on the order of thousands of dollars. This is a problem of mismatched scale.

The next version of ASHRAE 90.1 will ask for 50 percent of 120V outlets to be connected to a timer. Specifics are available at: *https://osr.ashrae.org/Public%20Review%20Draft%20Standards%20Lib/90%20.1bs_2007__1stPPRDraftFINAL.pdf.*

To receive American Recovery and Reinvestment Act (ARRA) funding, states must conform to the latest and greatest building energy codes. One state's effort to receive ARRA funding is available at: *http://www.energy.gov/media/3930GranholmMichigan.pdf.*

Because states are under pressure, APPA institutions may be under pressure to translate the promise of 90.1(bs) into energy savings and jobs creation. Two questions:

- Will this increase use of extension cords to non-timed outlets?
- Will this double the number of outlets so that occupants conform to the 50 percent requirement?

The net effect of 90.1(bs) might be more energy wasted farther upstream the supply chain as the electrical industry uses more labor and more natural resources to install and manufacture extension cords, conduit, wires, circuit breakers and receptacles. Conversely, 90.1(bs) might drive innovation. Writers of the 2011 National Electrical Code are revisiting calculation methods that determine the number of receptacles and the sizes of transformers. Two proposals meant to reconcile the competing requirements of energy conservation and fire safety can be found on Pages 177 and 187 of the NFPA 70 Report on Proposals are available at: *http://www.nfpa.org/assets/files/PDF/ROP/70-A2010-ROP.pdf.*

ASHRAE 90.1(bs) could drive innovation that expands DC circuiting, eliminating power blocks at the end of electronic end-use equipment. Investment in the so-called Smart Grid, or in the reliability of the last mile of power distribution, could be disrupted by the prospect that automobiles and trucks (that carry 90 percent of U.S. fuel supply at any given moment) could morph into a massive backup power system—a system that would increase Homeland Security by eliminating the risk in the U.S. power grid becoming a weapon of mass destruction.

Innovation and regulation is a manifestation of a reciprocal process: the social negotiation of technical change. Having a hand in writing the rules is one of the most efficient ways of driving innovation and reducing costs in the long run. But it is a long run. Code intervention moves along a three-, six-, and nine-year trajectory.

David Handwork is APPA's Code Advisory Task Force expert on ASHRAE 90.1 and director of engineering services at Arkansas State University, Jonesboro. He can be reached at *dhandwork@astate.edu.*

PICK YOUR BATTLES

The first draft of any leading practice document is an ideal place to install controversial requirements. Thought leaders in any industry have to pick their battles. An imperfect document is usually better than no document at all. Twenty years and six revisions later, two things were happening in NFPA 25, both apparent opposites:

- Reliability improvements since 1991 were being ignored.
- Fire pump system innovations were being forestalled, effectively pushing reliability improvement into operation and maintenance budgets.

APPA's arguments before the NFPA technical committee acknowledged that installed systems always need maintenance, but the cost has to be risk informed and set against the gathering pace of development in newer, smart building technologies. The lesson relearned is that the political aspects of standardization are inescapable. You need the right "touch"—not too little; not too much. The best regulatory framework allows room for flexibility and provides platforms for negotiating agreement. Proof points are needed along the way.

Different industries respond to innovation differently. Many entrepreneurs can be intimidated by the inertia of many industries, including ours. The software industry is very quick to adapt to market needs and sometimes even creates the market. The life science industry on the other, engages in licensing activity because of early-stage risk. The chemical process and communications equipment industries respectively, prefer trade secrets and lead time to market.[3] Energy startups demand more money, more time, more late-stage risk (see sidebar). In our industry we use none of these. We take a process that works. Find its flaws. Remove those flaws. Do it at half-cost.

The New Yorker Magazine - March 2009, used with permission

"These new regulations will fundamentally change the way we get around them."

CONCLUSION

Innovation and regulation are facets of the same overall process of technical change. It is important to understand them together as well as separately. Risk regulation literature offers cautionary messages about unthinking legal compliance. Danger lies in simplification and encapsulation of leading practices in quantitative or one-size-fits-all practices. Perfect compliance with regulations can have perverse consequences; just as non-compliance will land you in court. Regulatory advocacy provides APPA with a real-time partnership with regulatory agencies to calibrate risk, and provides a growth platform for innovation.

INNOVATION AND REGULATION ARE FACETS OF THE SAME OVERALL PROCESS OF TECHNICAL CHANGE. IT IS IMPORTANT TO UNDERSTAND THEM TOGETHER AS WELL AS SEPARATELY.

NOTES

1. Stanford University, U.S. Department of Energy, U.S. Veteran's Administration, U.S. General Services Administration, and Edison Electric Institute.
2. *NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.* National Fire Protection Association, Quincy, Massachusetts.
3. *Preserving Vital Patent Law. Washington Times*, December 20, 2009. C. Nard, Case Western Reserve University. A. Morriss, University of Illinois, Urbana-Champaign.

Michael A. Anthony P.E., is senior electrical engineer at the University of Michigan, Ann Arbor, MI, and is a member if APPA's Code Advocacy Task Force. He can be reached at *maanthon@bf.umich.edu*.
Jim Vibbart, is manager of zone maintenance at the University of Michigan Plant Operations. He can be reached at *jvibbart@umich.edu*. This is his first article for *Facilities Manager*.

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

The technical focus of this issue includes two books about engineering; one that addresses the engineer's responsibility to be sustainable, and one about making effective use of engineering consultants. Both of these books emphasize the technical nature of the facilities business, but also the social, non-technical nature of our daily responsibilities.

—TW

SUSTAINABLE ENGINEERING PRACTICE, AN INTRODUCTION

ASCE Committee on Sustainability, ASCE, Reston, VA, 2004, 123 pages, softcover, plus CD, $32.25.

Just as APPA has been involved in sustainability issues since 1914 so have civil engineers. Sustainable Engineering Practice provides a history of how civil engineers (whose expertise includes roads, bridges and structures, water treatment, dams and canals, energy transmission,and water control projects) is a collection of reports, recommendations, and examples of notable sustainable solutions.

Sustainable Engineering Practice provides a brief history of world-wide sustainability since the Rio Summit of 1992, which formed the World Engineering Partnership for Sustainable Development, among other things. It also reviews the numerous initiatives that engineering societies have undertaken and completed since the Rio Summit. Among the initiatives are:

- an increased focus on the total cost of ownership
- sustainability in engineering education
- conservation of natural resources
- reduction of pollution, and
- environmental life-cycle assessment.

There are several examples of sustainable projects conducted by the U.S. Army Corps of Engineers, which reduced energy consumption to reduce environmental impact while saving money for other activities. These examples can be applied to many large facilities typical of higher education settings. There are numerous other ideas presented that fall in the civil engineering profession, such as roads, transit, and water management. Needless to say, these can sometimes be difficult to implement due to societal inertia, which we all experience it, often until it's almost too late.

This moderately priced book and CD provide good references for anyone making facility decisions whether for a single building, campus, or town.

HOW TO WORK EFFECTIVELY WITH CONSULTING ENGINEERS: GETTING THE BEST PROJECT AT THE RIGHT PRICE

Taskforce for the Update of Manual 45, ASCE, Reston, VA, 2004, 75 pages, softcover, $24.

I'm biased. I expect professionals to work that way and I expect to have a professional relationship with them. I also take the attitude that it's important to think like the professional you're working with in order to have an effective relationship. So I read *How to Work Effectively* from several perspectives and was satisfied that most of my biases were reasonable.

It's not always good to read what you like, because you don't often learn something new. So you should be cautious. But I think *How to Work Effectively* does a good job of explaining different ways engineers can have a contractual relationship with their clients, and the reasons why one method is more logical than another.

From the owner — who hires engineers for various building projects — *How to Work Effectively* outlines the results of various levels of preparation on the owner's part, and how the professional's fee is affected by the information known when the contract is negotiated. Obviously, more upfront information reduces questions and gives the professional the amount of effort needed to deliver the services. Correspondingly, the owner gains an understanding of how a professional calculates costs for services based on salaries, benefits, overhead, and profit. As a campus service provider, this same information helps me determine my organization's value.

There's nothing new about the elements of this book; the AIA has a similar publication, developed by the AIA Minnesota chapter and available online. But it's mostly focused on residential work as opposed to institutional work. The ASCE book is methodical, both broad and focused, and straightforward. It looks from the owner's and professional's perspective to identify best practices for a given setting. It is enlightening for owners and consultants who work with engineers. If you need to improve your understanding of the design-construction process with engineers, this may fill your needs.

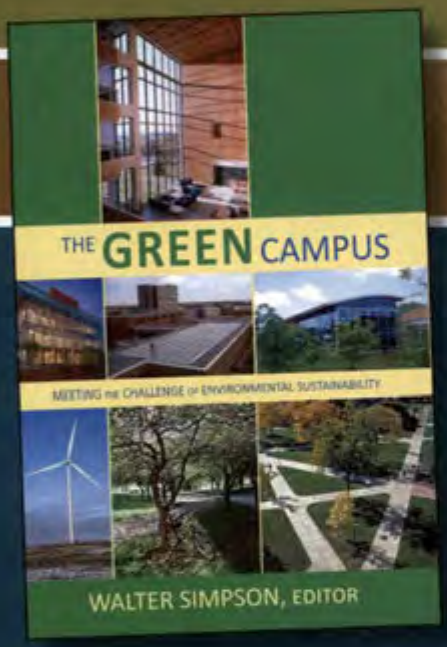
Ted Weidner is assistant vice chancellor of facilities management & planning at the University of Nebraska-Lincoln; he can be reached at *tweidner2@unlnotes.unl.edu*.

The Green Campus:

Meeting the Challenge of Environmental Sustainability

Edited by Walter Simpson

Published by APPA, *providing leadership in educational facilities*



Member Price: $87
Nonmember Price: $110

ISBN: 1-890956-46-5

Published 2008, soft cover, 361 pages

Purchase the book at
www.appa.org/bookstore

The Green Campus anthology explores the meaning of genuine environmental sustainability—in global and local terms—while profiling excellent campus environmental programs. The book offers guidance and inspiration to campus leaders and advocates who promote sustainability within institutions of higher education, and addresses these fundamental questions:

- What does it mean to be a green campus?
- Is it possible for educational institutions to effectively reduce their sizable environmental footprints?
- How can individuals make a difference and successfully advocate more environmentally sustainable campus operations?
- Is the education community poised to create solutions to our most vexing environmental problems?

This comprehensive resource is a vital tool that administrators, faculty, staff, students, and concerned citizens can use to help the education community take a leadership role in environmental stewardship.

Contributors include:
David Orr
Tony Cortese
Jim Hansen
Judy Walton
Alex Wilson
Brian Kermath
Michael Philips & Andrea Putman
Will Toor
Karyn Kaplan
Dean Koyanagi
Jack Byrne & Nan Jenks-Jay
and many more!

APPA Leadership in Educational Facilities

Professional Development WRAP-UP

EVEN IN TOUGH ECONOMIC TIMES— APPA'S INSTITUTE IS A SUCCESS!

By Suzanne Healy

January 2010 marked another successful APPA professional development offering with the Institute for Facilities Management in Indian Wells, California. The week welcomed highly engaged attendees from all across the APPA membership – to include Egypt, Hong Kong, and Pago Pago. We also were reminded of the popularity of this premier professional development offering as we welcomed 44 new attendees.

As the cornerstone of APPA's professional development offerings, the Institute continues to deliver content in the core areas of general administration, operations & maintenance, energy & utilities, and planning, design and construction which prepare our colleagues for their daily campus challenges. We appreciate the dedication of the Institute deans: Mary Vosevich, General Administration, Jay Klingel, Operations & Maintenance, Lynne Finn, Energy & Utilities, and Don Guckert, Planning, Design & Construction. Their oversight and direction showed through with the variety of course offerings that provided broad range of topical material for the facilities professional. Students had the opportunity to interact with experts who brought not only their knowledge, but their experiences from vast backgrounds, which provided a rich environment.

As the week drew to a close we celebrated with ceremonies

for the Class of January 2010. Sharing the achievement with old friends and new colleagues made for a great evening.

Kudos to all those institutions that supported the professional development of your staff! Now, like never before, we must take a leap of faith and spend on behalf of our institutions. This is no time to pinch pennies! The professional development of any individual must be as customizable as the individuals themselves – and APPA is here to help you achieve your departmental goals. Please visit *www.appa.org/training* for more information on all of our programming offerings.

We look forward to seeing you and your staff at the next APPA event!

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

January 2009 Institute Graduates

Hugues Antoine, Virginia Commonwealth University
Larry Atchinson, Lewis & Clark University
Greg Bechtold, Medicine Hat University
Rich Brown, Michigan State University
Victor Burgess, University of Texas MD Anderson Medical Center
Elizabeth Clark, Pennsylvania State University
David Crockett, Eastern Illinois University
Ron Cushman, Simpson University
Valerie Dambold, Illinois State University
Larry Fairbank, Brigham Young University
Wayne Flack, Concordia College/Moorhead
Connie Fox, Middlebury College
Dave Freeman, Augusta State University
Maly Garay, San Diego State University
Renato E. Invernizze, University of Colorado/Boulder
Kristie Kowall, Illinois State University
Steve Lancaster, Illinois State University
Boyd LeeMaster, Brigham Young University
Gregory Lischke, Wake Forest University
Miguel Lopez-Romero, Chadwick School
Marty Mattes, Bates Technical College
Carolyn McDonough, University of Maine/Orono
Catherine M. Newton, University of Michigan/Ann Arbor
Loras O'Toole, Montana State University
Rod Moran, University of North Texas
Shari Philpott, University of Colorado/Boulder
Larry Schmid, University of Nebraska/Lincoln
Billy Steele, University of Texas/San Antonio
Victoria E. Tate, Auburn University
Jon Terry, Quinnipiac University
Bethany Trombley, University of Texas/Austin
Chris Turletes, University of Alaska/Anchorage
Patrick Van Duyne, Joliet Junior College
George Wright, California Polytechnic State University/Pomona

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Compiled by Gerry Van Treeck

Miracle Method has developed Mira-Seal™, a proprietary process to seal tile and shower pans permanently. It eliminates the need for expensive and time-consuming removal and replacement of tile, making it ideal for college dormitory applications. The process involves cleaning the tile and grout, removal of mold and mildew, regrouting, and the application of Mira-Seal. Mira-Seal is unique in that it cures underwater. When applied, it penetrates into the grout and displaces any water under the tile. Twenty-four hours after application, the displaced water rises to the surface and is removed. Once dry, the tile is refinished using Miracle Method's Natural Accent's stone look finish. The showers and tile are ready to use again in 24 to 48 hours. For more information visit Miracle Method at *www.miraclemethod.com/collegehousing*.

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Spectronics Corporation has announced their BIB-150P ultraviolet inspection lamp. This hand-held UV lamp, with its unique 150-watt Built-In-Ballast™ bulb, is ideal for pinpointing any industrial leak such as oil, hydraulics, refrigerant, gasoline, diesel fuel, or water. Simply add the appropriate fluorescent dye and let it circulate with the specific lubricant. The dye will escape with the host fluid wherever there is a leak. When the system is scanned with the BIB-150P, the dye will glow brightly at the leakage area. For additional details about Spectronics Corporation visit *www.spectroline.com*.

Bobcat Company is making soil preparation easier for compact tractors or the Toolcat™ 5610 utility work machine with the release of the new soil conditioner and disc harrow Category 1 three-point hitch implements. Offering two, three-point soil conditioners in working widths of 60 and 72 inches. The soil conditioner is a useful tool for producing a perfect bed for seed or sod, windrowing and separating rocks or other ground debris, grading and leveling topsoil, removing old sod, or pulverizing clumps of dirt. For more information, please visit Bobcat Company at *www.bobcat.com/attachments*.

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Ivalo Lighting, a decorative fixture manufacturer, has added a 27" interior sconce to its popular L'ale product family. The new sconce is a sensual, LED-powered design inspired by the company's original L'ale pendant, introduced in 2006. The L'ale product family, designed by William Pedersen, is the recipient of the 2007 Chicago Athenaeum Good Design Award. The new L'ale cast-aluminum sconce is 27" high, varies in width from 4.25" to 8", uses tiny, high-power LED light sources, is available in matte titanium, matte slate, and matte graphite, as well as custom colors and is ADA-compliant. For more information about Ivalo Lighting visit *www.ivalolighting.com*.

Falcon Waterfree Technologies introduces the new F7000 waterfree urinal, a revolutionary splash-free bowl design that also provides revenue generating advertising opportunity for facility operators. The new urinal has already received accolades from several European organizations for its contemporary design and environmental benefits. The low purchase and life-cycle cost of the F7000 urinal makes it a smart choice for new construction and restroom upgrades. The Falcon F7000 urinal provides a special area for messaging, which can be used to describe water savings and other environmental accomplishments of the facility, or may be employed as revenue-generating advertising space. Advertising on the F7000 urinal is easy to update, easy to clean, and eliminates the need to install advertising frames on restroom walls. For further information visit Falcon Waterfree Technologies at *www.falconwaterfree.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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