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THE OFFICIAL PUBLICATION OF APFA



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Facilities Manager

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APPA'S 7 Key Strategies

will enhance and support our revitalization efforts.

1. Develop and execute a "brand" initiative.
2. Develop and implement an enhanced website to become the "go to" resource for facilities questions.
3. Expand research to build credibility and visibility by senior institutional officers.
4. Engage in symbiotic and collaborative partnerships.
5. Engage young facilities professionals.
6. Provide targeted cutting-edge educational programs.
7. Establish credible and valued credentialing programs for individuals and institutions.

From the Editor

by Steve Glazner

The annual APPA regional conference season is the time when chapter and regional members, business partners, and the host staff enjoy the blend of educational sessions, social events, and the camaraderie found among friends and colleagues from institutions in their localized areas.

In the 1950s APPA's six regional associations were formed—some 40 years after the organization began. It wasn't actually until 1971 that APPA's headquarters was created to consolidate and coordinate national and international efforts for the association.

Most of my regional experience and exposure has been with the Southeastern Region (SRAPPA). About 11 years ago, APPA made a decision to assign each APPA staff director to serve as a liaison to one of the regions. I was fortunate to be assigned to SRAPPA.

The other regional staff liaisons are:

- **Eastern Region (ERAPPA):**
Tom Base, director of membership and outreach
- **Midwestern Region (MAPPA):**
Suzanne Healy, director of educational programming
- **Central Region (CAPPA):**
Lander Medlin, executive vice president
- **Rocky Mountain Region (RMA):**
Jill Amstutz, director of communications and marketing; and
- **Pacific Coast Region (PCAPPA):**
Chong-Hie Choi, senior director of finance and administration.

Each region has its own personality and organizational culture, and this liaison relationship has greatly increased and enhanced the communication and understanding between APPA and the regions. Look for summary reports on each regional meeting in the newly designed *Facilities Manager* in January/February.

Finally, in this last issue of 2007, we reflect on the tragedies that hurt our communities at Virginia Tech, University of Delaware, University of Memphis, University of South Carolina, Ole Miss, and Clemson University. Let us strive to make 2008 a progressive, positive, and safe year for our educational institutions. ¶

COMING

IN JANUARY/FEBRUARY
ISSUE OF FACILITIES MANAGER

- Theme: The Lab of the Future
- Reports from 2007 Regional Conferences
- New redesign of *Facilities Manager*



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by Kisha D. DeSandies

Website Construction

APPA is currently in the midst of a complete redesign and reorientation of its website to reflect its new brand identity and to give members the ability to access information more efficiently. The new site is set to launch in mid-January 2008. Several APPA members will be asked to test the site and give feedback before it goes live to ensure our membership needs are met.

There have already been three new user-friendly and comprehensive features implemented on the existing website. First, we have added a robust search feature that is posted on the left column of each page of the site. This will better help users locate desired data and information.

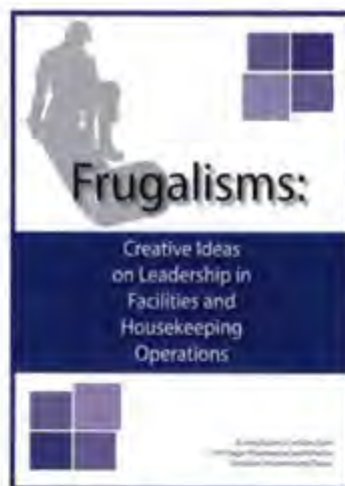
Second, stock your shelves with APPA's books by visiting the newly designed online APPA Bookstore (www.appa.org/bookstore). Enhanced features of the new bookstore include:

- A new shopping cart that allows you to save your items so that you may view and change upon your next log in.
- Easy-to-use search function by author, title, and topic.
- Ability to check the status of your order.
- Ability to track your shipment.

Finally, APPA's newest website feature is MyAPPA. This feature offers members access to personalized information—specific to an individual's APPA membership activity, including: membership dues status and renewal, record of attendance at educational sessions, list of publications purchased, survey participation, and online membership directory. Visit www.appa.org to use these new features.

Facilities Manager Redesign in 2008

Reflecting APPA's new brand is also extending to *Facilities Manager*. In the January/February issue, we will unveil a newly redesigned magazine that visually displays the character of our membership. The editorial content will continue to address the latest trends, standards, issues, and solutions in educational facilities renewal and modernization, sustainability, campus operations, grounds maintenance, and energy and utilities management.



I.E.H.A. Publishes Book on APPA President's Writings

The International Executive Housekeepers Association (I.E.H.A.) recently published an anthology of APPA President Alan Bigger's writings—*Frugalisms: Creative Ideas on Leadership in Facilities and Housekeeping Operations*. Bigger is the Frugal Housekeeper columnist for I.E.H.A.'s magazine *Executive Housekeeping Today*. *Frugalisms* contains several years' worth Bigger's housekeeping-related articles on floor care, staffing, budgeting, and customer service. You

can purchase the book through the APPA Bookstore at www.appa.org/bookstore.

Supervisor's Toolkit

Nuts and Bolts of Facilities Supervision

Registration Open for February 2008 Programs

There is still space for the February 3-7, 2008, Institute and Toolkit in Newport Beach, California. The Institute for Facilities Management is a four-track course of study with core programming in general administration, maintenance and operations, energy and utilities, and planning, design and construction. The Supervisor's Toolkit is a structured, open-ended, and pragmatic approach to developing supervisors.

APPA is pleased to bring back the Facilities Finance Institute this February in Newport Beach. This program is geared towards Institute graduates for continued professional development in the financial aspect of facilities management. Registration for the Institute, Toolkit and Facilities Finance programs are available at www.appa.org/education.

Registration is also open for the Educational Facilities Professional (EFP) Credential program, which is available for professionals who seek to take their career to the next level. The next EFP credential preparatory class will be February 8, 2008 in Newport Beach, California. Individuals can take the exam February 8 or 9. The EFP program confirms your achievements and illustrates your basic, fundamental understanding of what it takes to create and maintain

safe, functional, and inspiring learning environments, now and for future generations. Visit <http://efp.appa.org/index.cfm> for more information.

APPA 2008: Save the Date

Get ready for APPA to take you from Good to Great in 2008. Join us July 9-11 in San Antonio for APPA 2008, where you will climb toward peak performance with sessions to challenge, motivate, and transform you and your facilities operations. Experts and breakout sessions will focus on leadership and collaboration; solution revolution and technology; and connection and communication.



New Membership Directory Sent

APPA Members: Look for your copy of the 2007-2008 APPA Membership Directory to arrive soon. The directory will include contact information for institutional, associate, and affiliate members and business partners. It will also have updated information on APPA's new brand, programs and events, organizational structure, and Bylaws. Look for the new cover to feature a spectrum of our membership.



College Sustainability Report Card 2008 Released

Sustainable Endowments Institute has released the College Sustainability Report Card 2008. The report assesses sustainability efforts at the 200 public and private universities with the largest endowments. Letter grades are assigned to each campus in eight categories: administration, climate change & energy, food and recycling, green building, transportation, endowment transparency, investment priorities, and shareholder engagement. The report finds that two out of three schools have improved their sustainability performance since the 2007 report card, but many institutions continue to lag in applying sustainability practices to their endowment investments. Read the report card at <http://www.endowmentinstitute.org/sustainability>.

U Victoria to Use 100% Post-Consumer Recycled Paper

The University of Victoria marked International Campus Sustainability Day by announcing that it will switch all its bond paper supplies to 100 percent post-consumer waste content beginning January 1. In making the switch from 30 percent post-consumer waste content, the university becomes one of the first in British Columbia to make the commitment to using 100 percent recycled paper stock. With the improved quality of recycled paper stocks and more effi-

cient equipment, the switch is not expected to translate into increased costs for the university or for students and staff.



Columbia University won one of three Grand Awards in the Urban University Grounds category there were seven awards.

PGMS Honors Schools with Outstanding Grounds

The Professional Grounds Management Society (PGMS) recently recognized several colleges and universities for their exceptional grounds maintenance with the society's 2007 Green Star Awards. The College of Wooster in Ohio received the sole Grand Award in the University and College Grounds category. Four others were recognized with an Honor Award including the University of Virginia, Texas Tech University, Texas Woman's College, and Penn State Delaware County.

In the Urban University Grounds category there were seven awards. The Grand Award recipients included Columbia University, American University, and the University of Texas at Austin. Honor Award winners included: the University of Pittsburgh, the University of Nevada-Las Vegas, the University of Alberta, and Arizona State University. Cincinnati State Technical & Community College received the Grand Award and Gwinnett Technical College received an Honor Award in the School Grounds category.

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*Large bronze screens, cast in China, adorn three sides of the East Asian Library.
(Jonathan Martin/UC Berkeley)*

UC Berkeley Dedicates New East Asian Library

The University of California at Berkeley recently dedicated the C.V. Starr East Asian Library, one of the first freestanding libraries in the United States constructed exclusively for an East Asian collection. The new 68,000gsf library's treasures include more than 900,000 volumes of primarily Chinese, Japanese and Korean materials including woodblock prints, rare maps and scrolls, contemporary political posters and Buddhist scriptures. More than 70 UC Berkeley scholars teach over 200 courses concerning East Asia to over 5,500 undergraduate and graduate students. Other features in the library include:

- Coleman Fung Media Center, which will have links to public and private databases in Japan, Korea and China that relate to the humanities and social sciences.
- Art history seminar room with state-of-the-art projection capabilities and easy access to large-size books in the collection.
- Henry Fong Rare Book Room, which contains a rare book vault, with temperature and humidity controls and modern security measures.
- The Murakami Collection of first-edition literary publications from the Meiji (1868-1912) and Taisho (1912-1926) periods.†


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Thought Leaders Examine Facilities Management Concerns

by E. Lander Medlin

Clearly, with budget deficits as they are, there is an 'elephant' in the room. This situation leaves a slim margin for increased investments in education by federal, state, or provincial agencies. Therefore, the opportunity to make the kinds of adjustments and investments in education that are essential for the public welfare is unlikely to present itself anytime soon.

Last year, APPA established the annual Thought Leaders Series to spark progressive discussion and distillation of major issues impacting college and university facilities and create a forum to disseminate information on alternative ways to approach these vexing problems and concerns. In April 2007, APPA's second Thought Leaders Series took the next step and directly mapped out effective solutions and best practices to handle these challenges.

These types of discussions are critical to our industry because the challenges of change remain and the myriad pressures of accessibility, affordability, and accountability are ever-present. This makes effective constructing, operating, and maintaining educational facilities difficult at best. However, to effectively manage the entire campus physical assets in an environment of scarce resources, the educational facilities professional must understand all aspects of their facilities as well as their impact on the complex mission of the institution. They must also connect the goals of their operation with the educational outcomes of the institution. Consequently, linking programming, design



and construction, and facilities operations in an integrated way is essential to achieve educational outcomes.

At the first Thought Leaders Series—held in May 2006—a group of 20 educational leaders identified seven trends affecting higher education's future and related these trends to the top 10 issues affecting facilities professionals. Their work resulted in the distribution of the white paper, *University Facilities Respond to the Changing Landscape of Higher Education*.

This year—through the gracious sponsorship of Carter & Burgess, Inc. (second-year contributor), and IBM—we were able to meet to hone in on these trends and issues in our field. The focus of this second meeting was to consider, in greater depth, three major challenges confronting higher education as a whole: **evolving technology, changing stakeholder expectations, and the impact of competition** on both these drivers of change.

Facilities professionals at this year's Thought Leaders meeting identified the top ten critical facilities issues and formulated specific questions to engage senior institutional officers and facilities professionals in further dialogue at their individual institution. By taking an in-depth look at these drivers of change, they were able to

identify major patterns and themes, significant challenges, relevant strategies, strengths, and potential obstacles to success. In addition, by taking a broader perspective to develop the top ten critical facilities issues, they were able to provide a comprehensive list of questions following each issue. This approach will enhance a facilities professional's discussion with senior institutional officers concerning these trends and issues to help improve performance and better prepare for the future.

So, what did we learn? We found the following six challenges of particular importance or significance:

- aging infrastructure and workforce
- increasing regulation
- lack of transparency
- strained public perception
- stressed financial model
- measurable "accountability" (i.e., better performance at a cheaper price—it's about *value*)

It is essential that we seek to improve our understanding of our role, purpose, and processes if we are going to *add* value to our institutions and the higher education delivery system. The essence of our **strengths** is our ability to build relationships and partnerships and, at the same time, ensure that we keep higher education's values at the forefront. Certainly, a key message is that broad collaboration is the neon sign for success. Also, we were reminded that technology is just a tool to create and develop community. When it comes to the **impact on facilities**, the group recognized the need for:

- for shared use/multi-use facilities
- for blended "bricks and clicks" to follow the "pedagogy"/ curriculum needs

Lander Medlin is APPA's executive vice president. E-mail her at lander@appa.org.

- for increased accountability and meaningful metrics and measures
- to increase our own transparency
- to involve students (early) in the planning process
- for more effective communication

Our facilities experts considered these issues and others to develop a list of the top 10 critical facilities issues for 2007:

1. improve communications
2. address sustainability
3. balance and articulate expectations
4. integrate with IT
5. focus on the customer
6. manage maintenance and adaptive reuse
7. make master planning effective
8. focus on total cost of ownership
9. align facilities planning with institution goals
10. institute metrics for performance measurement

The summary report, available free through our bookstore, provides the

detailed background and explanation for each of these issues along with a series of discussion questions you should use to begin a meaningful dialogue and search for solutions at your respective institution.

Finally, we highlighted the **critical skills or qualities** each educational facility professional should possess for future success. You will find these qualities detailed at the end of the monograph.

The issue and goal is ultimately about leadership—creating connections; enhancing the channels of communication; and ensuring broad collaboration. Remember, it's the human networks that really count. [We hope you find these reports useful as you consider the challenges you face at your institution. We believe the Thought Leaders report gives you the information you need to address these vexing problems, and to do so collaboratively at the highest levels in the institution.]

EDUCATIONAL FACILITIES
AND THE IMPACT OF
TECHNOLOGY,
EXPECTATIONS, AND
COMPETITION

APPA Thought Leaders Series
2007



The second Thought Leaders report—*Educational Facilities and the Impact of Technology, Expectations, and Competition*—is available free at www.appa.org. The report stems from APPA's 2007 Thought Leaders Series on the changing landscape of higher education.

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Implementing a Cleaning and Maintenance Standard

by Daniel S. Wagner

Note: In June, the University of Michigan Ann Arbor Campus Plant Building and Grounds Services Department became the first organization to be certified to the new ISSA Cleaning Industry Management Standard (CIMS).

For years, the University of Michigan's Plant Building and Grounds Services (PBGS) Department struggled with proving that, as a department, they not only live up to the university's well-known motto—The Leaders and Best—but embrace its philosophy and values. The management and 440 employees of PBGS believed their department was operating in an efficient and quality manner, until Area Manager Darryl Betts learned about the new Cleaning Industry Management Standard (CIMS).

"We saw CIMS certification as one way our department could exemplify that philosophy and gain the respect our staff deserves," says Betts, a 20-year veteran with the department.

"Too often in this industry, you know you're at the top of your field, but you have no way to independently prove that belief. Now we do, and that has tremendous value."

CIMS Certification

CIMS is a management framework designed to assist in-house cleaning departments and service contractors develop and maintain quality, customer-focused organizations. Administered by ISSA, the worldwide cleaning industry association, and developed through a consensus-based



CIMS is a management framework designed to assist in-house cleaning departments and service contractors develop and maintain quality, customer-focused organizations.

process that brought together the cleaning, facility management, and purchasing communities (including representatives from APPA), CIMS is based on universally-accepted principles that have proven to be the hallmarks of successful, customer-focused organizations. Compliance with the standard indicates that an organization is structured to deliver quality services that focus on meeting customer expectations.

The University of Michigan PBGS is one of 23 organizations participating in the CIMS certification program, which is a comprehensive assessment by an independent assessor. Once the organization demonstrates compliance with the standard, they are recommended for certification.

The Process of Complying

Other service departments within the University of Michigan won industry awards, including plant operations, which received the prestigious APPA award for excellence in 2006. Betts identified CIMS as the first certification program that looked at an entire department and required the department to meet a set of management expectations that range from training employees to interacting with customers. Thus, Betts encouraged PBGS to seek certification and lead the PBGS team through the process of documenting compliance with the core sections of CIMS: quality systems; service delivery; human resources; health, safety and environmental stewardship; and management commitment. This was to prepare the department for its assessment of management and operational follow-through.

Janet Allen, PBGS technical training coordinator, participated in the process. She spent two months gathering and documenting policies and other requirements of CIMS to demonstrate compliance. Allen immediately recognized that the task would not be an easy one, but came with great benefits and promised to be quite enlightening.

"You may start out feeling like there is so much to compile and that you do not know where to begin," says Allen. "But I found it was manageable if you are organized and take a systematic approach when working through the checklist of compliance items. We discovered that we had tremendous resources within our department and elsewhere in the university that had never been pulled together into a single document for easy access."

Dan Wagner is the director of CIMS for ISSA, the experts on cleaning and maintenance in Lincolnwood, Illinois. E-mail him at daniel@issa.com.

PBGS Business Manager Lukeland Gentles was also involved in the process and liked how CIMS promotes information sharing across an entire organization and provides ready access to management information.

"Oftentimes you have different individuals responsible for different aspects of an organization, and, they may not have a good understanding of one another's areas and their impact on overall operations," he says. "CIMS compelled us to go to everyone from OSHA representatives to human resources and gather knowledge."

Gentles further stressed that such gathering of information helps deal with situations where someone may be absent or may have left the university by making sure that there is no information gap.

Allen agrees. "For instance, some of us were not as familiar with the university's procurement processes, so it was a good learning experience to better understand that aspect of our operations," she says.

With the CIMS compliance, PBGS now has what the team refers to as "management in a box"—a set of seven comprehensive binders that can be referenced by anyone in the organization. Further, PBGS plans to place all the management and operations material on a CD for easy access, updating, mobility, and sharing within the department, the university and amongst peers in the industry.

The Value of CIMS Certification

PBGS found the certification process useful in identifying areas where they were successful and where they could improve. This reinforced the need to standardize and simplify processes. The team's efforts found that some things as simple as personnel disciplinary form letters differed from area to area, and the department is now working with the Human Resources department to make employee communications more consistent.

"We discovered that we had tremendous resources within our department and elsewhere in the university that had never been pulled together into a single document for easy access."—Janet Allen, PBGS technical training coordinator.

The group also engaged in past discussions regarding the need to standardize and simplify equipment procurement, and their CIMS preparation efforts reaffirmed the need to move forward.

"The ISSA certification process was certainly an informative and positive experience," says John Lawter, PBGS associate director. "It reinforced our beliefs in what we feel we are doing

right, as well as identified areas for improvement. It was a nice opening act to our next round of strategic planning."

One possible area PBGS expects to focus on involves the use of workloading software. According to the team, going through the CIMS certification process helped them see the value of workloading tools being used by more decision makers in the organization. PBGS, therefore, expects to expand the use of such software to include, not only upper management, but supervisors as well.

PBGS also sees CIMS certification and the fact that it applies equally to in-house operations and contract cleaners as valuable in creating a level playing field.

"When you're always under the microscope and the common perception is that someone else can do your job more efficiently, it is invaluable to be able to hold the same certification

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that is available to contract cleaners," says Betts.

Gentles notes that the international credibility ISSA brings to the table can also have a significant impact when communicating with internal clients, upper management, and peer institutions. Achieving certification from the worldwide cleaning industry association lends terrific support come budget time, he adds.

PBGS also sees CIMS certification and the fact that it applies equally to in-house operations and contract cleaners as valuable in creating a level playing field.

"If a global organization says your department is operating as efficiently as possible in these cornerstone areas of management and customer focus, then you'll be taken a more seriously the next time someone considers cutting your budget," Gentles advises.

The University of Michigan is understandably proud to be the first organization to achieve CIMS certification. Betts notes that CIMS certification may very well become commonplace as more organizations understand its benefits, but the university prefers to "be on the cutting edge rather than on the back of the bus." By achieving CIMS certification, the University of Michigan Plant Building and Grounds Services Department has proven to be the Leaders and Best indeed. ¶



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Membership Matters

Seven Ways to Practice Multicultural Leadership

by Juana Bordas

Not only is the world getting flatter, it is becoming more colorful. As globalization becomes a reality, more organizations will employ people of every race, nationality, religious background, and age group. That is why if your organization is still leading the old traditional way, you're making a mistake.

Traditional leadership models—although they may differ from person to person and method to method—generally exclude the enormous contributions, potential learning, and valuable insights that come from leaders in diverse communities. Through implementing multicultural leadership, not only will your organization's working environment be a better, more enjoyable place to work, but you will be able to provide more comprehensive services at your institution.

Multicultural leadership encourages an inclusive and adaptable style that cultivates the ability to bring out the best in our diverse workforce and to fashion a sense of community with people from many parts of the globe. Here are eight ways to help you make the transition to a multicultural leadership model.

1. First, you need a history lesson.

Understanding the history that gave rise to ethnocentricity is perhaps the most difficult step in transforming leadership to an inclusive, multicultural form. You



Successful work units will be those whose leaders view themselves as just another part of the organization and who place value in the expertise and innovation of their employees.

can't just go to a seminar for a day and come out understanding why the old Eurocentric leadership models won't work in a globalized world. You need to learn about these cultures in order to develop the clarity that allows you to incorporate multicultural leadership techniques into your organization.

2. Think we, not I. Today's work environments can be an incredibly competitive place where the accepted motto seems to be "every person for themselves." Leaders who put an end to this harmful way of thinking will create a work environment where the focus is on mutual, not singular advancement. Then people will work for group success before personal credit or gain. This will ultimately result in the entire department or organization's success.

3. Flatten your leadership structure. Successful work units will be those whose leaders view themselves as just another part of the organization and who

place value in the expertise and innovation of their employees. Flattening the leadership structure will help employees feel more appreciated and will work more easily together instead of getting hung up on a 'you're the boss' mentality.

4. Help people learn to work better together. No two people come from exactly the same background. Despite outward similarities, every employee, manager, or director is unique. Successful organizations are those that learn to accept the small differences that make us human and work together for the greater good of the organization. Consensus building is a great way to strengthen any work environment.

5. Minimize conflict by reminding employees that they truly are "family." Any number of conflicts can arise in an office setting, and by using the right leadership techniques, you can alleviate conflict so everyone works together (for the most part, at least) as one big, happy family. If leaders encourage employees to view one another as family helps them to seek out resolutions to their problems. It makes them feel a responsibility to find a way to coexist in order to benefit the organization.

6. Foster a culture that's accepting of spirituality. You might be reluctant to make a connection between spirituality and work, but it is possible to do it without stepping on anyone's toes. As long as no one tries to force his or her faith on anyone else, the entire workplace is free to learn from one another and be inspired by the values that underline many faith traditions—hope, optimism, and gratitude. By encouraging employees to share their spiritual sides rather than compartmentalize

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Traditional leadership models—although they may differ from person to person and method to method—generally exclude the enormous contributions, potential learning, and valuable insights that come from leaders in diverse communities.

them, you create a workplace where people bring their “whole selves” to work. Your employees will quickly see that they are free to be themselves. And as a result, they will be happier people—and happier people are more productive and creative.

7. Focus employees on a departmental or institutional vision. Almost every organization has a motto or mission that is meant to inspire employees to provide high-quality service. If you don't have one, you should come up with one right away. But does your organization's vision really represent the beliefs and attitudes of all of your employees? In order to develop a vision that truly reflects the diverse attitudes of your employees, think of it as a community vision. Listen to different points of view, communicate in an open, give-and-take fashion, and welcome new ideas. The shared vision that results will provide a focal point for people's skills, talents, and resources. With that vision assuring them that their efforts will make a difference, people will be willing to assume a higher degree of risk and make greater sacrifices, which will translate to an organization with harder working, more dedicated employees.

Tapping the potential of the changing workforce, member base, and community requires leadership approaches that resonate with and are representative of a much broader population base. Leaders must be able to use practices and approaches that are effective with the many cultures that make up our communities.

Leaders without significant experience within diverse cultures needn't worry. People *can* develop affinities and sensitivities for a number of different cultures. Leaders *can* acquire multicultural competencies and work effectively with many different populations. ¶

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Correlating Facilities Impact Study with FPI Data

by Gary L. Reynolds

In promoting leadership in educational facilities, APPA has conducted surveys of its members to provide benchmark data for comparative purposes. A biennial survey, *Comparative Costs and Staffing Report*, was the mainstay of APPA's survey efforts for many years and included basic data on costs per square foot for custodial, maintenance, utilities, etc. More recently, APPA recognized that additional measures are important to provide a strategic picture of institutional facilities. Thus, over the past several years APPA made changes to the survey instrument with strong influences on the redesign coming from the Strategic Assessment Model (SAM) and the Balanced Scorecard.

The redesigned survey, *Facilities Performance Indicators (FPI)*, now includes Facilities Operating Expenses (FOE), Current Replacement Value (CRV) of facilities, and General Institution Expense (GIE), as well as the usual costs for custodial, maintenance, and utilities.

Findings from the recent CFaR project on the Impact of Facilities on the Recruitment and Retention of Students came from survey results of more than 16,000 students from 46 institutions across the U.S. and Canada. Of those 46 institutions, eight of the schools also participated in APPA's FPI survey. Thus, there is an opportunity to explore correlations between student responses and financial measures.

Seven measures from the FPI (data from FY05-06) include custodial, maintenance, and total costs per gross



Of those 46 institutions, eight of the schools also participated in APPA's FPI survey. Thus, there is an opportunity to explore correlations between student responses and financial measures.

square foot (GSF) as well as normalized ratios such as FOE/CRV, FOE/GSF and FOE/GIE. From the student survey (completed in Spring 2005) there were several questions asking for student satisfaction such as, "Overall, how satisfied are you with the quality of the facilities on your college campus?", "How would you rate the quality of maintenance of your college/university?" and "How would you describe your overall feelings about your college or university?"

The data was prepared by taking the average of all the student responses for each of the eight schools for each of the three questions noted above. The data was then combined with the FPI data in a common SPSS database (the

same data analysis software used for previously reported results). A number of multiple linear regression models were run with various dependent (student responses) and independent (FPI data) relationships. Of all the analysis completed, a student's perception of the *quality of maintenance* is the most strongly correlated to FPI data, with the strongest relationship to the two ratios of FOE/GSF and FOE/GIE and with a weaker correlation to FOE/CRV.

Research shows that students are evaluating an institution, in part, on their perceptions of the quality of the maintenance at the college or university they are considering. The results also showed that approximately 1 in 6 students rejected an institution if they perceived that the institution was poorly maintained. This follow-up research (admittedly based on a small sample size) shows that there is a positive statistical correlation between students' perception of the quality of maintenance and the facilities operations expenditures per gross square foot (FOE/GSF).

The sum of these two pieces of research indicates that an institution's operation and maintenance expenditures have a direct and strong statistical correlation with the ability of an institution to recruit students. ¶

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Gary Reynolds is a past APPA president and co-director of APPA's Center for Facilities Research. E-mail him at glrcolo@gmail.com.

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Deferred Maintenance Reporting for the Have-Nots

By Richard L. McDermott

I was stuck. I was at an institution that was never going to fund equipment and system replacements according to their "industry standard expected service lives." It was time to make a report to the executive group about the deteriorating state of the physical plant, but I was not sure how to arrive at a point that would be meaningful to the decision makers. I wanted to be able to hit the ball out of the park, but felt like I was standing there with a wiffle bat, which is an ineffective tool of persuasion.

I remembered watching a TV interview of college basketball coach Bobby Knight. His answer to a reporter's questions about goals that were unrealistic for his team was "Sometimes a goal is just not possible. When faced with that, you need to get on with something that is attainable." Good advice. I started moving along with the usual steps in putting together a report—but kept an eye out for that attainable something.

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Qualification

This topic is not for institutions that have plenty of money, which replace everything in the facilities inventory according to its "industry standard expected life cycle." It's nice to be able to travel that route. However, there is broader path that most of us follow. It is usually referred to as "running systems and equipment to failure."

Back to the Story

I was following the usual three steps:

1. Complete a survey that lists individual projects
2. Complete a management report that presents what has to be done
3. Identify a necessary funding level

If you do not like assumptions, find a way to measure what is really going on. Follow the empirical path.

I realized I was putting together a boring presentation and if I was bored with it, I was going to bore the executive group. The focus was fuzzy. It was going to be a real labor to bring relevance to the punch line. It did not stand up and speak to an executive group that was comfortable with:

- Running systems and equipment to failure—tell us when it is about to fail then we will deal with it.
- Saw little relevance in what other institutions are doing or in national physical plant benchmarking factors.
- Were not looking to spend more money on maintenance—the zero sum game meant they would have to take it from someone else.

The Well-Worn Path

I found the available literature usually offered the following:

Deferred Maintenance/ Deferred Maintenance Backlog/ Accumulated Deferred Maintenance Backlog: Total dollar amount of existing maintenance repairs and required replacements (capital renewal), not accomplished when they should have been, not funded in the current fiscal year or otherwise delayed to the future.

Deferred Maintenance Backlog Deterioration/Plant (Facilities) Deterioration Rate:

Facilities and equipment are in a constant state of degradation. The rate of deterioration may be expressed as a percentage of current replacement value per year. A benchmark deterioration rate for a reasonably well maintained facility is approximately 2.5 percent per annum.

Facility Condition Index (FCI): The facility condition index (FCI) is expressed as a ratio of the cost of remedying existing deficiencies/requirements, and capital renewal requirements to the current replacement value (i.e., $FCI = (DM + CR) / CRV$).

While property owners/managers establish independent standards, a "fair to good facility" is generally expressed as having an FCI of less than 10 to 15 percent.

Therefore, for local campus predictions, you needed to assume critical variables. By doing so, you lose relevance, not gain it. I started seeing that waffle bat appearing in my hands again. Wrong path—choose another one.

Empirical Path

If you do not like assumptions, find a way to measure what is really going on. Follow the empirical path. I have always liked the word empirical. It usually means not boring or fuzzy. It is something interesting and real. You can get your hands around it. An empirical fact would be something the

How an institution defines and what it places in the backlog will vary. FMers are not a devious lot. However, there are grey areas in the process.

Executive Group could see when they looked out their office windows. If you have completed a quality survey:

- you have accurate data
- you have the current aggregate backlog
- you have the time over which it all occurred

Why not calculate empirical factors?

TABLE 1

Medical School Building Cyclotron Operations Center Bldg School of Public Health University Center Tower

Building	Year Built	Current Year	GSF	Weighted Average Age
A	1978	2005	864,608	14.35
B	1984	2005	17,522	0.23
C	1981	2005	212,678	3.14
D	1977	2005	239,547	4.12
E	1974	2005	291,918	5.56
			1,626,273	27.41

Buildings

Weighted Average Annual Deterioration Factor

Building	Year Built	Current Year	GSF	Weighted (by sq ft) Age	Unmet Deferred Maintenance Backlog	Current Replacement Value (CRV)	Average Annual Backlog Addition	Average Annual Backlog Addition Rate
A	1978	2005	864,608	14.35	\$38,597,752	\$363,556,000	\$1,429,546	0.39%
B	1984	2005	17,522	0.23	\$581,004	\$6,140,000	\$27,667	0.45%
C	1981	2005	212,678	3.14	\$2,279,688	\$44,714,000	\$94,987	0.21%
D	1977	2005	239,547	4.12	\$14,994,369	\$100,727,000	\$535,513	0.53%
E	1974	2005	291,918	5.56	\$13,254,024	\$82,817,000	\$427,549	0.52%
			1,626,273	27.41	\$69,706,837	\$597,954,000	\$2,515,263	0.42%

Now we have something interesting

The average annual backlog addition rate is 0.42 percent. This is an analytical tool that I did not have before. And, while it might not be perfect, it has to be miles better than a bunch of assumptions.

The Udder Way

What does the 0.42 percent factor represent? It is a long way from the 2.5 percent deterioration rate mentioned in the literature. It is the empirically derived Unmet Deterioration Rate (UDR, pronounced "udder"). The UDR is the average annual amount of deferred maintenance accumulated above everything else at work to create it or remove it. The UDR:

- reflects past funding actions
- reflects normal deterioration
- includes accelerated deterioration
- reflects empirical equipment service lives

The UDR includes empirical service lives—not textbook expected service lives. Let's call them elastic service lives because they stretch the serviceability of equipment to the limit. Excluded from the concept of elastic service lives are critical systems such as fire and life safety, elevators, BSL lab support, etc. Available funds must at least address everything in the critical failure category. If they do not, that is a presentation different from the one being described in this article. Elastic service lives are already factored into the result. Why?

The deferred maintenance backlog is set at the current level of institutional acceptance.

What can we do with it? We can predict the future—with a plausible level of accuracy. Campus options do not have to be shown as a confusing array of possible outcomes. Rather, the analysis can pinpoint the institution's future. Let's put a few more pieces in place, and then get back to predicting the future.

What is your Backlog?

How an institution defines and what it places in the backlog will vary. FMers are not a devious lot. However, there are grey areas in the process. If a governing body dictates that deferred maintenance has to be within a certain range, magically all institutional reported values fall within that range—like the news from Lake Wobegon, where all the men are good looking, all the women are strong, and all the children are above average.

For this analysis, items in the backlog figure are ones that do not currently have a funding source.

Where do you draw the circle around what is the backlog? For the first cycle, it is not that important. Regardless of where you draw it, it should be the same "freeze frame" of the current campus condition. Try to keep the time horizon near-term. Small errors can become large if the study projects too far into the future. What is crucial is where you draw the circle when you repeat the backlog survey. It has to be the same

The relevance of the Facilities Condition Index (FDI) isn't that it falls into a certain range, or that it is something that can be benchmarked against other institutions. It describes a condition of the institution that the executive group sees on a daily basis....

circle of inclusiveness, or you are not talking about the same thing.

What is your FCI?

The relevance of the Facilities Condition Index (FDI) isn't that it falls into a certain range, or that it is something that can be benchmarked against other institutions. It describes a condition of the institution that the executive group sees on a daily basis.

- It is useful in pinpointing where an institution is at the present time
- It requires an answer to the question "Is this condition acceptable?"
- It is useful as a reference point to check if an institution is in a state of equilibrium—or not.

As long as the variables used in calculating the FCI in cycle one are treated in the exact same manner in cycle two, you have a powerful trending analysis tool.

What is the Funding History for Deferred Maintenance?

The accounting record reveals the funding history that produced the current backlog.

This is good to know, but not part of the analysis presented in this article. The executive group does not need to be reminded about what has been funded and what is not a problem. That is another subject for another day.

Predicting the Future with Decision Charts

A good chart is worth a thousand words. Especially a chart that predicts the future based upon real conditions. A simple excel spreadsheet with chart wizard is all that is needed. Set the spreadsheet up so it is on the screen and active as you talk with the executive group. Make changes as they are discussed. Eliminate the delay of getting back later with results from changes discussed during the meeting.

Decision Chart 1 puts the picture and questions into sharp focus. The executive group is clearly staring at their own institution. This is like taking Scrooge on a visit to Christmas Future, knowing he will come back with a conviction to change things.

This is what the institution's condition looks like today, and more importantly, what it will look be in 10 years with the same conditions held constant. Why is the curve nice and smooth? Because of the ability to use elastic service lives in

the analysis. Equipment and system replacements are scheduled when they fit into an annual budget. The FCI curve is added as a reference point to emphasize change in the institutional curve.

Some interesting products of the analysis

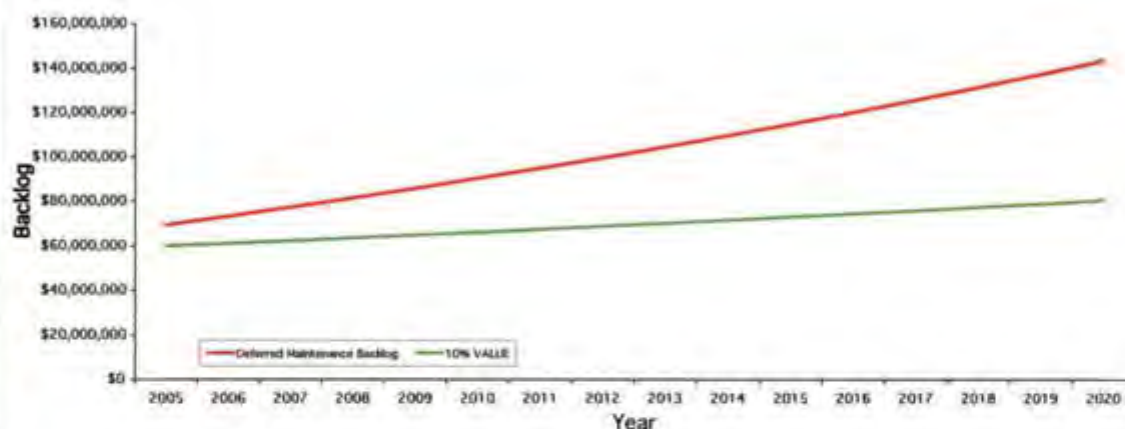
- The campus is not in equilibrium—it is getting worse over time
- At some point in the future, the financial inertia between the campus condition and where it needs to be will be

If the answer is yes, Adjust chart input variables (**Decision Chart 2**) to equal a funding level that achieves equilibrium and maintains the status quo. The executive group sees the chart respond to their decision as you adjust the input variables.

If the answer is no, improve the current condition

Adjust chart input variables (**Decision Chart 3**) to a funding level necessary to improve the aggregate campus condition. The chart displays a one-time infusion of funds, and a

DECISION CHART 1



enormous. It will take an extraordinary action to pull it back into shape.

- At some place along the curve, the campus condition will deteriorate to the point where it will impede or block program delivery (this is the point where, metaphorically, the campus villagers show up at your house, in the middle of the night, with torches and pitchforks).

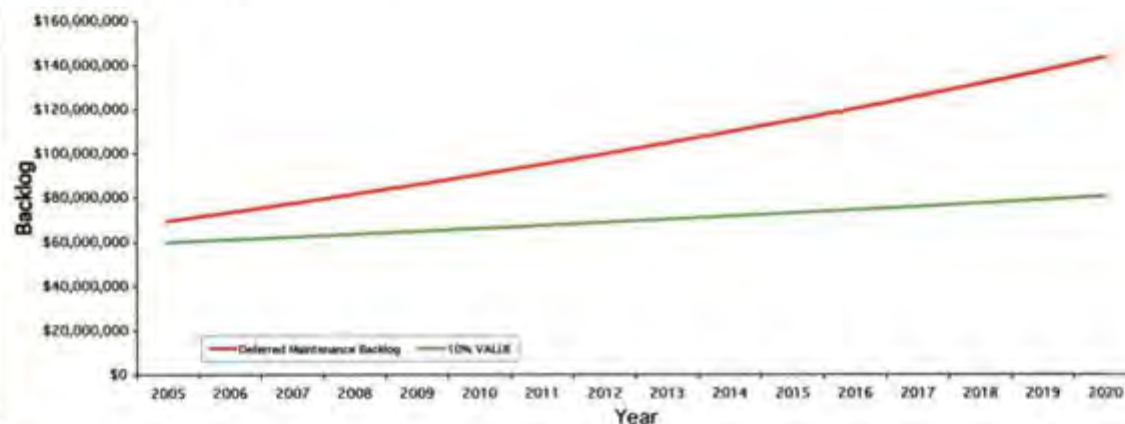
Here is where all of this pays off. The executive group is at a crossroads and must make a decision. They must answer the question "Is this current condition acceptable?"

long-term maintenance account increase to hold the benefit achieved by the one-time infusion. Funding to produce this result is immediately known and available for approval.

What happens if the deferred maintenance budget is cut?

You never know when you may get an invitation to attend a meeting to discuss budget cuts. Once the spreadsheet is set up, it can be used to emphasize the dramatic increase in the backlog if a minus figure is placed in the budget cell (**Decision Chart 4**).

DECISION CHART 2





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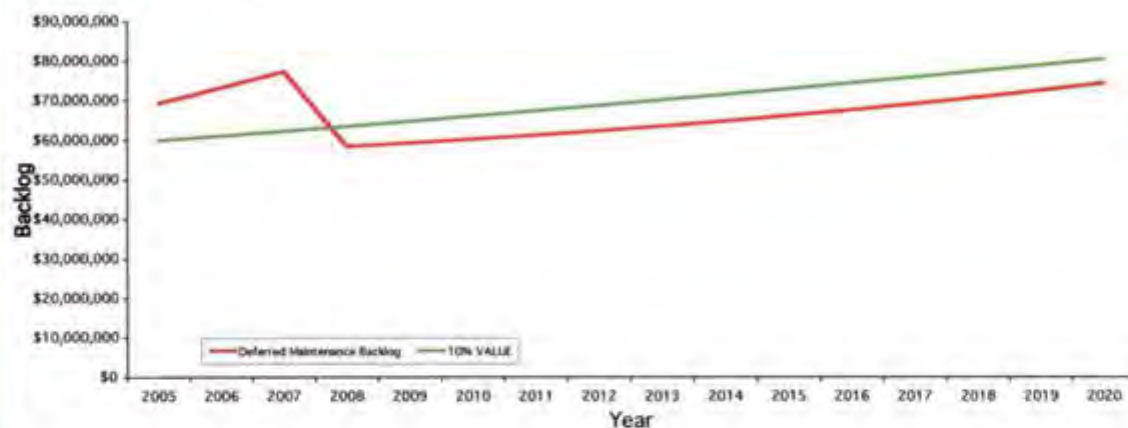
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Some Obvious Limitations

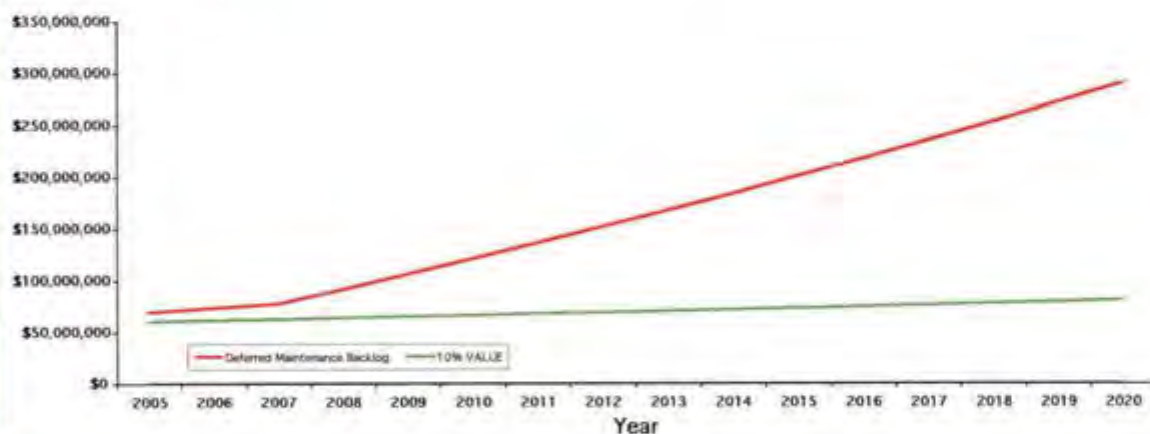
- The campus building profile cannot be a collection of buildings that are all the same age. In this case, all deferred maintenance will be due at approximately the same time. Aggregate analysis is of no value. Even with a diverse inventory, the analysis has to address the possibility of a large block coming due at the same time. The analysis should also keep an eye on what happens just outside the time window of the study.

- Deferred maintenance has to be funded early enough to catch the backlog before it is at death's door.
- There has to be acceptance of the premise that systems and equipment will be run to near failure. Textbook service lives are out the window. Empirical information on how many decades you can actually get out of systems is the guideline. ¶

DECISION CHART 3



DECISION CHART 4



Summary

- When the phrase "based upon assumptions" is uttered in the middle of a boring management report, all is lost. Moving from assumptions to empirical brings relevance to the discussion.
- Calculating the UDR helps navigate the murky waters of replacing "expected service lives" with "elastic service lives."
- Empirical analysis can yield factors that stand up and talk about your specific institution. It compels answers to questions about real conditions.
- If the FCI is a vague value and benchmarking it only runs into trouble, what good is it? Its value is in knowing what it is when your executive group says "good enough."
- Predicting the future, in front of the eyes of the executive group, is all that is needed to ask the compelling question "Is the current campus condition acceptable?" To aid decision making, an interactive chart can instantly display the impact of different funding levels.

PANDEMIC PREPARATION:

HOPING FOR THE BEST, PREPARING FOR THE WORST

By Kate Van Sant and Patricia Stewart



Universities and colleges are more aware than ever that sitting back and hoping for the best should a pandemic hit this country is neither wise nor acceptable. Yes, we should hope for the best case scenario to happen—that being nothing at all; however, that hope should not preclude smart preparation for the worst possible scenario. Experts everywhere agree that even if a flu pandemic does not occur, there are still other disasters that could happen. The recent events at Virginia Tech attest to the necessity of being as prepared as possible; even for something that does not yet exist.

Although regular flu shots may provide some protection from a new strain of influenza, there is always a delay between the appearance and identification of a new type of influenza and production of an effective vaccine for that

particular strain. In the event of an influenza pandemic, the Department of Defense Implementation Plan for Pandemic Influenza indicates that a vaccine specifically targeted to the pandemic virus would not be available until at least six to nine months after confirmation that the virus was indeed being transmitted human to human. Modern travel could spread influenza human-to-human around the world in days.

Following are some useful definitions:

***Virus**—(from the Latin meaning toxin or poison)

A microscopic particle that has the ability to infect other organisms and cause disease; viruses cannot reproduce themselves; instead they invade the cells of the host and use the genetic material of the host to “make more of them”.

This ability to corrupt the cells of the host makes treating a viral infection very difficult. These infections do not respond to traditional therapies such as antibiotics, and few antiviral drugs exist. The best protection against viral infection is vaccines that aid the body in mounting an immune response.

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Examples of viral infections include AIDS; all strains of Influenza (flu); Chickenpox and the common cold. (American Heritage® Dictionary of the English Language)

***Epidemic**—from Old Latin; epi (among, upon) + demos (people, district)

An infection or disease that spreads quickly and is localized in terms of its impact on a given population or area; basically, many people are infected at one time in one place. (Dictionary.com Unabridged)

***Pandemic**—pan (all) + demos (people)

An epidemic that is spread over a very wide area such as an entire region, country or continent; the infection impacts all people everywhere. (Online Etymology Dictionary)

***Morbidity**—the incidence and rate of infection; measures how quickly an infection is able to spread; how many people got sick? (American Heritage® Stedman's Medical Dictionary)

***Mortality**—measures the rate of death caused by an infection or disease; how many people died; how long did it take? (Merriam-Webster's Medical Dictionary)

***Mutation**—the ability of a virus to adapt to changes in its host's environment. Mutations can occur deliberately, by error or by chance. (The American Heritage® Science Dictionary)

There have probably been several influenza pandemics per century throughout history. The flu pandemic in 1918 is the worst we know about, estimated to have killed 40 to 50 million. That pandemic killed more people in one year than the Black Death (bubonic plague) killed in a century, and killed more people in 24 weeks than AIDS has killed in 24 years (Barry, 5). Subsequent influenza pandemics occurred in 1957 (the "Asian flu") and 1968 (the "Hong Kong flu"), but they were nowhere near as severe in morbidity or mortality as the 1918 pandemic. We study the 1918 influenza because it is the first flu pandemic for which we have any real data, and by far the worst.

Although this pandemic was often called the "Spanish" flu, this was a misnomer. Since the infection appeared near the end of World War I, when most nations were censoring their news, reporting of the progress of the pandemic was first covered by the uncensored press of neutral Spain, so the pandemic was incorrectly associated with that country. For along time it was assumed that the first grouping of infection actually appeared in Kansas, where soldiers on their way to the war were crowded together into army camps, huddled together to stay warm during a very cold winter. Recently, a British virologist, John Oxford, has revived evidence that the disease might first have appeared in 1916 at Etaple, a British army transit

camp, where birds, pigs, and a constantly changing population of 100,000 soldiers created an ideal incubator for an influenza mutation.

Influenza usually kills the very young and the very old, those with weakened or as yet undeveloped immune systems. But the 1918 flu showed a strange pattern; along with infants and the aged, those in the prime of life also had a very high mortality rate. One theory explaining this phenomenon maintains that the healthiest people died because they had the strongest immune systems; the flu hit the body so hard that the healthiest immune systems launched all-out, no-holds-barred attacks on the virus, filling the lungs with fluid and spurring the rest of the unpleasantness that happens internally when the human body fights infection. This allowed pneumonia to take hold, which was the real killer. Another theory is that a related form of the 1918 flu had appeared in the mid 19th century, giving a limited immunity to the older generation.

The argument can be made that we now have antibiotics to treat bacterial pneumonia, but even with antibiotics, pneumonia following influenza has about a 7 percent mortality rate.

Strains resistant to antibiotics are fatal much more often. A secondary infection of *Staphylococcus Aureus*, now an antibiotic-resistant problem in hospitals, kills about 42 percent of the influenza victims it strikes (Barry,

252). And those infected with Avian flu may then contract viral pneumonia, on which antibiotics have no effect.

Risk assessment weighs *probability* and *consequence*.

The following three "ifs" might not be *probable*, but:

- If the Avian flu mutates so that it can be transmitted easily from person to person;
- If it sickens half the world, as the 1918 influenza pandemic is suspected of doing;
- If it kills 50 of those who catch it, as it has so far;

Then... the *consequence* would be the death of over 1.7 billion people. The World Health Organization is using an estimate of 2 to 7.4 million deaths for planning purposes, but this estimate is based on the "comparatively mild 1957 pandemic" (World Health Organization).

To understand why our technology and scientific sophistication might not protect us from a pandemic, it is necessary to know a little about the influenza virus. There are really many different varieties of flu virus. Influenza viruses live in birds, especially the gastrointestinal system of ducks. They can spread the virus to other birds such as chickens, sometimes pigs, and from pigs to people. So areas where people live in close proximity to pigs and birds are suspected to

The goal of campus facilities should be to do everything that is reasonable, practical and beneficial to safeguard the health of faculty, staff and students.

breed new flu strains more frequently. Remember the Swine flu years ago? It was called that because it was thought to have mutated so that birds could infect pigs, and then mutated again so that it spread from pigs to people, then again so it could spread person to person.

We don't know what form, or forms, of the influenza virus are going to hit us at any time. Flu shots are often effective because the form of the virus that has circulated in humans the year before will probably produce a related version the next year. That same flu shot may be somewhat effective for the Avian flu, if they have enough similarities. Bottom line: get the shot.

There have so far been several hundred cases of the Avian flu virus passing from bird to human, usually in circumstances of some intimacy—people perhaps slaughtering diseased birds or using the sick bird's waste to fertilize where they grow their food. The big question is will this virus mutate into a form that can be passed easily from one person to another? All these different versions of the virus are changing all the time. So, if the Avian flu does not become a pandemic, another form of the flu may become so at any time in the future. This is not a one-time exercise.

The incubation period is the time from exposure to when symptoms appear. For influenza this period is usually around two days. You can catch the flu, be contagious, and not know

it for a day. You go to class or the office, go to a movie, meet friends, ride the bus home, and you may have infected dozens before you wake up feeling awful the next morning.

A pandemic would be a different kind of emergency than most of the disasters we plan for. Since influenza mutates so rapidly, a pandemic would probably occur in three or four waves. Even with low mortality, a large percentage of the workforce would probably be sick or caring for their sick families. We cannot plan for business continuity in the same way. "Social disruption may be greatest when rates of absenteeism impair essential services, such as power, transportation, and communications" (World Health Organization).

A pandemic would not be a five-hour event where we can begin recovery/continuity efforts the next day. You might compare it to the scenarios we have seen for a nuclear war, where cities throughout the world are hit, radiation follows, and the subsequent shortage of resources. A pandemic of this kind would not be a battle, but a war, with all the attendant complications of supply, morale, and exhaustion.

Since Hurricane Katrina, perhaps we are in less danger of complacently assuming that our governments or other normally dependable organizations are going to "save us." We now know that the National Guard, the Red Cross, the doctors, nurses, and pulmonary technicians, will all be short-handed, worried about their families, and running out of supplies if we experience a pandemic.

One important thing that all facilities should do is begin to identify and inventory available assets and resources that could prove beneficial, and even essential, in the face of an event such as pandemic flu. Ask these questions: Who are essential personnel? What supplies are needed? What do we have on hand available for use now? How long will these supplies last? Are we maintaining a minimum three month supply of needed items?

Supplies to have on hand now include, but are not limited to, the following items. Hand sanitizers (gel based is best)—available in all your department's restrooms and break areas; stock the smaller, portable versions in all work vehicles. A quality pop-up wipe is also a good idea to have on hand in your stockrooms. Maintain a good supply of soap as well, not necessarily antibacterial, just good quality soap; liquid or foam is best—see to it that all your restrooms and break areas have a hot water supply. Bandages, masks, gloves, heavy duty garbage bags and spray disinfectants are good to have as

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well; also, these are items that will keep long-term. Liquid bleach should be considered; this item in 1-gallon containers or smaller has a shelf-life of 1 year if stored properly. There are quality surgical-type masks being manufactured with a layer of bio-filter built in, along with N-95s, these are the masks that should be considered for use. If left unopened and stored properly they should have an indefinite shelf life. The health and safety officer should have information on reliable scientific companies from which these type masks can be purchased. Be aware that the Centers for Disease Control (CDC) recently issued a statement on the use of masks during a bird flu pandemic—the bottom line being that masks may not provide 100 percent protection, but some protection is better than none at all.

Consider also what expertise already exists in your department. Who are your resident experts in areas of responsibility that may overlap with your preparedness needs? It is critical to the success of a well-prepared campus to know who these people are: the environmental health and safety officer; the environmental engineer; the safety and training officer. These are people whose jobs require that they be up to date on the latest research, compliance regulations and any breaking news relevant to the health and safety of the campus. Give them the responsibility of gathering and disseminating relevant information to the director of facilities as news happens. It is also wise to develop a good relationship with the director of student health and to maintain an ongoing dialog with this individual—here is another expert and valuable resource. Yet another valuable resource is the director of telecommunications for your campus; he or she will be critical during the planning stages of your campus pandemic policy and instrumental in maintaining an accurate, timely flow of information to the students and staff. These are also the people to rely on for help in establishing a good working relationship with outside agencies at the local and state levels. The people who come to the table for disaster preparedness will be the same people who come together for pandemic preparation.

As we consider resources, what can be done right now to ensure that our staff is healthy? One of the best practices established at the University of Mississippi was to take cold and flu season seriously. The University partnered with employee health services and strongly encouraged staff to get a flu shot; the safety officer reminded everyone to regularly wash their hands and sent out emails that addressed the proper technique for hand washing; the safety officer also stayed current on health articles and tips that could be used by the staff to help prevent colds and flu. Gently encourage anyone who knows or thinks that they might be sick to see a doctor and stay home until they are better. This helps greatly reduce employee down time due to illness. Take the well being of your staff seriously; they are your most valuable asset.

A pandemic would be a different kind of emergency than most of the disasters we plan for.

One of our primary concerns should be identifying essential personnel. West Virginia University has specified four main areas of responsibility:

- Operations
- Planning
- Administration/Finance
- Logistics

Each of these four areas, and several layers below them, include a command structure five people deep, in case of illness, family concerns, or unforeseen circumstances. For pandemic planning purposes the Department of Defense assumes a 40 percent absentee rate. We have no way of knowing who will get sick, and who will have to function in multiple roles. The outline of specific responsibilities for planning and managing a possible pandemic must be more flexible than hierarchical.

The logistics area, which was assigned to facilities, includes identification of the following locations and the supplies needed:

- Health evaluation, infirmary area
- Quarantine area
- Sick bay
 - ✓ Medicine storage
 - ✓ Medical supply storage, masks, gloves
 - ✓ Detergent, bleach
 - ✓ Available washers and dryers
- For both sick bay and staff housing
 - ✓ Air mattresses
 - ✓ Linens, towels
 - ✓ Paper goods
 - ✓ Plastic sheeting, framing to separate beds
 - ✓ Food and water
- Transportation
 - ✓ Transportation of sick people, soiled linen, bio-waste
 - ✓ Gasoline
 - ✓ Diesel
- Critical Equipment
- Generators
 - ✓ How much fuel is required?
 - ✓ Can they support Police Dispatch?
 - ✓ Can they provide hot water,
 - ✓ Basic cooking needs?
 - ✓ Can they heat/cool
 - ◻ Populated areas
 - ◻ Research
 - ◻ Animal Quarters
 - ◻ Temperature-sensitive chemicals
 - ◻ Food storage

- Radios
- Protective equipment
- Signage

Remember that any staff members who are on the job during a pandemic may well be staying on campus, may be quarantined on campus, and/or may not want to go home and risk infecting their families, especially if they get sick. Make an extra effort to plan for their care. Whoever stays with the ship will be overworked, anxious about their families, their friends, and their own health. We have to make sure we have safe, comfortable quarters for them, as much communication with the rest of the world as we can rig up, and a lot of calories and coffee.

As the pandemic progresses, we will have to provide more intense care for our students as they too become sick, anxious, and bored. Simultaneously, we will have fewer staff available as they get sick, exhausted, or go home. All of us must begin to identify and arrange for the specifics that will be required before we need them. If and when Avian flu became infectious person-to-person, it will be on CNN, and everyone everywhere will hear about it at the same time. We will all be calling the same vendors wanting rush orders of the same equipment and materials. We can't wait until it actually becomes infectious person-to-person. The following decisions should be made now:

Is your campus participating in disaster drills and exercises? Exercises and drills will provide an ideal situation for testing your pandemic procedures; this is where we spot the flaws and work out the kinks, particularly in communications.

- Agree on assumptions, examples:
 - ✓ For both sick bay and staff housing
 - ✓ How much of what quality of supplies to purchase
 - ✓ Exactly what will medical personnel have, what must you provide
 - ✓ What kind of protective equipment to provide
 - ✓ Which buildings could be closed
 - ✓ How much transportation to provide, to whom, of what type
- Assign responsibility for each task, each item to specific person
- Assignee obtains high and low estimates of total cost to provide to central administration

The goal of campus facilities should be to do everything that is reasonable, practical and beneficial to safeguard the health of faculty, staff and students. Another area to consider is that of communication and cooperation between physical plant facilities, student health and your administration (move up your chain of command). Maintain a strong but fluid loop of information and keep it flowing.

Facilities and physical plants should also participate in table-top exercises with their state and local agencies. Get to know these people and establish a good working relationship with them. We have found that many of the protocols used in disaster planning transition easily to pandemic planning...don't reinvent the wheel, just tweak it where needed. As previously stated, these agencies and their respective employees are assets that may prove invaluable as we prepare for the worst. Is your campus participating in disaster drills and exercises? Exercises and drills will provide



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an ideal situation for testing your pandemic procedures; this is where we spot the flaws and work out the kinks, particularly in communications. For all of us, the desired result is to be as flexible and prepared as possible.

Does your institution include a medical school, or is there a large health facility nearby? Establish contact with them; you will have more medical supplies and personnel on campus in the event of a pandemic if you have prearranged the use of your field houses and auditoriums to hold extra sick bays and clinics, indicated that your residence hall laundry facilities will assist in stockpiling bleach and keeping bedclothes clean, and offered food and coffee for the duration. When working on your communications plan, start with the local Public Health Department; they are the center of information for events of this kind.

The CDC provides free downloadable software, based on Microsoft Excel that estimates the potential number of days lost from work due to an influenza pandemic. Input values can be changed by the user so that all sorts of scenarios can be explored. This software can be found at <http://www.cdc.gov/flu/tools/fluworkloss>, and there are links to additional influenza planning software at the bottom of the web site. The U.S. Department of Health and Human Services maintains PandemicFlu.gov, a one-stop site that brings together all sorts of information on pandemic planning; including an excellent checklist for institutions of higher learning ("Colleges and Universities Pandemic Influenza Planning Checklist"). The Harvard School of Public Health offers Exercises and Drills, including a Tabletop Drill for avian and pandemic flu, at <http://www.hsph.harvard.edu/hcphp/products/exercises/index.html>. Although the drill is geared to public health agencies, the scenarios are useful in planning drills for any organization, including colleges and universities.

We live in a constantly changing world. It is a world where physical plants and facilities are tasked with the responsibility of bridging the gap between meeting the needs of our employees and customers and meeting head-on the challenges that naturally occur with change. In both instances,

preparation will be the key to any hope of success, no matter how small that success might be. We make every effort to train and equip our employees so that they possess the knowledge, skill, and right attitude to carry out their organization's mission. Can we do any less in preparing our organizations for events such as pandemic flu, natural disasters, or other equally devastating threats?

Surely we can all agree that the issue is not if something will happen; only when, where, and who among us will be impacted first remains as yet unanswered. The vital importance of being as prepared as reasonably possible cannot be overstated. It is better to be ready—even for a



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When working on your communications plan, start with the local Public Health Department; they are the center of information for events of this kind.

circumstance that doesn't exist yet—than to have that circumstance become reality and find your organization totally overwhelmed by it. To quote the director of physical plant at Ole Miss, "we are not the University of Mississippi's main mission...our role is to support the school's mission by thinking ahead to three, four, or five years down the road and asking ourselves whether or not we have sustainability." The very nature of our work demands that we be flexible, viable and sustainable in thinking, doing and planning for the future. Bottom line, start looking toward the future of your organization and be prepared. ¶

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- Riddle:** What's the difference between a Hurricane and a Tornado?
- Answer:** Three DAYS vs. three MINUTES to prepare!
- EMBRY Riddle:** What did Santa bring your campus for Christmas 2006?
- Answer:** An F2 Tornado!

Over the years, the facilities management department has prepared the Daytona Beach campus for hurricanes, most notably for the three that blew through the campus in 2004. However, no one had thought much about preparing for a tornado. That is, until an F2 tornado ripped through our campus at 120 MPH on Christmas Day last year.

were totaled). It continued its path through the center of the campus damaging nine buildings, and destroying two. It leveled the first building, the fleet maintenance hangar that housed three planes that day. One of the aircraft that was sent careening through the campus hit the maintenance technology building with such force it broke through the exterior block wall and exploded, starting a fire.

The tornado proceeded through the center of the campus destroying trees and pole lights in its path. It lifted the roofs off most of the nine buildings it passed over. It pelted them with debris. It shattered windows and embedded aircraft parts and other building fragments into the exterior walls. One building's roof system was torn completely off and became a projectile. This section of roof breached the exterior wall of the library's second floor, damaging approximately 2,000 books. All but 800 books have since been restored.



On a positive note, the tornado could not have had better timing. The tornado touched down at 1:20 p.m. on Christmas Day—the *only* day of the year that the campus is officially closed. Had it been any other day, including all other holidays, the Flight Line would have been open for flight training along with support departments. Only three safety personnel were on campus, and they made it to safety. The damage assessment results indicated there would have been serious injury or death had the campus been open.

The tornado approached the campus from the west, hitting the Flight Line first. The Flight Line is our campus airfield and home to our university-owned aircraft. It made "aircraft tumbleweeds" out of most of the fleet (49 of the 65 aircraft

The final two buildings in the tornado's path suffered the most damage after its initial touch down. The main administration building, 45,000 sq. ft. Spruance Hall was damaged to the point of no recovery. The storm then crossed the main boulevard and wreaked havoc on the field house. It tore back approximately 2,400 sq. ft. of roofing and exposed the basketball court to water damage. In addition, it damaged the athletic fields that had just recently been built.

In the end, the damage was estimated between \$50 million and \$60 million. For those that were first on the scene, the campus looked like a battlefield. Thanks to the solid leadership of the university president and the Daytona Beach Campus chancellor, a plan was quickly formulated. Becky Griffith, manager of operations and maintenance, was among those first to arrive on site. She contacted Dan Young, director of facilities, who was with family in Ohio for the holidays. He immediately packed and headed for Florida, driving through the night to be there first thing in the morning.

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An "all hands on deck" call was put out to maintenance personnel on Christmas night to report to work at 7:00 a.m. the next morning. Foremen of each trade contacted their regular contractors and asked that they be ready to respond.

A command center was established at the facilities management building, which was untouched by the tornado. All emergency calls and contractors were directed to this point. Our reliable contractors responded, as well as other disaster recovery contractors that had heard the news.

Dan was now on site, ready with a battle plan. He matched managers and foremen up with contractors and assigned us to buildings where we were to assess the damage and develop a restoration plan. The grounds and transportation departments were in full swing, pulling vehicles out of creeks and cutting away trees and debris from campus roadways. Hazardous

could overcome this. Within two weeks of the disaster, our president said, "We never doubted for a moment that we'd be able to return to our mission of providing the best education in aviation and aerospace. The best way to describe the spirit on campus is onward and upward." He further stated that "we (ERAU) have the best facilities management team in the country." What a morale booster for our team.

Where Are We Now?

About 95 percent of the work on the salvageable buildings is complete. The majority of roof systems have been restored. Although the enormous quantity of broken windows has now been replaced, there wasn't enough glass in the state of Florida to meet the entire need. We are currently waiting on new skylights for the library to replace those that were damaged.

ERAU Christmas 2006 Tornado Pictures



Former Fleet Maintenance Operations Center (FMOC) Hangar.
The tornado leveled the building and destroyed the three aircraft inside.



Aircraft flattened by the tornado



Maintenance Tech building WITH aircraft that caused explosion and fire.

waste companies were coordinating the removal of fuel from the damaged aircraft and other hazards from the demolished hangar.

A large number of photos were taken to document the full extent of the damage. When the insurance carrier arrived two days later, the condition of the campus had significantly improved! The insurance carrier had to view the photographs taken earlier to gain a true perspective of the damages. They deemed our facilities group to be "the most responsive group we've dealt with." Never underestimate the power of those facilities warriors (a term of endearment penned by one of our employees, Letitia Kolb, who staffed the command center during the emergency response process.)

With the exception of the first day when everyone was dealing with the shock of seeing the campus in such a wounded state, there were smiles as people worked. Our risk manager said it best: "Buildings can be replaced. People cannot." As long as there were no injuries or death, we knew we

Spruance Hall remains boarded up, waiting on an insurance resolution. It has been affectionately renamed the "Plywood Palace" by the students. Needless to say, we look forward to the rumble of bulldozers, indicating the demolition of the building.

The 120-plus staff members that were displaced are currently housed in four modular facilities, or have taken up residence in former dining rooms, student lounges, and other available space. It is estimated that it will be a minimum of two years until their new facility is built and ready for occupancy.

The fieldhouse was reopened the day of the president's State of the University address. Paint crews were literally exiting the back of the building as the staff and faculty arrived through the front doors. The "sweet" smell of paint served to remind all of those present how far we'd actually come in the last eight months.

The aircraft maintenance operation is temporarily housed in a hangar on the Daytona Beach airport property. Plans for a new hangar are being developed.

In some ways, we are better off than before the storm. Buildings that would soon be due for repair and replacement projects were now fast-tracked, and those issues were handled due to the damage. Granted, it was inconvenient at best, but we're in good shape right now.

What We've Learned

1. We prefer hurricanes to tornados!

2. Never underestimate the power of good leadership. From the president on down, good leadership guided us through this disaster.
3. Nothing binds a group of people together like adversity—or the trip back from adversity! Through it all, we heard very few complaints. The administration set the standard for the rest of the campus. Our chancellor and his staff moved into a conference room until their modular facility was ready. There they were facing into the walls, backs to each other, no dividers, sitting on conference room chairs for weeks. No complaints. Just glad to have a roof over their heads.
4. Although you can't predict a tornado, you can predict which building systems have a lesser chance of survival. We are reviewing our standards to determine if more "storm worthy" buildings are in order.
5. Timing is everything. As mentioned in the beginning, the campus was closed. Had it been any other day, the human toll could have been enormous. Granted, we have no control over timing, but . . .
6. To that end, the campus emergency notification system has been updated. Should an emergency occur, be it another tornado or other disaster, the campus will be informed through the use of the following:
 - "Code Red Reverse 911" an opt-in system
 - Campus Siren—Federal Warning System (will include an exterior audible alert tone with voice capability for specific messages and instructions)
 - ERAU Web Page Emergency Notification Box
 - Patrol Vehicle Public Announcement Systems
 - Weather Radios throughout the campus buildings
 - Pop-Up Emergency Notification message system for computers
 - Campus E-mail System

The tornado must have had a sense of humor. Not only were we spared human casualties, but ironically:

Exactly 20 years ago, the construction workers on the Spruance Hall project spray painted "Merry Christmas" across a steel beam on the front of the building for the holidays. Twenty years later—on Christmas day—the tornado ripped the exterior facade off that portion of the building to reveal those very words. Yes, Merry Christmas, Embry-Riddle. ¶

More ERAU Christmas 2006 Tornado Pictures



"Legacy Walk" through the center of the campus looking East. The tornado followed this path. Spruance Hall is directly in its path from this point.




Sim Center – West Side.



Miller Center hallway. This was typical interior damage.



Athletic Fields—behind the Fieldhouse. These were fairly new fields.



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Green Building Reaches the Tipping Point in Higher Education

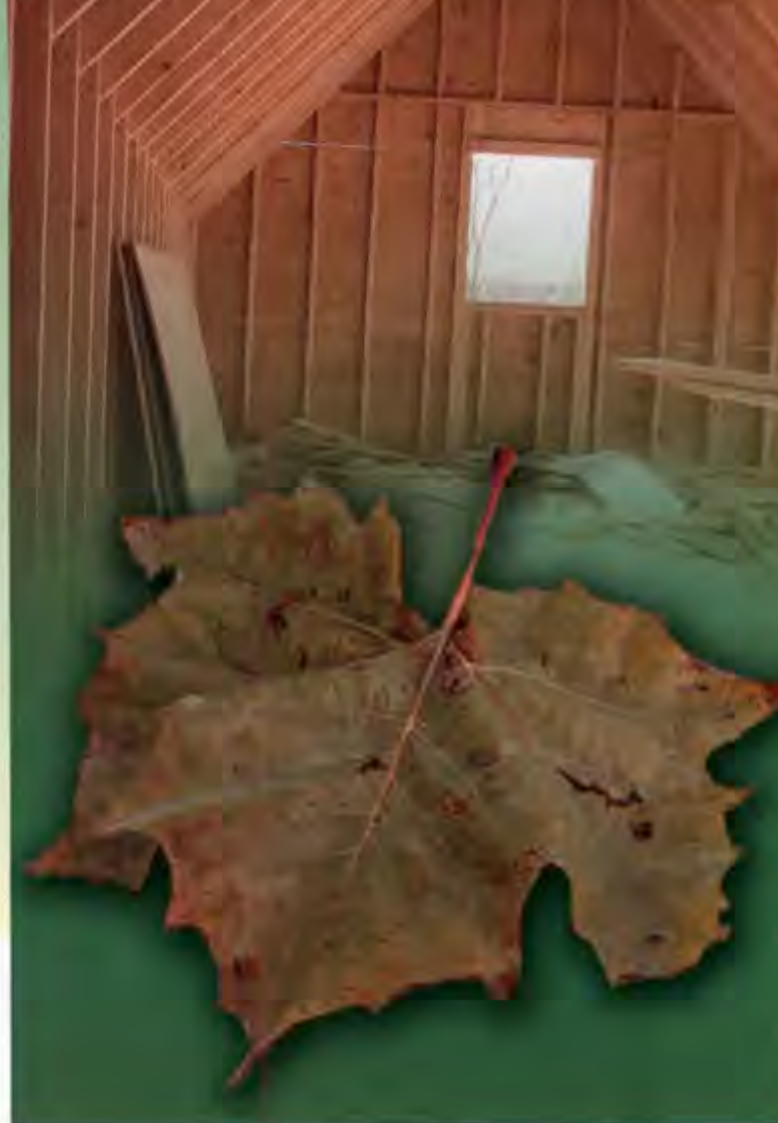
By David Barista

In August 2007, *Building Design+Construction* magazine surveyed a scientifically drawn sample of members from three major higher education professional organizations: APPA; the Society for College and University Planning (SCUP); and the Association for the Advancement of Sustainability in Higher Education (AASHE).

Together, the three groups represent a diverse workforce within the U.S. higher education sector. Recipients of the online survey were asked to gauge their level of knowledge, interest, and action with regard to green buildings and sustainable practices at their institution.

Principal findings of the survey

- Nearly nine in ten (85%) respondents said they have incorporated sustainable design and green building principles in recent building projects, and just 5% said they have no plans to incorporate green in future building projects.
- Both SCUP and APPA members have seen a sharp increase in green building projects, compared to 2004. About half (47%) of SCUP respondents said they have incorporated sustainable strategies "quite extensively" in recent building projects, up from 26% in 2004. While 42% of APPA



members have implemented green extensively, up from 14% in 2004. The green adoption rate among AASHE members is at a healthy level as well, with 86% having incorporated sustainable design in recent projects, 40% having done so extensively.

- About half (47%) of respondents said they are willing to pay up to 5% more for green, and about one-fifth said they would fork out an additional 6 to 10%. Just 9% of respondents across the three groups said a cost premium for green is not acceptable (Table 7).
- Relatively low-cost approaches for reducing energy consumption—including energy management, automated lighting controls, and daylighting—topped the list of sustainable action items that have been implemented or are planned for upcoming projects. Strategies for improving indoor air quality are also popular.

Most of the respondents that have incorporated green into recent building projects are simply not sure if it has improved student performance. About one-third (32%) of respondents saw improved performance in the classroom as a result of going green, while about half said they don't know if it has impacted performance.

Dave Barista is managing editor of Building Design+Construction, published by Reed Business Information. E-mail him at dbarista@reedbusiness.com. This is his first article for Facilities Manager.

The historically high adoption rate among the three organizations is proof that the green building movement has not only reached, but has moved past the tipping point in the higher education sector.

"Universities have always built good buildings with a view toward the long-term life of their structures, and they're starting to realize that it's a very small step to go from good buildings to good green buildings," said Richard Franz, architect with David E Shambach Architect Inc., Tucson, Arizona, and formerly the facilities planning director at Pima Community College in Tucson.

Franz said the university sector's long-term outlook with regard to campus buildings, coupled with the fact that multiple funding sources are available to schools for campus expansions and improvements, make the higher education sector ripe for green building activity.

"As much as those in higher education complain about lack of funding, the sector is relatively well funded, especially compared to K-12," said Franz. Unlike K-12 school districts, universities have several ways to raise money for buildings and infrastructure, including state funding sources, bond levies, and alumni donors.

In fact, some respondents claim that going green actually helps with fundraising efforts. "Many times we'll see more donor support for a green project," said respondent Gerry Bomotti, senior vice president for finance and business at the University of Nevada, Las Vegas. Fundraising efforts have helped pay for the construction and operation of two LEED-registered buildings at UNLV: a science and technology lab and a classroom building for the school's Greenspun College of Urban Affairs.

"Yes, we have and do pay more for green, but the focus on up-front capital costs is not the only factor we look at," said Bomotti. "If you consider a full and complete analysis of the benefits, including increased fundraising, lower operating costs, and getting a higher-quality facility, we may not really be paying more for green."

Further indication that green building is flourishing in the university sector is the fact that many of the traditional barriers to green seem to be slowly fading.

First cost, for instance, remains a key obstacle, with about half of respondents claiming that sustainable design adds significantly to the initial cost of construction (Table 11). However, an overwhelming majority of respondents (88%) either "agree" or "strongly agree" that colleges and universities are more will-

ing today than they were three to four years ago to invest in green building projects. How much more?

Moreover, other common barriers to green—including claims that the sustainable design process is too complicated and that green buildings are hard to justify even on the basis of long-term savings—were cited by a surprising small percentage (between 15 to 19%) of respondents (Table 11). In fact, besides higher first cost, the only other barriers that received substantial attention from respondents are related to "other school priorities" (38%) and concerns about the amount of paperwork required to certify green buildings (30%). The latter concern should quickly fade as the U.S. Green Building Council and other green building certification organizations continue to simplify the certification process with the use of electronic submittals and reduced paperwork.

How are universities overcoming the obstacles to green? A higher level of knowledge and expertise in green building is one way. About three-quarters (71%) of respondents across the three groups said their school has some level of experience with green building, and one-fifth of those surveyed said their school is "very experienced" with green. For SCUP and APPA members, the overall experience level is higher today than three years ago. Nearly three-quarters (71%) of APPA members said their school has some level of experience with green building, up 20% from 2004. While 73% of SCUP

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respondents said their school has experience with green, up 8% from 2004.

While the desire to improve student performance is certainly a key driver of green building activity at universities, the link between sustainable design and student performance remains largely unproven to a majority (68%) of respondents. About half of those surveyed that have implemented green buildings at their school are simply unsure of the effect sustainable strategies have had on student performance, while 20% said they flat out haven't seen improvement as a result of going green. AASHE members have seen the most improvement, with 40% of those surveyed having seen better student performance in the classroom (Table 9).

Respondents are, however, reasonably confident that green buildings can help reduce operations costs, especially related to energy consumption. Eighty-one percent of respondents across the three groups either "agree" or "strongly agree" that green buildings significantly reduce energy costs, and 79% agree that these buildings operate more efficiently than comparable conventional college buildings.

Also, energy-reduction strategies are among the sustainable action items most often implemented or planned for construction or renovation projects. About 80% of respondents across the three groups have implemented approaches for reducing energy consumption, including energy management systems, automated lighting controls, and daylighting schemes (Table 11).

Strategies for improving indoor environmental quality, such as specifying low-e interior products like carpeting and paint, are also key goals of university sustainable building programs. About three-quarters of respondents have incorporated low-e products to help improve IEQ.

As expected, big-ticket items, like photovoltaics, geothermal heating/cooling, and under-floor air distribution systems, rank low among sustainable action items, having been incorporated by less than one-fifth of the respondents. ¶

Survey Results

TABLE 1

A BREAKDOWN OF RESPONDENTS' INSTITUTIONS

	SCUP	APPA	AASHE
Urban	43%	44%	46%
Suburban	22%	29%	20%
Mixed/ Multiple locales	18%	14%	16%
Rural	17%	13%	17%
Base	134	131	455
Public	67%	64%	65%
Private	33%	36%	35%
Base	134	131	455
Four-year	91%	88%	90%
Two-year	9%	12%	10%
Base	134	131	455
<2,500 students	10%	13%	16%
2,500 to 7,499	16%	23%	19%
7,500 to 14,999	31%	26%	18%
15,000 or more	42%	38%	47%
Base	134	131	455

Respondents mostly work for large, public, four-year schools.

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TABLE 2
A WHAT ROLE DO YOU SERVE AT YOUR UNIVERSITY/COLLEGE?

	SCUP	APPA	AASHE
Facilities director/manager	24%	58%	11%
Facilities designer/planner	23%	3%	3%
Construction/capital projects manager	16%	8%	—
University/college administrator	12%	12%	18%
Architect/designer	11%	2%	—
Engineer	1%	2%	1%
Consultant	1%	—	1%
Sustainability coordinator/officer	1%	2%	15%
Facilities operations & maintenance staff	1%	5%	3%
University/college business official	1%	—	3%
University/college board member	1%	—	—
Student	—	—	10%
Other	7%	8%	35%
Base	134	131	455

Nearly half (47%) of SCUP respondents are facilities directors and designers, and about six in ten (61%) APPA respondents perform the same role. AASHE respondents were more diversified, with about one-fifth (18%) being school administrators, 15% sustainability coordinators, 11% facilities directors and designers, and 10% students.

TABLE 3
HOW FAMILIAR ARE YOU WITH THE TERM "SUSTAINABLE DESIGN" OR "GREEN BUILDING"?

	SCUP 2007	SCUP 2004	APPA 2007	APPA 2004	AASHE
Very familiar	71%	78%	60%	55%	65%
Somewhat familiar	28%	17%	36%	39%	32%
Have heard of it	1%	4%	4%	6%	3%
Never heard of it	—	1%	—	—	—
Base	134	294	131	217	455

TABLE 4
HOW FAMILIAR ARE YOU WITH LEED?

	SCUP 2007	SCUP 2004	APPA 2007	APPA 2004	AASHE
Very familiar	65%	61%	54%	36%	56%
Somewhat familiar	28%	20%	37%	51%	37%
Have heard of it	6%	10%	8%	10%	6%
Never heard of it	1%	9%	1%	3%	1%
Base	134	294	131	216	455

Compared to 2004, respondents from both SCUP and APPA are generally more familiar with the terms "sustainable design" and "green building," and with USGBC's LEED program. All survey respondents, including AASHE members, said they are familiar with both sustainable design and green building, and just eight of the 720 total respondents said they never heard of LEED.

TABLE 5

HOW WOULD YOU DESCRIBE THE LEVEL OF EXPERTISE ABOUT GREEN BUILDINGS AT YOUR INSTITUTION?

	SCUP 2007	SCUP 2004	APPA 2007	APPA 2004	AASHE
Very experienced	19%	25%	22%	9%	20%
Somewhat experienced	54%	40%	49%	42%	50%
Not much experience, but interested	24%	26%	27%	38%	24%
No experience	3%	10%	2%	11%	6%
Base	134	293	131	215	455

While fewer SCUP members said their institution was "very experienced" with green building this year versus 2004, the overall experience level is higher today than three years ago. Nearly three-quarters (73%) of SCUP respondents said their school has some level of experience with green building, up 8% from 2004, and the number of respondents with "no experience" decreased from 10% to 3%. APPA members appear to have made the most progress in sustainable design, with nearly a quarter (22%) saying they're school is "very experienced," up from 9% in 2004.

TABLE 6

WHAT LEVEL OF CONSIDERATION SHOULD BE GIVEN TO GREEN DESIGN WHEN A MAJOR PROJECT IS BEING CONTEMPLATED?

	SCUP 2007	SCUP 2004	APPA 2007	APPA 2004	AASHE
4-5 Top 2	91%	87%	88%	74%	94%
3 Mid-range	7%	9%	11%	18%	3%
1-2 Bottom 2	1%	4%	2%	8%	3%
Base	134	294	131	216	455

Nine out of ten respondents across the three groups said green design deserves strong consideration in the design of campus buildings, a moderate increase among SCUP members and a strong increase among APPA respondents, compared to 2004 data. AASHE members feel most strongly about green, with 94% ranking it at the top end of the scale and just 3% saying it deserves minor consideration.

TABLE 7**WHAT INITIAL COST DIFFERENTIAL WOULD BE ACCEPTABLE TO YOUR INSTITUTION TO GET A GREEN BUILDING?**

	SCUP	APPA	AASHE
Not acceptable at any cost	10%	9%	7%
Up to 2% more	16%	20%	11%
3-5% more	37%	34%	22%
6-10% more	18%	19%	13%
11-15% more	4%	4%	4%
More than 15%	2%	3%	2%
Don't know/Not involved with cost estimates	13%	11%	40%
Base	134	131	455

When it comes to paying a premium for green buildings, about half (47%) of respondents across the three groups said they are willing to pay up to 5% more for green, and about one-fifth said they would fork out an additional 6 to 10%. Just 9% of respondents across the three groups said a cost premium for green is not acceptable.

TABLE 8**HAVE YOU INCORPORATED SUSTAINABILITY INTO RECENT BUILDING PROJECTS?**

	SCUP 2007	SCUP 2004	APPA 2007	APPA 2004	AASHE
Yes, quite extensively	47%	26%	42%	14%	40%
Yes, somewhat	43%	47%	38%	53%	46%
No, but we plan to do so	6%	11%	15%	16%	9%
No, and we have no plans to do so	4%	15%	5%	18%	5%
Base	134	296	131	217	455
More than 15%	2%	3%	2%		
Don't know/Not involved with cost estimates	13%	11%	40%		
Base	134	131	455		

Both SCUP and APPA members have seen a sharp increase in green building projects, compared to 2004. Nearly half (47%) of SCUP respondents said they have incorporated sustainable strategies "quite extensively" in recent building projects, up from 26% in 2004. While 42% of APPA members have implemented green extensively, a significant increase from the meager 14% who said they did so in 2004. Less than 5% of total respondents across the three groups said they have no plans to incorporate green in future building projects. SCUP members are the most active, with 90% of respondents having implemented some level of sustainability into recent projects, followed by AASHE members, with an 86% adoption rate.

TABLE 9

**IF YOU HAVE USED SUSTAINABLE DESIGN IN BUILDING PROJECTS,
HAS IT IMPROVED STUDENT PERFORMANCE?**

	SCUP 2007	SCUP 2004	APPA 2007	APPA 2004	AASHE
Yes	27%	25%	29%	9%	40%
No	21%	9%	29%	16%	12%
Don't know/Not sure	52%	66%	42%	76%	48%
Base	121	210	105	140	390

Most of the respondents that have incorporated green into recent building projects are simply not sure if it has improved student performance. AASHE members have had the most success so far, with 40% of those surveyed having seen improved performance in the classroom as a result of going green.

TABLE 10

**ARE THE GREEN BUILDING CONCEPTS INCORPORATED IN RECENT
PROJECTS BEING USED AS A TEACHING TOOL?**

	SCUP	APPA	AASHE
YES	54%	49%	66%
NO	16%	27%	15%
NOT SURE	30%	24%	19%
BASE	121	105	390

About half of the SCUP and APPA respondents that have incorporated green into recent building projects said the concepts are being used as a teaching tool. Two-thirds of AASHE respondents said green buildings are being incorporated into the curriculum.

TABLE 11**WHICH GREEN STRATEGIES HAVE YOU INCORPORATED OR PLAN TO INCORPORATE IN RECENT PROJECTS?**

	SCUP		APPA		AASHE	
	Have done	Plan to do	Have done	Plan to do	Have done	Plan to do
Energy management	91%	84%	89%	90%	75%	70%
Automated lighting controls	86%	82%	87%	87%	74%	63%
Daylighting	83%	81%	83%	82%	71%	65%
Low-e paints/finishes/adhesives	75%	78%	70%	77%	61%	60%
Low-e carpeting	69%	75%	73%	78%	56%	60%
Building commissioning	69%	72%	74%	79%	49%	47%
Energy analysis/modeling tools	68%	69%	62%	69%	54%	58%
Recycled/renewable building materials	64%	68%	64%	72%	60%	64%
Environmentally sensitive landscaping	61%	71%	62%	72%	57%	59%
Environmentally responsive site design	60%	66%	44%	59%	43%	55%
High-reflectance, high-emittance roof	43%	57%	44%	60%	34%	42%
Acoustics/soundproofing	50%	57%	64%	72%	44%	43%
Green furniture, fixtures, equipment	51%	62%	47%	64%	51%	55%
Reused construction and demolition waste	46%	61%	42%	54%	42%	50%
Waterless urinals	32%	36%	38%	35%	41%	39%
Storm water harvesting	37%	59%	34%	48%	34%	44%
Environmentally preferred purchasing	32%	42%	42%	54%	44%	53%
Passive solar	27%	43%	27%	42%	31%	43%
Green (vegetated) roof	25%	36%	23%	30%	28%	37%
Photovoltaics	17%	29%	18%	29%	25%	35%
Geothermal heating/cooling	17%	21%	14%	28%	19%	23%
Underfloor air distribution	13%	19%	12%	23%	12%	17%
None of the above	1%	2%	3%	2%	4%	7%
Other	7%	5%	9%	6%	13%	18%
Base	121	129	105	125	390	433

Relatively low-cost approaches for reducing energy consumption topped the list of sustainable action items that have been implemented or are planned for upcoming school construction or renovation projects. Energy management, automated lighting controls, and daylighting are green features most often implemented or planned by the survey respondents. Indoor air quality is also a key issue, with low-e interior products like carpeting and paint scoring high on the list.

TABLE 12
WHAT ARE THE BARRIERS TO ADOPTING GREEN BUILDING PRINCIPLES
AT YOUR INSTITUTION?

	SCUP	APPA	AASHE
Adds significantly to initial costs of construction	56%	58%	55%
Too much paperwork	39%	27%	24%
Other program needs are more important than green building	36%	39%	38%
Not comfortable with new technology	21%	8%	21%
Green building isn't required by law or regulation so isn't necessary	19%	15%	23%
Too complicated	16%	17%	18%
Too hard to find contractors with green building/sustainable design expertise	19%	16%	18%
Green buildings hard to justify even on the basis of long-term savings	14%	18%	14%
Too hard to find materials for green building/sustainable design	8%	10%	7%
Green building doesn't provide enough flexibility	5%	8%	4%
Green building is a passing fad	2%	2%	3%
None of the above/institution doesn't see barriers to green building	21%	24%	16%
Don't know	3%	2%	7%
Other	14%	7%	19%
Base	134	131	455

Cost remains the most significant barrier to the adoption of green strategies, with more than half of respondents from the three groups claiming that sustainable design adds significantly to initial costs of construction. The exorbitant amount of paperwork required to certify buildings is also cited as a chief obstacle, but this barrier should quickly fade as the U.S. Green Building Council and other green building certification organizations continue to simplify the certification process with the use of electronic submittals and reduced paperwork.

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Facility Asset Management

Why our CMMS Isn't Living up to Expectations

by Matt Adams, P.E.

During the last few years I have half jokingly told my friends and family with children looking for careers to learn Oracle Financials or PeopleSoft, or SAP. All they need to do is learn how to reconfigure or fix the big enterprise systems used in our universities and follow in the footsteps of the big companies with offers to fix the original installations of enterprise resource planning (ERP) solutions. They can easily charge hundreds of dollars per hour and always have more work than they can handle.

However, the big costs and disappointments of these projects within our industry have become a cliché. Unfortunately, within the facilities departments, many of our mini-ERPs, or what we call computerized maintenance management systems (CMMS), have suffered a similar black eye.

There is a clear issue with underutilization or poor return on investment for many CMMS systems purchased within the APPA community over the last 10 years. The reasons for this result are many, but the sense of disappointment is singular. The scenario has been too often repeated. After years of working with little or no CMMS technology, a department finally is funded to procure a new IT system. The department establishes committees for the task and research options. Vendors vie for the project with lengthy presentations. The staff gets their hopes up and the expectations run high. Finally they can get away from our paper systems and Excel spreadsheets. After this big purchase, they will become



streamlined and efficient. Then, two or three years after they made this historic investment into our department, they slid back into many of their previous legacy systems. What happened? Why aren't we using this

"white elephant" more? The system is not broken, but they continue to spend precious resources on it—without getting the expected benefits. Where did things go wrong?

There is an expression that applies to this CMMS selection process: "never go to the grocery store on an empty stomach." We are so "hungry" for a new system that we often get much more than we really need. The archaic funding mechanisms that many of us endure delay the purchase and this makes us even "hungrier." When we finally get our chance to purchase a new system, we want to get as much as we possibly can. There is a sense that this is our only shot at this, so we better make the most of it. (This



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same sociology plays out with our capital projects, but that is for another column.) It is basic human nature. However, we must learn to discipline ourselves, or there will be a strong likelihood of over-purchasing.

More fundamental to the CMMS lack of return-on-investment issue is the lack of preparations. Most of the purchases in our industry have a budget for the software and its initial installation and then support. This cost, while perceived to be high already, is only half of the cost. That's right; if the CMMS project only has the cost of the software installation included, you have under funded the project by half. Keep in mind that for this rationalization I am valuing internal labor for what it actually costs as if we were paying the bill to an external consultant. Given this assumption, the rule of thumb is that there should be an equal amount of

There is a clear issue with underutilization or poor return on investment for many CMMS systems purchased within the APPA community over the last 10 years.

preparations associated with any CMMS implementation; the cost of which equals approximately the cost of the system itself. From another perspective, if you are about to purchase a system and you cannot roughly identify a combination of internal and/or external labor associated with preparing for the project equal to the cost of the system; you are likely not properly prepared. The department is setting itself up for disappointment later.

Given this new rubric for total project costs, what exactly is included in the preparations? The primary task for preparation is process analysis. I know that for some it sounds like I am about to go into "consultant speak." Do not be afraid. Most of our industry's professionals actively execute process engineering continually; they just don't characterize it as such. The first step is the most important and involves identifying, analyzing, and mapping your existing processes. Each service center within the facilities department has one or more primary processes associated with its service delivery or support function. This research provides the baseline of the current operations. Without it we don't know where we are or how to get to where we want to be.

Next is the research of modern CMMS systems. Oddly enough, many of us do this while we are in the interview process. This is too late. The selection committee or working group assembled for this initiative must have a solid working knowledge of the basic features and functions provided by the CMMS publishers that specialize in our industry. In order to use this technology to improve or enhance our internal processes and overall effectiveness, we must know what is available to work with. This research is best done in a systematic, structured manner whereby the primary and secondary features of the available systems are listed, explained, and prioritized in order of perceived need or direct impact on the department. The features should be defined in lay terms for the team illustrating potential impact on each service center.

Given the knowledge of what a typical CMMS system can do for each service center, only now can effective process reengineering be completed. All process engineering has two primary categories; manual and electronic processes. They are intertwined and play off of each other, but without an understanding of CMMS abilities,

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there can be no full reengineering of processes that utilize the tools provided by the various vendors. A second pass through the departmental processes is executed with proposed improvements to the old and clear links to the future CMMS system. The new and improved process maps are now goals and clearly illustrate where the team sees CMMS acting upon the service center processes.

At this point, it is time to purchase the CMMS system. The selection process for a good software system is a concept in and of itself. Rather than describe it now, I would encourage all to solicit the help of the campus internal IT departments. However, there is one additional item that must be on the shopping list which is often excluded from past projects. The additional work (supplied by the software vendors) includes configuration specification, adjustment, and sustainment. Configuration specification is a specification of variables, fields and attendant features within the vendors system and specifically how they are configured upon installation to support the new and improved departmental processes. There should be plenty of consulting time included in the vendor's contract to review the new process maps and understand the team's expectations. This is, in fact, a formal set of documentation that is left behind.

Following installation, the next step is related to adjustment. At least one time, the vendor should return to campus after the system has been in use for a period of time, say 12 months. At this time, the configuration review and process maps are updated based on real experience with the system. This step is extremely important and rarely performed. How can you expect to get it exactly right the first time? You don't know what you don't know.

Finally, the last task is sustainment. This is simply ongoing training and retraining. No change to a department's processes and systems

will endure without reinforcement. This too is a major requirement that is often overlooked by our peers. The vendor contract must include a retainer or a pool of training hours used quarterly or semiannually by the department's staff for ongoing training of CMMS utilization and reinforcement of the new processes. This should go on for at least three years, preferably longer.

Ultimately, we can be our own worst enemy if we try to buy more software than we can absorb. We can only absorb or utilize what we prepare for. This discipline takes time and resources, but is the only way to actually provide a return on your investment of a new CMMS system. **J**



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

Leadership in facilities is a subset of APPA's core competencies. While APPA's body of knowledge, the four-volume Facilities Management Manual, provides some excellent examples, I can't seem to find enough to satisfy me. This month we look at two books on leadership that should prove useful to all APPA members.



Conquering Adversity: Six Strategies to Move You and Your Team Through Tough Times, by Christopher Novak, CoverStone Leadership Institute, Dallas, TX, 2004, 92 pages, softcover, \$14.95, audio CD, \$19.95.

Sometimes bad things happen. Sometimes bad things even happen at work: unfair criticism, misplaced blame, loss of funding, missed opportunities, etc. In the face of adversity, it can be too easy to lose focus, confidence, and/or momentum. In *Conquering Adversity*, Christopher Novak provides advice for working through the tough times and helping others do the same.

Ted Weidner is assistant vice chancellor of facilities management & planning at the University of Nebraska-Lincoln and president of Facility Asset Consulting. E-mail him at tweidner2@unlnotes.unl.edu.



While presented against the context of the author's own devastating personal loss, the strategies and insights are equally applicable to teams or individuals dealing with personal crisis or professional disappointments.

Some of his strategies speak to the importance of maintaining perspective. For example, he recommends you take a fact-based accounting of the situation. What are your priorities? What exactly has been lost? What do you still have? As a team leader, you can ask these questions and bring into focus both the resources and reasons for continuing to move forward.

You can also create realistic expectations of a return to better times. By communicating a sincere belief in the resiliency of the group and the situation, without minimizing or dismissing the loss or disappointment felt by others, you can create an envi-

ronment where workplace mistakes become learning experiences, let-downs become lessons learned, and crisis situations become challenges to overcome.

Other strategies speak to the power of personal relationships in the workplace and how they can create a "chemistry" that results in exceptional team performance during good times and much needed trust, communication, and willingness to help others during bad. Key to these relationships is communicating and sharing on a personal level: sharing your passion for a job well done, your ideas and thoughts, your appreciation and admiration.

Additional strategies build on the belief that while imperfect action is nearly always preferable to no action, this is especially true in times of adversity. As team leaders, we can help others overcome the natural reactions of indecision and hesitation by encouraging and rewarding action, even when we may not be sure what our next best steps should be.

While presented against the context of the author's own devastating personal loss, the strategies and insights are equally applicable to teams or individuals dealing with personal crisis or professional disappointments. Knowing what to do in the face of adversity is difficult. Knowing what to say to others who are looking to you for leadership can be even more difficult. Whether you refer to it while navigating your own tough times, while searching for the right words to encourage a coworker, or as a road map to share with others following a period of organizational crisis, *Conquering Adversity* can be a helpful addition to your resource library.



Leadership in Educational Facilities Administration, Christopher K. Ahoy, APPA: Alexandria, VA, 2007, 234 pages, softcover, \$45 (APPA members), \$60 (nonmembers).

The distinguishing characteristic between a manager and a leader is vision. Chris Ahoy, past president of APPA, presents true leadership vision in *Leadership in Educational Facilities Administration* by

While some authors of leadership books present the work of others or snapshots of their accomplishments, I don't recall reading a single book where the author presented the entire process within one organization.

documenting how he started a new job with a vision and plan. This dense book, one that can be read quickly but really requires a lot of time to digest, provides the nearly complete story of Iowa State University's Facilities Planning & Management journey to a world-class operation. It is "nearly complete" because the 12-year plan was started in 1997 and won't be com-

plete for another year, according to the author.

While some authors of leadership books present the work of others or snapshots of their accomplishments, I don't recall reading a single book where the author presented the entire process within one organization. It's all in here—the process, the organization, the steps, stories, and examples. It is interesting to read about the changes and the methodical focus used to make the changes. I can say from a single visit I've had that there are some impressive systems in place to support the changes. The book doesn't detail every system and may not detail every change; it's not that long a book.

Ahoy presents his vision for the changes and how they developed over a career at four other institutions. This is not a "flash of brilliance plan" but one that was thought out through years of experience, study, and careful (if sometimes difficult) execution. The plan presented may not work for everyone. The plan is described well, the sources and metrics are identified, and one could transplant the plan by following the book.

The book is broken into five chapters. Each chapter begins with one or more quotes on leadership or vision. Topics with chapters are broken out with sub-topics clearly organized. Occasional diagrams and figures highlight important points so the reader can follow along. Additionally, Web references are sprinkled, sparingly, to provide additional supporting information or examples. More than 100 cited references, a detailed index, and glossary of terms make this book an excellent reference.

I don't think I will ever read every book on leadership, even all the books available from APPA's bookstore, but I do believe there are some must-read books for facility managers and I believe this is one of them. We are fortunate that Chris found the time to document his improvement efforts. ¶

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American Ballast has developed a full range of energy-efficient, electronic ballasts for compact fluorescent lamp applications. All models feature universal input voltage—108-305 volts—and are compatible with most infrared based remote control applications.



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Extech Instruments has announced its new 42515 wide-range infrared thermometer for measuring both contact and non-contact temperature, featuring automatic emissivity adjustment and a 200-point memory. Extech's 42515 IR Thermometer delivers a wide temperature range for infrared measurements from -58 to 1472°F (-50 to 800°C) as well as the Type K thermocouple measurements from -58 to 2498°F (-50 to 1370°C). Emissivity is manually adjustable from 0.1 to 1.00 and features automatic adjustment for temperatures of 212°F or higher.



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Coming Events

Coming Events

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

APPA Events - 2008

Feb 3-7—Institute for Facilities Management. Newport Beach, CA.

Feb 3-7—Facilities Finance Institute. Newport Beach, CA.

Feb 3-7—Supervisor's Toolkit. Newport Beach, CA.

Feb 8—EFP Credentialing Prep Course. Newport Beach, CA.

Feb 8 or 9—EFP Credentialing Exam. Newport Beach, CA.

March 3-4—CAPPA Technology Conference. San Antonio, TX. Donna Grebe, dgrebe@maryville.edu.

March 19-21—2008 4th Annual FLAPPA Conference: Taking the "LEED" on Being "Green." University of North Florida, Jacksonville, FL. <http://www.flappa.org>.

April TBA—Leadership Academy. Scottsdale, AZ.

April TBA—Supervisor's Toolkit. Scottsdale, AZ.

April TBA—EFP Credentialing Prep Course. Scottsdale, AZ.

April TBA—EFP Credentialing Exam. Scottsdale, AZ.

May 25-28—GAPPA Annual Meeting. Jekyll Island, GA. www.gappa.org

July 9-11—APPA 2008: Good to Great. San Antonio, TX.

July 7-8—SFO Summit. San Antonio, TX.

July 9-11—Supervisor's Toolkit. San Antonio, TX.

Sep 7-11—Institute for Facilities Management. Austin, TX.

Sep 7-11—Supervisor's Toolkit. Austin, TX.

Sep 12-13—EFP Credentialing Prep Course. Austin, TX.

Sep 12 or 13—EFP Credentialing Exam. Austin, TX.

Other Events - 2008

Jan 23-26—AAC&U Annual Meeting. Washington, DC. www.aacu.org

Jan 29-30—Financing Campus Facilities Through Public/Private Partnerships. Austin, TX. <http://www.academicimpressions.com/conferences.php>.

March 2-4—Stitching the Campus Quilt: SCUP's 2008 Mid-Atlantic Regional Conference. Pittsburgh, PA. www.scup.org/regions/ma.

March 31-April 2—3rd Smart & Sustainable Campus Conference. College Park, MD. www.nacubo.org.

April 7-8—LEAN Management Models for Facilities Management and Capital Projects Conference. San Diego, CA. www.tradelineinc.com/lean2008.

April 21-22—The 2008 International Conference on Biocontainment Facilities. Washington DC. www.tradelineinc.com/bio2008.

May 5-6—Research Facilities 2008. Boston, MA. www.tradelineinc.com/research2008.

May 7-9—COAA Spring Owners Leadership Conference. St. Louis, MO. www.coaa.org.

June 1-3—Provision of Cleaning & Grounds Services at Post Secondary Institutions. Alberta, Canada. www.uofaweb.alberta.ca/facilities.

June 17-19—Elevator U 2008 Conference. Arizona State University, Tempe, Arizona. <http://www.elevatoru.org>.

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