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NUMBER 1

Facilities Manager

The official publication of APPA: The Association of Higher Education Facilities Officers

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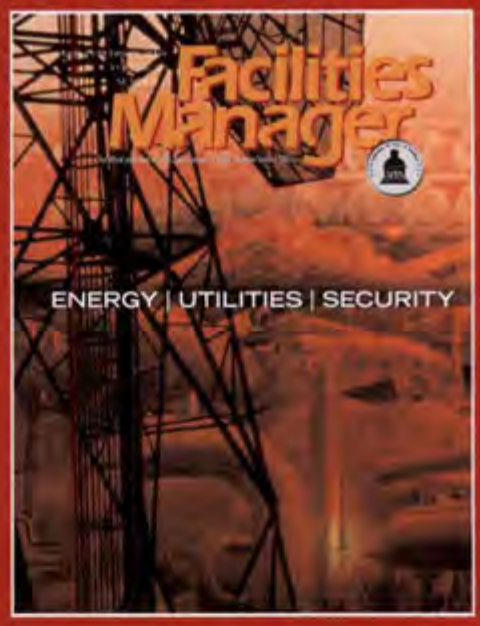

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Global Partner in Learning

From the Editor

by Steve Glazner

The Blackout of August 2003 should teach us a few lessons. Caused by a cascading and near-instantaneous series of human and equipment failures, the power blackout in much of the northeast United States and parts of eastern Canada demonstrated too glaringly the fragility of our current utility systems. It also reinforced the importance of good maintenance practices, appropriate capital renewal and modernization of equipment, and the continual improvement of business processes.

This issue of *Facilities Manager* discusses the security and reliability of utility systems (author Tony Litton) and background on the U.S. power grid (longtime author Mo Qayoumi). Scott Turley presents a valuable case study of energy and utility success at the University of Arkansas.

There has been much written and presented on LEED certification for new buildings, but Robin Smith and Steve Wiggins are working on a pilot program for the U.S. Green Building Council to address LEED certification for existing buildings at Emory University. The Leadership in Energy and Environmental Design for Existing Buildings (LEED-EB) process is one that other institutions can benefit from. After all, we continue to be challenged to retrofit and renovate current buildings for the school's program needs.

In earlier articles and presentations, APPA President Brooks Baker has stated his belief that APPA should become more involved in code advocacy—to be more active in the development and direction of new or current codes that affect the educational facilities profession. In this issue, Tom Jaeger explains the value to an association and its members by becoming more involved in code advocacy, and Doug Erickson shares a sidebar on his code advocacy experience with the American Society for Healthcare Engineering.

* * * *

You may have noticed a logo on the cover stating "90 Years of Excellence" for APPA. Started in the Midwest in 1914 by primarily the Big Ten universities, APPA has grown in size and stature over the past 90 years. We're celebrating all year in *Facilities Manager* by including a short profile of members who have benefited from their association with APPA over the years. In this issue you'll hear from Sam Polk of the Southeastern region, while the March/April issue will include Don Mackel of the Rocky Mountain region.

We're proud of our 90 years of service to educational facilities, and we look forward to many more.

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Institute Registration

Registration is still available for APPA's upcoming Institute for Facilities Management, February 1-5, 2004, at the Tampa Marriott Waterside, in Tampa, Florida. If you have any questions regarding the program, please contact the APPA Education Department at 703-684-1446 or e-mail suzanne@appa.org.

Supervisor's Toolkit

Nuts and Bolts of Facilities Supervision

Front-line Supervision

Join your colleagues for another session of Supervisor's Toolkit: Nuts and Bolts of Facilities Supervision, February 1-5, 2004, at the Tampa Marriott Waterside, in Tampa, Florida. There is still time to register either by calling the APPA Education Department at 703-684-1446 or by e-mailing suzanne@appa.org.

2003-04 Directories

The 2003-04 Directories have been mailed. Please check that your information is correct. If you need to update this information, please visit www.appa.org/membership or complete the Information Correction Form on page 4 of your directory and fax it to 703-549-2772.

Nominate a Colleague Today for an APPA Award!

There is still time to nominate a colleague for an APPA award. A full listing of the awards and their criteria are listed at www.appa.org/recognition, along with the application forms. Complete an application form and **submit it by January 31, 2004.** APPA's Professional Affairs Committee will review all applications in March and all awards will be presented at APPA's annual Forum leadership breakfast and banquet in July in Washington, D.C.

It's Official! AAPPA Becomes TEFMA

by Alan McGregor, Murdoch University

The Australasian region of APPA (AAPPA) officially became the Tertiary Education Facilities Management Association (TEFMA) during the Adelaide Conference in October 2003, when Ed Rice, president-elect of APPA, signed a strategic partnership agreement between APPA and AAPPA.

The decision to go it alone was difficult for AAPPA. AAPPA had benefited from its long association with APPA (14 years), but the region is geographically separate from North America and has different needs—more diverse educational programs, conferences, workshops, and publications—to serve their membership.

In July 2002, Andrew Frowd, Robert Kelly, and Alan McGregor presented the idea of a new relationship and status for AAPPA to the APPA

Continued on page 8

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Continued from page 6

Executive Committee. In November 2002, AAPPA's regional board unanimously voted to proceed with an action to change the name to TEFMA, move to be independent, and develop a strong strategic partnership with APPA. The formal vote, some months later, was 83 percent in support for the motion.

TEFMA will be recognized as the preeminent body that promotes and supports excellence in facilities management in the Australasian tertiary education sector and although independent of APPA, will continue to enjoy a strong relationship with them.

To Defer or Not

APPA has estimated that the price tag to fix the backlog of repairs in higher education, based on a 1995 survey, would be $26 billion. In an article in *The Chronicle of Higher Education* (October 10, 2003), Lander Medlin, executive vice president of APPA, states that since the survey, that estimate has probably increased by at least 25 percent.

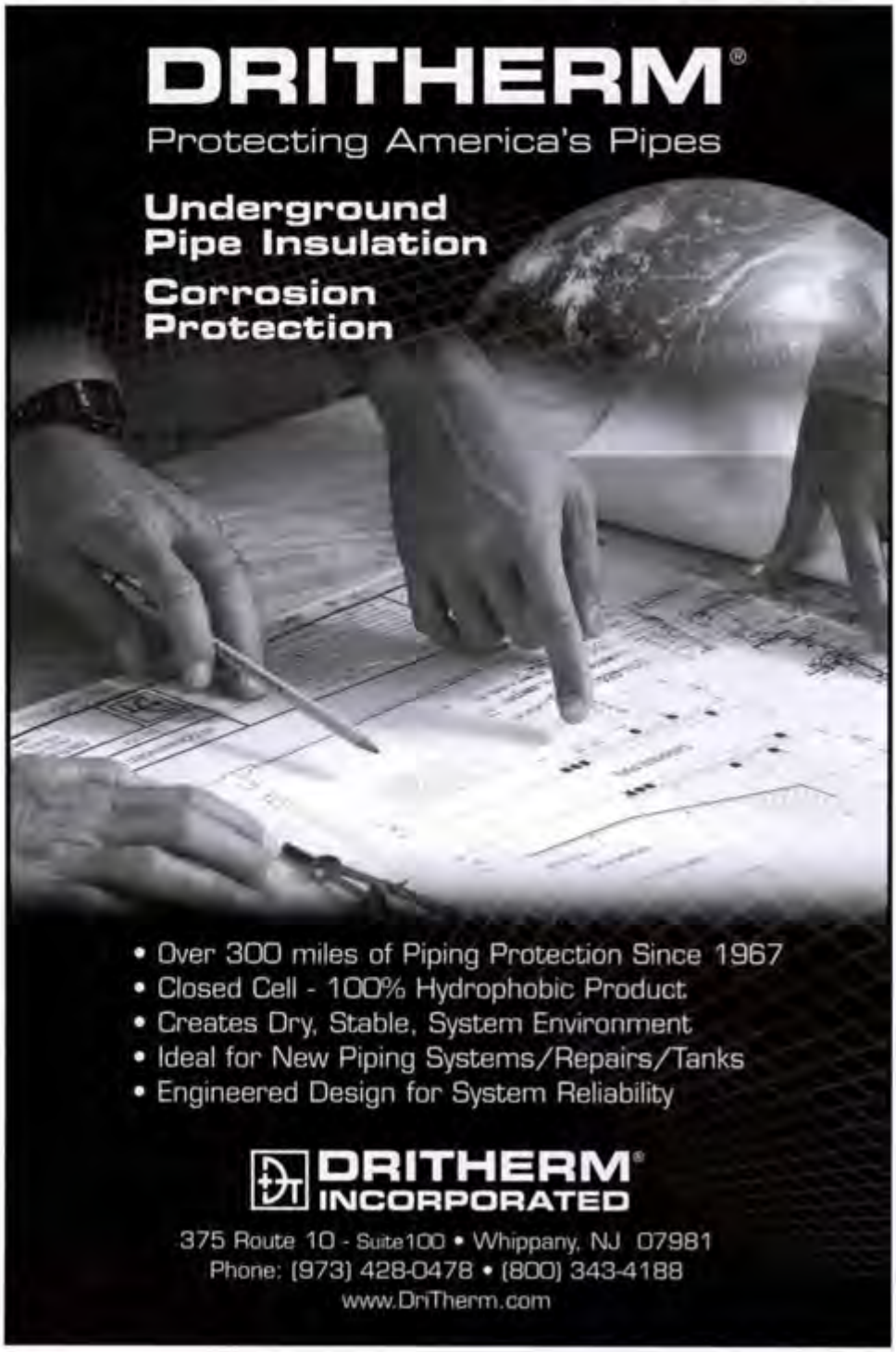
Fix-it lists are getting longer and longer as institutional budgets shrink and administrators face decisions about spending priorities. Postponing these repairs may seem like the least painful approach. But deferring maintenance can have costly future effects as the longer repairs are left, the more serious the problems become.

"It's not glamorous to replace plumbing, " says Brooks H. Baker, president of APPA and associate vice president for facilities at the University of Alabama at Birmingham. Many donors prefer to give money to put toward new buildings, even as older buildings are falling into ruin.

The stakes for deferring maintenance can be high. With the mission of each institution to educate students, the university environment has to be a place where they can function and learn. The key is to establish clear priorities, both in choosing what repairs to make now or later. "Anything that helps make a facility safer—such as the replacement of aging fire-detection systems—should be the last project deferred and the first taken up again," says Matthew C. Adams, president of the Adams Consulting Group, which specializes in educational-facilities management and engineering.

Physical plants must meet specific standards and accreditation of the institution can be threatened if these facilities don't measure up.

Experts say that as appealing as it is to defer maintenance because of a budget crunch, larger maintenance bills will almost always result. Clearly explaining how money is to be spent and how the choices were made to spend it will increase support for those projects and for others in the future.



Is Your Computer Secure?

According to *The Chronicle of Higher Education* (November 14, 2003), a study released by EDUCAUSE, an education-technology consortium, states that computer network systems in institutions are still vulnerable to viruses and to attacks by hackers. The report goes on to state that students and faculty members are not adequately educated or informed about security threats.

Most of the hazards facing computer security in higher education are unintended mistakes and come from carelessness on the part of technology users. Many institutions do not have plans for coping with serious problems that may affect their computer networks.

"Half of the institutions didn't have a formal disaster-recovery plan, and that struck me as odd," says Robert B. Kvavik, former vice provost of the University of Minnesota-Twin Cities and co-author of the report. When an employee brings a laptop to work, a simple thing like automatically scanning all personal computers that are connected to the network would prevent viruses and other security hazards from slipping past the company fire wall.

Some faculty members maintain that academic freedom could be compromised since fire walls would block out electronic transmissions from Asia where many viruses and worms originate from.

However, according to Rodney J. Petersen, project coordinator for a committee studying online security for EDUCAUSE and for Internet2, the high-speed research network, "tighter security will actually preserve academic freedom by ensuring the reliability of the data that researchers are sharing."

It's Not Easy Being Green—But These Award Winners Were Up To It!

The U.S. Green Building Council (USGBC) presented awards to the outstanding leaders in green building design and construction at the Greenbuild International Conference and Expo held in early November 2003, in Pittsburgh. The awards were given to those companies and individuals who signify the vision, leadership, and commitment to the evolution of green building design and construction.

Awards were presented in the following categories:

Green Building Business: Toyota Motor Sales, USA, Inc., for their commitment to a Global Earth Charter mandating a reduction of their environmental impact not only in the automobiles they produce, but in every aspect of their business.

USGBC Leadership: Penny Bonda, FASID, L.C. Clark Publishing Company, for dedicating her career to green design and development.

Green Public Service Government: Austin Energy for its pioneering Green Building Program—a community resource that promotes sustainable building through consumer marketing and education, and technical training of building professionals.

Green Public Service Non-Government: Raymond Cole, Professor, School of Architecture, Environmental Research Group of the University of British Columbia, for his sustained commitment to environmental research and teaching, and his adaptation of USGBC's LEED Green Building Rating System criteria to fit within the Canadian framework.

Local/Regional Leadership: Vivian Loftness for her work as professor and head of the School of Architecture at Carnegie Mellon University and with leading the development of the BIDS Tool.

The U.S. Green Building Council is the nation's leading coalition of corporations, builders, universities, federal and local agencies, and nonprofit organizations working together to promote environmentally responsible buildings that are profitable and healthy places to live and work. For more information of the USGBC, visit www.usgbc.org.

Update on Nation's Infrastructure

In a report published in the October 2003 issue of *Maintenance Solutions*, in 2001 the American Society of Civil Engineers produced a report titled "The 2001 Report Card for America's Infrastructure" in which the condition of the nation's roads, bridges, drinking water systems, and other public works were graded an overall D+. According to a new report issued "The 2003 Progress Report for America's Infrastructure," little improvement has been made with some areas actually sliding toward failing grades.

The nation's schools received the lowest grade, a D–, based on this assessment: "Due to aging, outdated facilities, severe overcrowding, or new mandated class sizes, 75 percent of our nation's school buildings remain inadequate to meet the needs of school children . . .While school construction spending has increased, the cost to remedy the situation remains more than $127 billion." To view the complete progress report, visit www.asce.org/reportcard.

New IAQ Tools

The U.S. Environmental Protection Agency has launched a new indoor air quality information site, IAQ Design Tools for Schools. The site contains tools and recommendations to help communities and design professionals integrate good indoor-air quality practices into the design, construction, renovation, and operation of K-12 schools. For more information on these tools, visit www.epa.gov/iaq/schooldesign

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Eastern Region
B. Kent Donley
ERAPPA Newsletter Editor

The Delaware Valley Chapter of APPA hosted the 53rd ERAPPA conference September 27-October 1 at the Loews Hotel in Philadelphia. The conference's theme, "We the People...edu" was visible everywhere, from the banners outside the hotel to the façade of the new National Constitution Center and reflected both the richness of Philadelphia's past and higher education's commitment to people.

The conference officially kicked off Sunday evening with the opening of the exhibit hall where attendees could mingle with business partners representing over ninety companies while listening to the lively music of a small contingent of Philadelphia's Mummers.

Philadelphia's Mummers

There was plenty to do for those who arrived early. A behind-the-scenes tour of the Philadelphia Eagles new football stadium, Lincoln Financial Field, on Saturday afternoon kicked off the weekend.

Saturday night some sixty brave souls took part in a ghost tour of the historic district of Philadelphia. The tour visited over a half-dozen sites where ghosts have been sighted—including Independence Hall. The evening ended at City Tavern, a restoration of the original building where the Founding Fathers drank many a pint debating the finer points of the Constitution.

Ben Franklin speaks to ERAPPA attendees.

Sunday afternoon tours included the Battleship New Jersey, anchored across the Delaware River in Camden, New Jersey, as well as tours to Bryn Mawr College and the University of Pennsylvania.

On Monday morning, Ralph Archbold, the official Ben Franklin of Philadelphia, gave a lively keynote address with anecdotes from Franklin's life. This allowed delegates a glimpse inside Colonial America and at the same time focused on the importance of the work higher education facilities officers carry out in continuing the legacy of an informed, educated populace first set down by the framers of the Constitution.

The importance of the Constitution in our daily lives was underscored Monday night when attendees spent the evening in the newly opened National Constitution Center. This multi-media presentation provided a moving narrative of the struggles the nation has gone through to define who we are as a people. The conference's theme, "We the People," took on an even deeper meaning for those who attended this event.

Monday and Tuesday were filled with well over 30 educational sessions along with time in the exhibit hall to meet with our business partners and enjoy uniquely Philly foods, such as cheese steaks and TastyKakes.

And, for the first time in the Eastern Region, certain educational sessions were designated as qualifying for AIA Learning Units.

The conference wrapped up Wednesday morning with a "Rocky" run up the Philadelphia Art Museum steps and a closing presentation by futurist, Joyce Gioia.

New officers were sworn in for the upcoming year: Kevin Petersen, president, Catholic University of America; Ronald Dupuis, president-elect, Wilfrid Laurier University; Fred Long vice president of chapter affairs, La Salle University; William Suter, vice president of education, American

2003 ERAPPA Host Committee

University; Michael Delleo Jr., vice president of membership, Emerson College; Keith Woodward, vice president of technology and communication, Quinnipiac University; Jim Barbush, secretary, Pennsylvania State System of Higher Education; Sheri Vucci, treasurer, Smithsonian Institution; Norman Young, senior APPA representative, University of Hartford; and Kevin Petersen, junior APPA representative.

The New York Chapter will host the 54th ERAPPA Conference September 26-29, 2004, in Syracuse, New York, with the theme "Changing Times; Enduring Values."

* * *

Southeastern Region
Jewell Winn
SRAPPA Vice President for Communications

The Southeastern Region is becoming famous for hosting outstanding annual conferences. They just keep getting better and better and better. West Virginia University (WVU) hosted the 2003 conference with the theme "Scaling New Heights" from October 11-14 with approximately 480 people attending at the beautiful Lakeview Resort and Conference Center in Morgantown, West Virginia.

The 52nd SRAPPA conference began Saturday afternoon with a choice of attending a football game between WVU and Rutgers or a golf tournament on one of Lakeview's two 18-hole courses. The evening concluded with a warm reception sponsored by Chapman Corporation. Retired WVU Physical Plant Director Dorsey Jacobs served as the evening's master of ceremonies and entertainment was provided by Same Difference, a talented group of WVU student jazz singers.

A kick-off luncheon sponsored by the Dick Corporation was held Sunday with music by WVU's Steel Drum Quartet. Immediately following the luncheon came the traditional "first timers" meeting. Board members met informally with "first timers," where they introduced themselves and shared with them the benefits of attending a regional meeting. They welcomed the "first timers" to the meeting, encouraged them to become involved, and made themselves available for any questions or concerns the new attendees might have.

Sunday afternoon included interesting and informative campus tours and concluded with a delicious southern-style dinner at the Mountainlair Student Center. After dinner, lively entertainment was provided by Subway and SRAPPA members and guests danced the night away.

On Monday, the educational sessions began along with the opportunity to visit the 37 business partners in the exhibit hall of the Lakeview Fitness and Sports center. Between sessions, attendees enjoyed a variety of snacks and beverages sponsored by Apex Environmental, Inc. At the end of the day, attendees gathered in the exhibit hall to participate in a drawing with more than $10,000 worth of prizes donated from the business partners.

In keeping with tradition, evenings are never boring at a SRAPPA conference. Attendees boarded the *Gateway Clipper* for a delicious dinner cruise with live entertainment along the Monongahela River. SRAPPA attendees "rocked the boat" as they danced the night away under a beautiful fall sky.

Board member Ron Brooks wins a prize in the drawing.

During Tuesday morning's business meeting breakfast, sponsored by W. R. Drake, each SRAPPA board member and APPA committee member gave a brief overview of the year's work. The slate of officers presented and unanimously voted upon were as follows: Bob McMains, president, Emory University; Joe Fisher, president-elect, West Virginia University; Marion Bracy, 1st vice president, Xavier University; James Hellums, 2nd vice president, University of Memphis; Jeff

Turner, vice president for long-range planning, West Liberty University; Sylvester Johnson, vice president at large, Tulane University; Jewell Winn, vice president for communications, Tennessee State University; David Gray, secretary/treasurer, Middle Tennessee State University; David Anderson, senior APPA representative, University of Southern Mississippi; Sam L. Polk Sr., junior APPA representative, Tennessee State University; and Bill Elvey, APPA representative elect, Virginia Polytechnic Institute and State University.

SRAPPA members rocking the boat on the Monongahela River.

Spouses are always in for a special treat at the annual conferences. This year they enjoyed a day at the nearby world-class resort Nemacolin Woodlands Spa for a magnificent massage and a tour of Fallingwater, a home designed in 1936 by Frank Lloyd Wright. Fallingwater is built over a stream that flows parallel to the house and partially under it so the sound of flowing water continually fills the entire house.

As Tuesday's activities drew to a close, attendees and guests prepared themselves for the conference highlight—the semi-formal banquet and reception. Dinner and reception music was provided by guitarist and harpist Dan and Julie Cunningham. Slides highlighting the conference events were shown during dinner. WVU's President David C. Hardesty enhanced the evening with a speech titled "Ten Characteristics of a High Performance Organization." APPA's Immediate Past President Phil Cox

SRAPPA Board members attend the business meeting.

installed new officers and numerous awards were given. Incoming President Bob McMains shared his plan to focus on membership and to encourage facilities professionals to make APPA/SRAPPA the organization of choice. McMains concluded by stating, "even though change doesn't always improve things, improvement is always the product of change."

The 2004 conference will be hosted by Marion Bracy and Xavier University in New Orleans, Louisiana, at the New Orleans Hyatt October 28 - November 2.

* * *

Midwest Region
Ernie McVay
MAPPA Newsletter Editor

Even though the 2003 MAPPA Educational Conference was held in the home of the "blues," you couldn't find any of the attendees singing 'em. Held at the beautifully restored Union Station and in the shadows of the Gateway Arch, "MAPPA 2003–Your Gateway to the Best" brought out the best in our co-host schools, Southern Illinois University Edwardsville and Southern Illinois University Carbondale.

Enjoying this rare trip outside MAPPA territory were 137 participants and 21 spouses. In addition, 104 business partners attended the conference and/or hosted the 41 exhibit booths.

Many of the attendees enjoyed the pre-conference golf outing at the Arnold Palmer-designed Spencer T. Olin course. Other early arrivals had the opportunity to see the St. Louis Rams play in the Edward Jones Dome or enjoyed the much talked about "Meet Me in St. Louis" bus tour, led by host Bob Washburn.

The official kickoff of the conference took place Sunday evening with the MAPPA first-time attendee reception and the opening reception, both held in the Grand Hall of historic Union Station. Surrounded by the ornate carvings and stained glass of the Grand Hall, attendees were treated to a wonderful meal; the highlight being the toasted ravioli for which St. Louis is famous.

Monday morning began with everyone gathered to hear keynote speaker, Joe Tye, who describes himself as "America's Values Coach." Joe encouraged everyone to commit themselves to values-based leadership by observing their core values. Joe's motivational message may have been overshadowed by past MAPPA President Larry Quick, Art Institute of Chicago, who led the audience in the Swahili Lion Roar. No one in attendance will soon forget the sight!

Monday continued with attending educational sessions, visiting the tradeshow and exhibit hall, networking with colleagues at breaks, and an educational exchange for both large and small schools.

After a day of learning, it was time for fun. Luckily, "Dinner Under the Stars" at the St. Louis Planetarium provided an opportunity for both. While some attendees were concerned that the food might glow in the dark since the planetarium resembles a nuclear power plant from the outside, the dinner was extraordinary in the very best of ways. We were treated to an after dinner stargazing show with the sky in real time minus any light pollution from the city. Given the proximity of Mars to Earth during the days of the conference, a short presentation was made about Mars and its exploration, including the upcoming surface landing scheduled for January 2004.

Union Station in St. Louis

Tuesday morning began with the business meeting. In addition to reports from the MAPPA leadership, contributions by members were recognized. Outgoing MAPPA Education Committee members were recognized: Bob Beck, Purdue University; J. B. Bardouille, University of Michigan; James Frederick, Sauk Valley Community College; Tom Dale, University of St. Thomas; and Jed Dertinger, The Ohio State University. Also recognized were outgoing APPA Committee members: Jeff Buenting, University of Illinois, from the Education Committee and Tom Dale, University of St. Thomas, from the Information and Research Committee. Lander Medlin, APPA executive vice president, was on-hand to present the Rex Dillow Award to Jeri King and Don Guckert, both from the University of Iowa, for their article "The High Cost of Building a Better University" published in the May/June 2003 issue of *Facilities Manager*. The election of new officers was the culmination of the annual meeting. John Ott, The Ohio State University OARDC, was reelected to a second two-year term as secretary and Becky Hines, The Ohio State University, received the honor of being voted president-elect.

Educational sessions filled the remainder of the day; later on the conference concluded with the banquet. Following dinner, Chris Ahoy, Iowa State University, assumed the presidency from Clay Shetler of Goshen College. MAPPA officers for 2003-04 include: Chris Ahoy, president, Iowa State; Becky Hines, president-elect, The Ohio State University; John Ott, secretary, The Ohio State University OARDC; and Jerry Carlson, treasurer, Illinois State University.

Wednesday morning our hosts from Southern Illinois University Edwardsville had one last chance to shine. After breakfast, a tour of their park-like campus was available. A visit to this remarkable campus was a fitting end to a remarkable event. A special thanks goes to our program and host committees whose hard work resulted in MAPPA's trip to Missouri being "the gateway to the best."

Chris Ahoy, 2003-04 MAPPA President

We look forward to the 2004 conference in Cleveland, Ohio, home of the Rock 'n Roll Hall of Fame, hosted by Case Western Reserve University; mark your calendar for October 31-November 3, 2004.

* * *

Central Region
Ed Bogard
CAPPA Newsletter Editor

The CAPPA Educational Conference was held October 10-14, 2003, at Texas A&M University at Corpus Christi, Texas. Because of the expanded agenda, the Executive Committee needed two days to cover all of the pressing issues. Among the issues was a complete rewrite of the Bylaws to support new and emerging technologies, improve delivery of services to the membership, and promote the free flow of information and communication within CAPPA. To support these initiatives, the committee recommended the addition of an Information Services Committee, the selection of a web master, publishing the newsletter in an electronic format, posting meeting minutes on the web page, and establishing links to every aspect of CAPPA and APPA. Along these same lines, the Executive Committee encouraged the use of an event planner for the Regional Meeting and the development of a method for selecting a meeting site irrespective of an institutional representative. In an effort to encourage continued participation of our Business Partners, a new four-step program was discussed. This program would be based upon the number of consecutive years of support to CAPPA and the intensity of

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CAPPA Executive Commitee discusses upcoming issues

that support with results in a graduated level of membership. Each level of Business Partner membership would provide an increased recognition within the CAPPA organization. The benefits of the program have received broad support of the Business Partners.

Although membership in CAPPA has been stable over the past few years, it was proposed that resources be committed to increase membership by three percent over the next year. This received the strong support of the Executive Committee as well as the membership. A number of educational programs were proposed and approved that will appeal to every level of skill represented by the CAPPA membership. The APPA program titled "Supervisor's Tool Kit: Nuts and Bolts of Facilities Supervision" will be reviewed with the intention of developing the necessary trainers in-house so it can be presented within the region at a reduced cost to the participants.

The 2003 conference opened with a welcome to Corpus Christi and the University Campus by Dr. Robert R. Furgason, president of Texas A & M University at Corpus Christi. This was followed by a full round of educational sessions, with dinner that evening aboard the USS Lexington which is anchored in Corpus Christi Bay. Delegates enjoyed a hearty dinner menu followed by an Imax movie, music and dancing, and a self-guided tour of the ship.

The next day was set aside for activities that included deep sea fishing, a round of golf, a casino cruise, or a tour of the Corpus Christi campus. In the evening, the Awards Banquet was held to recognize those who have contributed significantly over the past year. These awards included the Distinguished Member Award to Neal Swarnes, Certificates for Meritorious Service to Kevin Folsom, Miles Abernathy, and Herb Ohrt, the Newsletter Award to Kevin Folsom and Jack Mesh, and the President's Award to Leo Yanda and Tom Clark. A highlight of the Awards Banquet was to hear APPA President Brooks Baker encourage everyone to "stay hungry." He attests that "Being hungry equates to never letting yourself get into a position of being satisfied or complacent."

The sprit of renewal has been present in every aspect of the CAPPA region this past year. As a result, the policies and committee structure for the coming year is reflective of this ground swell evolution. In the words of CAPPA President Ron Smith, "Last year in Spearfish we celebrated our 50th anniversary as an organization. This, our 51st, we decided the theme should be 'The Next Fifty Years.'"

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USS Lexington

Rocky Mountain Region
Polly Pinney Conference Director
Dave Brixen, RMA President/
Co-Conference Director

A location described as "one of the most beautiful places on earth" by numerous travel magazines was the site for the 2003 RMA Educational Conference hosted by Arizona State University. The theme "Golden Prospects" reflected the first 50 years of RMA—looking to the future of our profession while celebrating our past. Nestled in the Red Rocks of spectacular Sedona, Arizona, at the Sedona Hilton, 358 RMA members, companions, Business Partners, and presenters assembled September 18-20, 2003, to celebrate the 50th Anniversary of the Rocky Mountain Association.

We were honored to have APPA's Executive Vice President Lander Medlin, APPA Staff Liaison for RMA Francine Moore, and many of RMA's Emeritus Members join us.

The golf tournament commenced on Thursday morning at the gorgeous Sedona Golf Resort. The four-star rated course, which winds around the famed red rocks of Sedona, provided both a challenge and a good time for the participants.

In the afternoon, participants had an opportunity to take a ride on the Verde Canyon Railroad, a four-hour train trip through a true wilderness canyon, past Sinagua ruins and geological rarities, and through a riparian habitat for endangered waterfowl and wildlife. That evening we were treated to an outdoor patio reception hosted by our Business Partners.

On Friday, we gathered early for the Welcome Breakfast with greetings from ASU Deputy Executive Vice President Scott Cole and an inspiring keynote address by nationally recognized speaker Ron Canham focusing on leading our organizations forward during change. After breakfast, the many and varied educational sessions began.

While the delegates spent time furthering their knowledge, sharing their expertise and experiences with one another, and spending some quality time in the exhibit hall, some of the companions were off on a Pink Jeep Tour, four wheeling to the summit of the Mogollon Rim to view the panoramic red rocks. Others visited Tuzigoot National Monument—the remnants of one of the largest pueblos built by the Sinagua Indians, Jerome State Historic Park, or Jerome, a historic mining town that seems suspended on the side of Mingus Mountain.

After an event filled day we all headed to the Blazing M Ranch for an evening that included a chuck wagon buffet and a western show featuring cowboy poetry, comedy, music, a rather odd fellow named Otis, and of course, time to renew friendships and enjoy one another's company.

The next morning, after breakfast with our Business Partners in the exhibit hall, the delegates assembled for Roundtable Sessions to discuss hot topics in facilities management and exchange experiences. Meanwhile, the companions spent their time experiencing the energy vortexes in Sedona and learning Chakras, a tool for creating vibrant health within the body, mind, and spirit.

Mid-morning the buses left for a trip to Arizona's spectacular Grand Canyon with a stop on the way for our group photo in front of picturesque Bell Rock. The canyon, overlooking the Colorado River 5,000 feet below, is one of the seven Wonders of the World.

Our conference concluded Saturday evening with a wonderful banquet and entertainment by comedian Carlos Oscar with Gary Lloyd providing country western tunes for dancing. We celebrated our past, present, and future by awarding the 2003 Presidential Award to Jeff Turner of Casper Community College for his outstanding contributions to RMA, the Lee Newman Award for outstanding service by a Business Partner to Lerch Bates and Associates Inc., the Val Peterson Award for outstanding contributions to the quarterly newsletter to Esther Federico of Pima Community College, and five-year Business Partner Awards to 3D/I and APS Energy Services.

The evening concluded with the installation of the RMA Board and President Dave Brixen by APPA and RMA Past President Gary Reynolds.

RMA attendees pose in front of Bell Rock.

Thanks to the RMA Board and committee members for their support. They are as follows: David Brixen, president, Arizona State University; Mark Shively, 1st vice president, University of Wyoming; Tommy Moss, 2nd vice president, Colorado State University; Eakle Barfield, 3rd vice president, Montana State University; John Bruning, secretary/treasurer, University of Colorado, Boulder; Paul Smith, newsletter editor/APPA junior representative, Pima Community College; Craig Bohn, APPA senior representative, University of Utah; John Morris, historian, Colorado State University; Wayne White, annual meeting coordinator, Utah State University; Nancy Hurt, Membership Committee, Colorado State University; Eakle Barfield, Professional Affairs

Jeff Turner, left, and Dave Brixen

Committee, Montana State University; George Stumpf, Awards and Recognition Committee, University of Colorado, Health Science Center; Polly Pinney, Educational Programs Committee, Arizona State University; and Harvey Chace, Information & Research Committee, University of New Mexico.

Thanks also to a truly exceptional 2003 Conference Planning Committee. They are: Ted Cary, Carrie McNamara-Segal, Fred Giles, Dennis Ederer, Doug Sanford, Joe Metzger, Vance Linden, Cindi Brennen, Jim Newell, Val Peterson, Linda Quihuis, Joanne Rollins, Sonny Alvarado, and Priscilla Crosswhite—a special thank you to Wayne White for his support with the Business Partners.

See the RMA 2003 website at http://fmis.fm.asu.edu/GoldenProspects.html. for additional meeting photos.

Mark September 18-21, 2004, on your calendar and we'll see you in the Grand Teton National Park at Jackson Lake Lodge. As one of our committee puts it, "sort of like jumping from the fire to the freezer." See you in Jackson!

* * *

Pacific Coast Region
Debbie Aguilar, Towny Angell, Tony Ichsan, and Anna Weskerna
PCAPPA Board members

Towny Angell, Reed College, with the assistance of Richard Bettega, Lewis and Clark College, and John Hall, Linfield College, and their incredible staff, hosted the 52nd PCAPPA meeting and educational conference. The theme of the meeting was "Vision is the Mission" and the site was along the waterfront of the Willamette River in Portland, Oregon.

The four-day conference was well attended (175 delegates, 35 vendor booths, and 51 contributing Business Partners) and offered topics on all phases of facilities management. APPA President Brooks H. Baker III attended the conference and participated in several workshops. He brought a great dose of southern wisdom and hospitality to our meetings and provided a big picture perspective of APPA's upcoming direction. Reed College President Colin Diver also joined us and shared his encouraging words and perspectives. Attendees were treated to a motivational and uplifting experience by guest speaker Dr. Thomas Tursich and a presentation on "Supervisory Tool Kit: Nuts and Bolts of Facilities Supervision" by Pep Hazlett. Chong-Hie Choi, director of finance and administration and liaison to PCAPPA, attended and provided information from APPA headquarters.

Aside from the educational sessions offered, attendees enjoyed a wonderful tour of Reed College including a delicious ice cream social, a boat cruise aboard the *Willamette Star* on the beautiful Willamette River, and, for the golfers, a gorgeous day at Langdon Farms. Other exciting adventures included tours of the Japanese and Chinese gardens, Powell's City of Books which provides a world-class offering of titles as the largest independently-owned new and used bookstore in the world, and the Pittock Mansion, completed in 1914, which offers a look at a bygone era.

The conference concluded with the awards banquet with the following awards being presented. The Presidential Award of Appreciation, for an outstanding conference showcasing their northwestern hospitality, was presented to Reed College's Towny

Brian Worley and APPA President Brooks H. Baker III

Angell, Doris Hall, Michele McPherson, and Keith North, to Lewis and Clark College's Larry Atchison, Richard Bettega, Janice Carter, Joan Greenman, David Lageson, and Josey Meza, and to Linfield College's Mike Dressel, Lynn Gadberry, Ron Ponto, John Hall, and Terry Wymore.

President Brooks H. Baker presented Brian Worley, University of LaVerne, APPA's Award of Appreciation for his dedicated service as PCAPPA's senior representative.

Once again our friends J.R. Huffman and James Alewine of San Joaquin Chemical provided their support of PCAPPA's main mission by presenting a $2,500 check for educational scholarships. They have provided scholarship funding for several years and are a much appreciated asset to PCAPPA.

Keeping with our sustainable interests, we recycled and passed the PCAPPA Presidential gavel from John Wong, British Columbia Institute of Technology, to Chris Christofferson, Stanford University (1994 PCAPPA President). Thank you, John, for a great year for PCAPPA. Chris brings with him many, many years of experience with both APPA and PCAPPA.

During the past year the PCAPPA Board focused on several objectives and, with the enormous effort of various committees, many of the objectives have been achieved. Some of these objectives included finding new strategies for member recruitment, increasing available scholarships, assisting with marketing of APPA and PCAPPA to the Mexico institutions, and updating the PCAPPA administrative guide.

The Portland conference provided a wonderful opportunity for attendees to pursue personal growth, meet with old friends, and make some new ones in an atmosphere of fun and excitement. It could not have been possible without the incredible commitment and energy of Towny Angell, Michele McPherson, Doris Hall, and Keith North from Reed College. Kudos to Janice Carter, Lewis and Clark College, who organized the golf tournament and a special thanks to Jim Adams, University of Puget Sound, who volunteered throughout this conference in order to gain experience to host the 2005 meeting. We are also grateful to Mark Hunter and his Education Committee for putting together a superior educational program.

In 2004 we will travel to the Westin Horton Plaza in downtown San Diego, California—the heart of the historic Gaslamp District. This meeting will be hosted by Scott Burns and his staff at San Diego State University. Mark your calendars and see you there!

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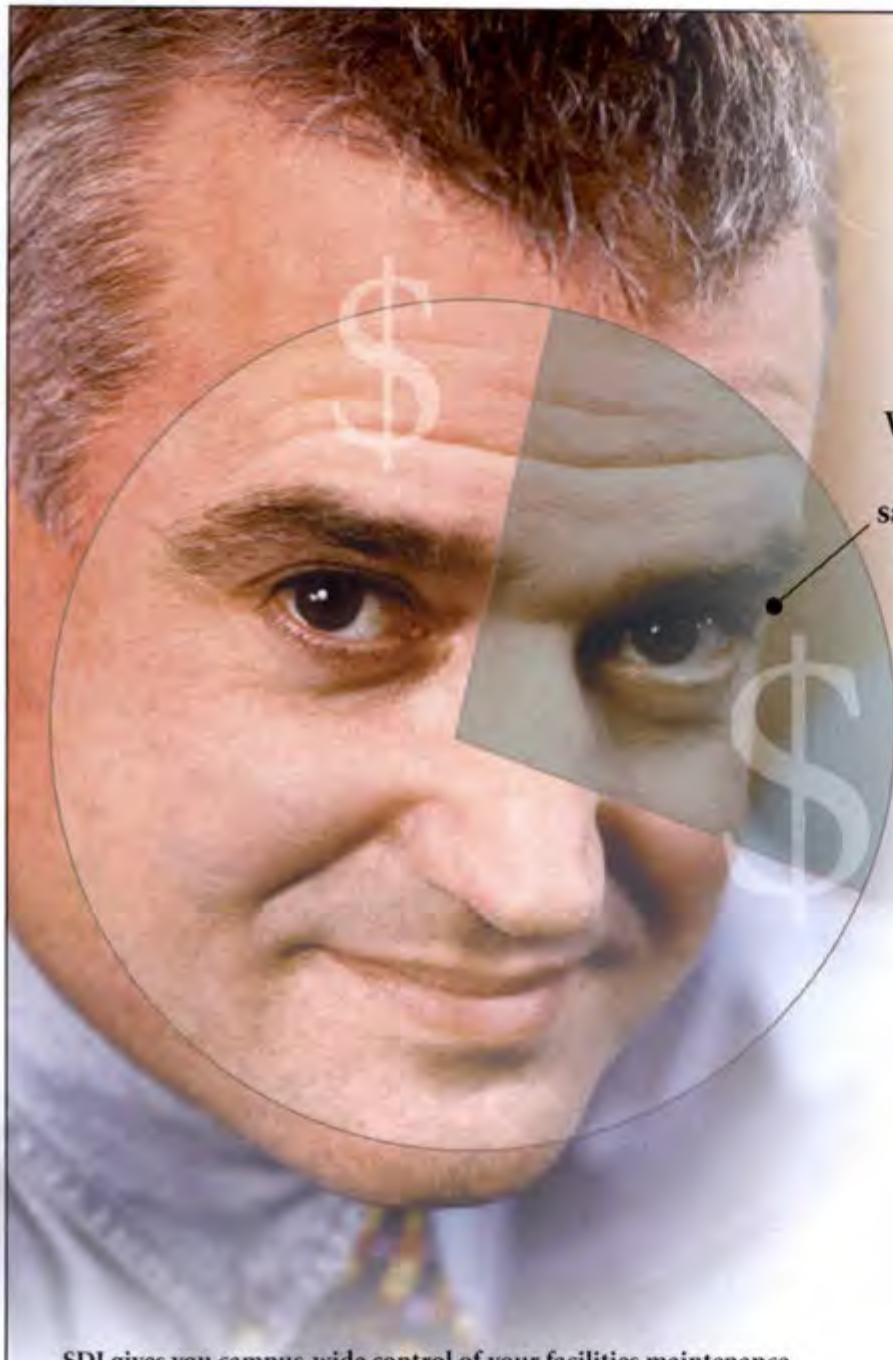

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A Talk with Dr. Sam L. Polk Sr.

by Francine Moore

Over the past 90 years, APPA has faced numerous challenges and opportunities. As leaders, we embrace change and view this as a means to move forward in key areas essential to our future as educational facilities professionals. During the year, we will ask members to reflect on why they joined APPA and why they continue to remain engaged and active members today.

Our first subject is Dr. Sam L. Polk Sr., director of facilities management at Tennessee State University, Nashville, Tennessee. Dr. Polk is a long-time member of the Southeastern regional Board of Directors, and he currently serves as the SRAPPA Junior Representative to APPA's Board.

FM: *How did you become involved in APPA?*

Dr. Polk: When I accepted a new position as director of facilities management in 1987 for Jackson State University, the president charged me with what he viewed as a simple challenge—motivate and improve the technical capability of staff, provide clean and safe facilities, and to oversee the renovation and capital construction with very meager funds. Nothing was simple about accomplishing this task. I hastily became knowledgeable about APPA and attended my first annual conference in 1988. That first meeting sold me on the value of APPA. Today, 15 years since my first encounter with APPA and now as the facilities director at Tennessee State University in Nashville, I'm even more convinced that belonging to APPA is essential for successful facilities managers.

Sam Polk, Tennessee State University

FM: *What impact has APPA had on your career?*

Dr. Polk: Professionally, APPA has afforded me an opportunity to assume a leadership position in the association's operation and management; present papers at annual conferences; and receive recognition for services rendered on publications and research projects. All of this allows me to have a keen sense of self worth. In a way, it puts a stamp of validation on what we do as facilities managers. Also, APPA has helped me be considered at my university, not just a provider of services, but a partner in the educational, research, and service missions to the university.

Today, 15 years since my first encounter with APPA and now as a facilities director at Tennessee State University in Nashville, I'm even more convinced that belonging to APPA is essential for successful facilities managers.

FM: *What would you say to a new member joining APPA?*

Dr. Polk: Take advantage of the wide array of educational and networking opportunities that APPA provides for individuals to discuss similar work experiences, problems, successes, and best practices with peers. APPA's Institute for Facilities Management provides attendees with an understanding of the body of knowledge of facilities management which is necessary for this ever-changing education environment.

If you would like to share your reflections for joining APPA during our 90th anniversary year, please e-mail Francine Moore, director of marketing and outreach for APPA, at francine@appa.org.

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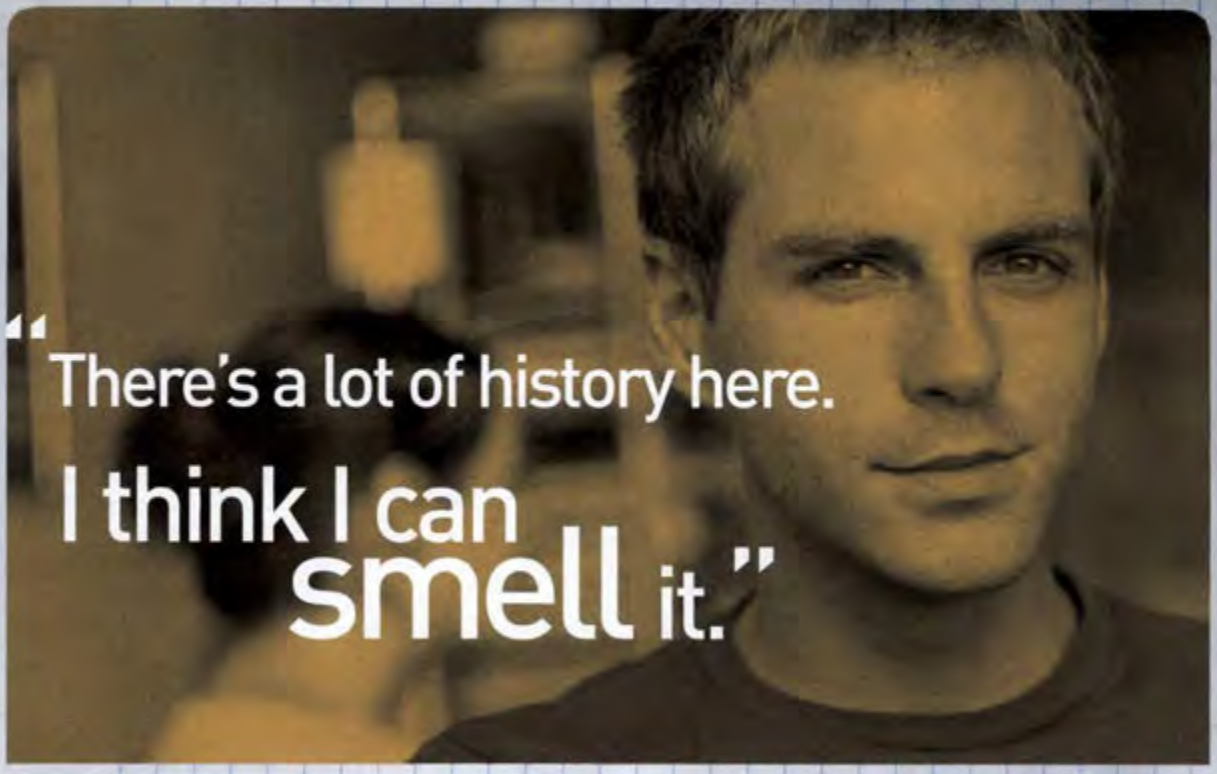

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Are You Making a Difference?

by Brooks H. Baker III

The September/October issue of *Facilities Manager* typically contains a profile of the APPA President for the current year. This past year's issue was extremely kind in its comments about me, so much in fact that my wife read it and thought they had confused me with someone else. The article mentioned that I live on a cattle farm where I grew up just north of Birmingham. Lessons learned while working the land have been meaningful to me and have proved useful during my career as a facilities professional.

This morning I was up early taking hay to a hungry herd of cattle when the sun began peaking up over the horizon. The weather was beautiful and the sights, sounds, and smells of the morning were invigorating. It was cool enough to give a special burst of energy to the newborn calves as they ran along side their mothers who were running and romping with each other through the now dormant Bermuda grass.

Periodically I am asked the question, "Why do you spend so much time and energy on the farm when you could be spending an extra hour or two in bed or have a free weekend on the golf course?" The answer is simple. Raising cattle and hay and being close to nature is something that I enjoy and am proud to be associated with. You know, that's the way all of our work should be. I heard a

man say one time, "If you don't love your work, you are underpaid no matter how much you make."

It is unfortunate that so many people go to work every day and the only thing they look forward to is quitting time. How many times have you heard people answer the question "How are you doing?" with phrases such as "Fine, since it is Wednesday and we are now over the hump" or "Great, now that it's Friday." If that's the way we feel about our jobs, we need to be looking around for something else to do.

How do the people who work around you feel about their job? What would it take to change a co-worker's attitude from one of just tolerating their job to really enjoying it? All of us are happier if we feel like we are making a difference and that the positive contributions that we make are being noticed and appreciated.

Guess what, the people who work in the facilities field have the same basic needs. They need to feel appreciated. They need to be given the tools and freedom to do their jobs, and then we must show them our appreciation. Let's all try this week to make our workplaces a little more fun and a little more meaningful for all those that we work around.

As President of APPA this year, it was my pleasure to visit PCAPPA during their annual meeting in Portland, Oregon, and CAPPA during their meeting in Corpus Christi, Texas. Unfortunately, due to illness in the family, I was unable to attend the RMA meeting and that was quite a disappointment to me. PCAPPA and CAPPA were wonderful hosts and made me feel like part of their family. My daughter Heather, who is in school at Colorado State University, joined me in Portland and was able to spend some time with me while we got to know the PCAPPA group—we were quite impressed with these wonderful people. Towny Angell and the staff of Reed College did a great job of hosting the meeting, and Heather and I really appreciate their hospitality. John Wong did a fine job of presiding over the meeting as the president of PCAPPA.

The CAPPA group in Corpus Christi was also a delight to be around. Ron Smith and his staff did a terrific job of hosting the meeting as did Art Jones, the president of CAPPA, who directed the overall meeting. The meeting was held on the beautiful gulf coast of Texas and, like PCAPPA, the educational programs were outstanding. By the time I left, I felt like I had known this group all of my life.

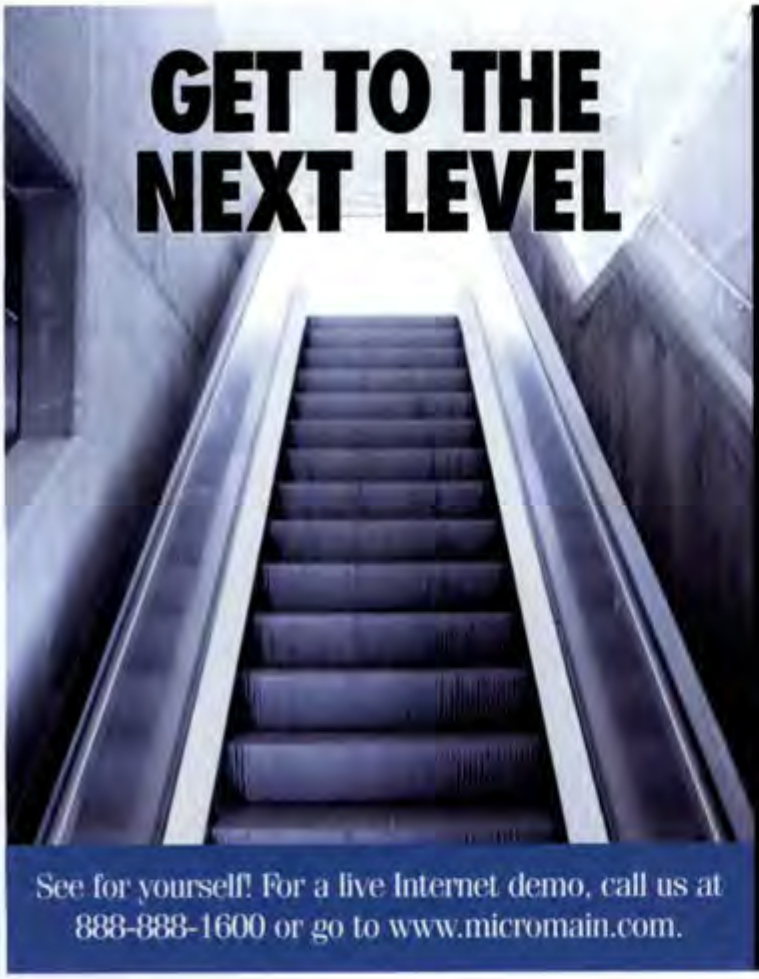
Like most of our members, my association with APPA over the years has primarily been through my region—SRAPPA. I believe that the strength of APPA lies in its regions and in the individual member institutions. We need that strength and energy that exists in our regions to help us with APPA's membership campaign. Several member institutions are struggling with their financial situa-

Brooks H. Baker is the associate vice president for facilities at the University of Alabama at Birmingham and the 2003-04 APPA President. He can be reached at bbaker@fab.uab.edu.

It is unfortunate that so many people go to work every day and the only thing they look forward to is quitting time. If you don't love your work, you are underpaid no matter how much you make."

tion to the point that their memberships have been put in jeopardy. As a result, we have seen a slight downturn in our membership. We are asking the regions and our membership to make telephone calls and personal contacts to enlist new members in APPA. We need to strengthen our ranks in order to provide our many valuable services to these institutions—many who may not even know how valuable aligning themselves with APPA can be. We will be recognizing those regions that have the highest recruitment of new members and the highest percentage of new member recruitment at the Forum this July. So help your region be on the winning team.

As a result of discussing code advocacy at the regional meetings, more members are becoming aware of the opportunities to participate in the actual writing of codes and standards. These codes and standards can have a significant impact on the capital and operational costs of our facilities. APPA is currently involved in tasks groups with EPA, and the U.S. Green Building Council, and has individual members on NFPA committees as well as other codes and standards bodies. With our widespread representation of the higher education industry and the skills and talents possessed by APPA members, we should be able to have a more significant influence in codes and standards organizations. Hopefully, we can convince the decision makers in our institutions that support of this effort will result in both short- and long-term cost avoidance for our institutions. You can get additional information regarding codes and standards in this issue. Thank you for allowing me to be a part of this great association.



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Inspire Excellence in the Coming Year

by E. Lander Medlin

I recently came across a book titled *Why Pride Matters More Than Money* by Jon R. Katzenbach. It is a fascinating title given the current financial situation of our educational institutions and organizations and the fact that many salaries have been frozen longer than we care to admit. However, it is a new year and, by all accounts, the economy seems to be turning around, although ever so slightly. For me, this new year poses the opportunity for personal reflection and a deeper understanding of how my actions and reactions impact or influence others. Interestingly enough, Katzenbach's book provided some insights on the importance of staff pride and self-esteem that seemed very timely to me.

As a result of reading the book, I began to realize how little I understood about pride and how much I had underestimated the role of pride in building the long-term sustainability of an organization. Feeling proud is a high motivational power since most people (myself included) are motivated by feelings of accomplishment, approval, and camaraderie. This emotional attachment fosters a level of individual commitment that money just can't buy! Frankly, instilling pride in employees should be viewed as an investment in motivation for an organization because the benefits recur over time. Hopefully the following thoughts and ideas will influence you as much as they did me and inspire you to make some changes in the way you impact people in your organization during the coming year.

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

In general, Katzenbach highlights **four fundamental themes** to support his premise that pride matters more than money.

First and foremost, **"personalize the workplace."** Make a personal commitment by getting involved and truly understanding what your staff are doing on a daily basis to make the workplace a productive and effective environment. The focus here is on the affective, emotional connection you make with each individual. It may sound like a tall task, but little things done daily can make a huge difference in creating a long-lasting bond with the staff. Gary Cowger, president of GM North America, said, "You can mandate mediocrity but you need to inspire excellence."

Moreover, the only thing that separates us from the mediocre is passion and pride in what employees do and how they do it. For example, we have all engaged in "staff/management retreats" in one form or another. The value to the bottom line has been proven over and over again or we would not continue to do them. However, the real value comes from the personal connections you make with your staff while in a different setting, engaging in different activities.

Ralph Waldo Emerson once said, "Your actions speak so loud I can't hear what you are saying!" Much can be gained by the example you set yourself. In this regard, **"always have your compass set on pride, not money."** In other words, motivating is more about a journey than it is a final destination. In fact, I'm not sure we ever truly "arrive." It is more about celebrating the steps of our accomplishments along the way rather than the final goal itself. An emphasis on connecting with, learning from, and listening to your staff will repay itself many times over. You must value their ideas and their knowledge and have confidence in their ability to get the job done. It shows that you really care and that they really matter.

Again, it's the little things you do every day and demonstrate through your own behaviors that make the difference in establishing pride throughout the organization. Instill the three "Rs" of respect, recognition, and rewards on a daily basis. Make no mistake about it, the benefits both individually and to the organization are phenomenal and ultimately measurable. Tom Peters and Bill Waterman emphasized this point years ago when they suggested that "early wins" are essential to achieving excellence.

Perhaps the most interesting testimony to the performance value of . . . celebrations came in a recent article in Fast Company entitled "Andy Person Finds Love." As the article recounts, when Person was CEO of PepsiCo several years ago, he was named one of the ten toughest bosses in America. Now at Tricon, Pearson has reportedly found a new way to lead . . .one based on personal humility and employee recognition . . . focused on a different, more positive emotional agenda: "You say to yourself, if I could only unleash the power of everybody in the organization instead of just a few people, what could we accomplish? We'd be a much better company." At Tricon, he has established a culture that elevates the common worker in a way that brings out the emotional drive and commitment that is at the heart of good work. As a result . . . Pearson now recognizes emotion for what it is: the secret to a company's competitive edge.

"Localize" as far down in the organization as possible. Getting to the frontline employee and understanding how he or she thinks and acts, works, and behaves is critical. Knowing family ties and engaging in community events outside the workplace can also prove enormously beneficial. This past July our immediate past president, Phil Cox, asked Board members to describe an activity they had engaged in within their departments that they considered important to the organization's overall success. Jim Roberts specifically identified the importance of personal visits to the hospital of a staff member or attendance at a family funeral. The emotional bond being created is well beyond mere words to describe. You should know all the staff by name and face and be knowledgeable of some of their triumphs and tribulations. This type of personal involvement and encouragement is what really develops the relationship, builds trust, and instills a sense of pride.

Finally, when speaking to your staff, **"make your messages simple, direct, and meaningful."** Always clarify what matters and why it matters. Frankly, I know of no individual who tires of good stories faithfully told and sincerely recounted. Simple stories created about real people doing good things for the organization strengthens the culture. In addition, we all make mistakes; however, recognizing our own imperfections honestly and openly goes a long way to opening up solid lines of communication over the long term.

Recognize that what instills pride in one staff member does not necessarily work for others. Therefore, developing a personal relationship with each person or establishing a leadership system that connects with all the staff through your actions and behaviors will go a long way in developing and instilling pride in the workforce during the bad times along with the good times. Secondly, recognize that it is always more difficult to instill pride or to create emotional commitment to performance within a traditional environment. It takes time, effort, and much patience, but it's well worth it in the long run. The effort you put forth lays the groundwork for higher levels of performance and long-term sustainability for the organization. Disciplined attention to maintaining a dynamic balance between organizational performance and worker fulfillment is key.

Katzenbach provided a wonderful summary of these themes and his key points by stating: "Set aspirations that touch the emotions; pursue a meaningful purpose; cultivate personal relationships of respect; become a person of high character; and look for humor along the way."

I recognize that I have probably not told you anything you did not already know. However, I hope I have served to rekindle your thoughts about yourself and your staff in this important area and reminded us all of the little things we can do to instill pride and make a difference in the lives of our staff during the coming year.

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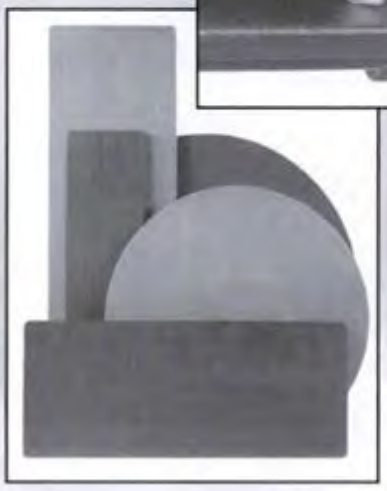

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More Than One Way to Skin a Cat

A Conversation with APPA's Membership Committee
by Randel Edwards

Bob Carter

Aggie Armstrong

Sarah High

David Miller

Jewell Winn

The APPA 2004-2005 Membership Committee is composed of Robert Carter (Chairperson, University of Guelph [bcarter@pr.uoguelph.ca]), Aggie Armstrong (CAPPA, Texas A & M University/Corpus Christi [aggie.armstrong@ mail.tamucc.edu]), Sarah High (ERAPPA Representative, University of Maryland/College Park [shigh@umd.edu]), David Miller (MAPPA Representative, Iowa State University [djmille@iastate.edu]), Ben Elisondo (PCAPPA Representative, California State University/Northridge [ben.elisondo@csun.edu]), Nancy Hurt (RMA Representative, Colorado State University [nhurt@users.fm.colostate.edu]), and Jewell Winn (SRAPPA Representative, Tennessee State University [jwinn@tnstate.edu]).

Randel Edwards: *How did you become involved in APPA?*

Carter: Years ago my predecessor (Paul McNichol, a former ERAPPA President) was involved in APPA and he introduced me to the association.
Elisondo: I attended an APPA Institute for Facilities Management in Montreal, Canada, in September 2000. At that conference I met Lander Medlin, Doug Christensen, Charles Jenkins, Jim Roberts, and SantaLynda Morerro. I decided that I wanted to surround myself with wonderfully positive people in my profession that I can learn from.
Armstrong: It was a natural progression from TAPPA (Texas APPA) to CAPPA (Central Region of APPA) to APPA.
Hurt: I first became involved in 1990 when I attended the Institute for Facilities Management. After completing that, I started attending the regional meetings.

Randel Edwards is APPA's director of member services and can be reached at randel@appa.org

High: At the suggestion of my supervisor, I attended the local chapter meeting and have been active from that point until now.

RE: *What impact has APPA had on your professional development?*

Miller: APPA has provided me with contacts in the facilities profession that would have been difficult to duplicate on my own. I have been challenged to contribute to the organization and to my profession through APPA activities.
Armstrong: It helped me go from being a local community businessperson to the big business of university facilities. People don't realize that the maintenance of a university is a big business.
Carter: It has had a huge impact on me starting with the Leadership Academy (formerly the Executive Institute at Notre Dame). Then, there's all the years of networking with colleagues and the educational sessions that have helped me look at the various best practices and improve what I am doing at my own institution. Publications such as the *Custodial Staffing Guidelines* and *Maintenance Staffing Guidelines* have been enormously helpful.
Elisondo: I have grown tremendously from involvement in APPA—from customer contacts and people skills to restructuring career objectives.
Winn: I have faced many challenges with constantly looking for ways to improve our organization's effectiveness for individual members as well as the institutions we serve. APPA benefits such as professional development, publishing opportunities, mentoring programs, regulatory and legislative updates, and information and programs unique to the educational facilities arena made those challenges actual stepping stones for growth and personal development for me as an individual.

RE: *What APPA membership benefits have been most helpful to you?*

High: Being a member of APPA has afforded me an opportunity to call upon my peers from other institutions to solicit advice on common issues. Equally, my membership provides a network of vendors, suppliers, and

experts who are willing to assist with the many bottlenecks one encounters daily in higher education.
Miller: Participation in the regional and national meetings has probably been the most beneficial to me. The networking and educational opportunities make these events the "last" thing I would stop doing for my professional development.
Hurt: The Leadership Academy, as well as the networking and professional relationships.

Elisondo: The networking opportunities and support from other facilities professionals who face the same types of challenges as our institution does.

RE: *What do you think is unique about APPA?*

Carter: Its ability to generate very high quality educational programming and publications for facilities professionals at an economical cost.
Elisondo: I think APPA is unique in that it offers a real "hands-on" approach to facilities problem solving. It also offers educational programs specific to needs of facilities professionals.

RE: *When someone asks, "Why should I belong to APPA?", how do you respond?*

High: How can you afford not to belong? With a network so large and crossing every demographic boundary, why go at it alone?
Elisondo: APPA has so many things to offer facilities professionals; it is the best investment that they will ever make.
Miller: It's the single best way to get to know people in your profession from anywhere in the country. The printed materials and educational opportunities are exceptional for you, for your staff, and for your institution.

RE: *Why does membership matter to you?*

Elisondo: Membership matters to me because it is the heartbeat of any organization. If the members don't feel valued, they will seek other options to meet their needs.
Armstrong: Because I know that there is more than one way to skin a cat. But I don't know all the ways. The more members, the more networking, the more knowledge, the more I learn.
Carter: It matters because it's a way of ensuring that all the membership benefits are delivered to the members. By pooling our resources, we are able to produce these very high quality products and services. Our membership is helping to create a leading body of knowledge for our profession.
Miller: Membership in APPA matters to me because of the professional payback that I receive for the time I invest in APPA and in myself.
Hurt: Membership matters to me because an organization is only as good as the people who are willing to contribute. The more we contribute

Continued on page 30

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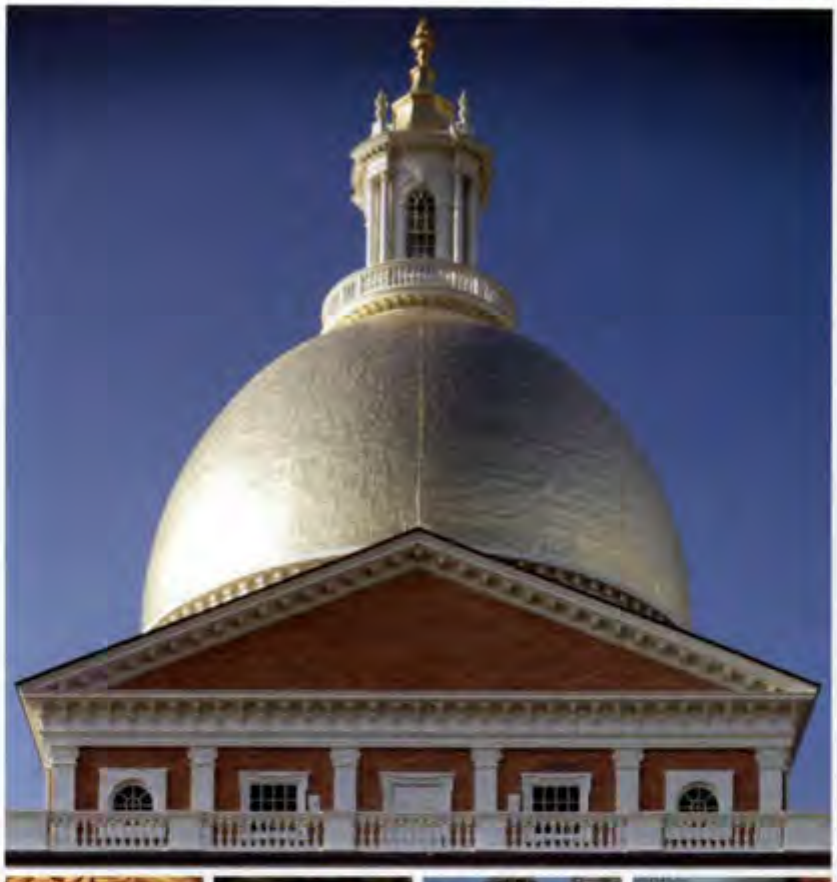

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Continued from page 28

the more we are able to improve the quality of the organization.

RE: *What are some of the priorities of the APPA Membership Committee this year?*

Winn: We are trying to retain the members we do have and aggressively recruit additional members. Diversity. We have to show it more. Also, the Membership Committee is developing a mentoring program [with the regions].
Carter: To get the message out to all our members how important it is for APPA to have a strong membership base so it can deliver cutting edge educational programming and publications.

Miller: We know that many institutional members are sustaining budget reductions. We want to make sure that our members see the value of APPA membership and have the information readily available to them to support their APPA membership value to their administration.

RE: *How can other APPA members partner with the Membership Committee with its priorities?*

Carter: They can speak to their colleagues about the great benefits of being a member and belonging to APPA. They can talk to younger people who are entering the profession and make them aware of APPA and its importance to their professional development.

Elisondo: They can join in on membership drives like "Member-Get-A- Member" and other incentive programs to recruit new members.
Winn: The mentoring program is another opportunity. The members can participate in mentoring either formally through the program or informally on their own as they network and meet with others.
Hurt: I think one thing APPA members can do is to respond to the requests from the Membership Committee representative for feedback.
Armstrong: Just keep talking about a good thing. Members can share with their local administration the value and rich resources of APPA and how APPA membership truly benefits the institution.

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- Refer them to www.appa.org/newmember. They can download a membership application.
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- If the nonmember institution joins APPA before mid-June 2004, you are a winner!

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Questions?

Contact APPA Member Services at 703-684-1446 ext. 232 or randel@appa.org.

High: If there are institutions in your area that you know are not currently participating or don't think that APPA is inclusive of them, you can make a personal appeal by inviting them to a local chapter meeting. With the many educational sessions and the broad range of participants such as mechanics, directors, vice presidents, financial and human resource staff members participating, there is something for everyone to gain.

RE: *What do you see as the strategic issues facing educational facilities professionals these days?*

Winn: Money is the biggest hurdle. It is the biggest issue. The second issue is finding qualified people. We are losing people to the private sector. For example, we will invest in an employee through high voltage training or the Institute for Facilities Management and then they will leave our institution. It is very discouraging. Our institution has instituted a contract that requires that employees stay so many months after their specialized training is completed.

Carter: The strategic issue is targeting a level of service that is consistent with the institution's strategic plan and obtaining the appropriate level of resources to deliver that.

Elisondo: Also, the consideration of outsourcing facilities maintenance is on the forefront of facilities professionals' minds.

RE: *How can belonging to APPA help you face these issues?*

Carter: It can provide knowledge to effectively address the issues through networking, educational programming, and publications.

Winn: Regarding budget, you can apply for a scholarship. The regions offer scholarships for APPA educational programming.

Miller: Peer networking and educational opportunities are the best ways to "arm" yourself to deal with critical issues. APPA can offer you the information and can provide you with opportunities to meet and talk to other facility professionals, many having already dealt with a problem similar to yours. Membership in APPA will allow you to learn from the mistakes of others and to grow your experiential knowledge through the activities of others—helping you to grow professionally and allowing you to add greater value to your institution.

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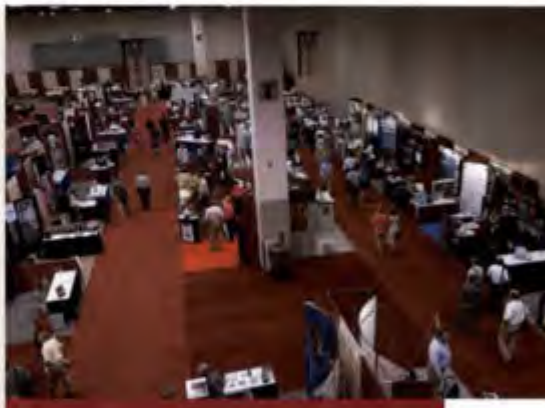

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SECURE RELIABLE UTILITIES:

More than Meets the Eye

by Tony R. Litton, P.E.

The untrained eye journeys through a campus with little understanding of the utility infrastructure that supports their activities. The complexity that surrounds even the simplest of those activities—turning on a light, working or studying in a climate controlled environment, sending and receiving e-mails upon demand—escapes most. Many walk over the miles of buried pipe and electrical lines and other utilities that serve their beck and call without any consideration of how many things have to be carefully orchestrated for these systems to work properly.

On the other hand, the facilities staff is unable to make a trip across the campus without worrying about the condition of that 20-year-old air handler with the patched coils, or the 35-year-old boiler that now requires the extra attention to keep it limping along, or the 40-year-old steam lines that are corroding.

The facility staff has the prominent middle position in the transfer, conversion, and delivery of energy and resources from primary utility providers to end-users or customers. The successful team commands an understanding of the needs of their customers and the capabilities and limitation of their systems as well as those of their suppliers. This understanding also requires a special vision of how dynamic influences such as energy availability, political policy, and regulation may have an impact on their ability to provide secure, reliable, and cost-effective utilities. Events over the last decade have compounded the challenges of delivering reliable utilities to the campus. Hazards have increased in number and complexity via intentional acts to disrupt service, whether from a computer virus or other acts of destruction. Further demands are placed on utility systems from indirect pressures such as aging infrastructure, difficulties in obtaining capital, uncertain regulations, unfunded mandates, and constrained supplies failing to meet rising demand. Natural hazards continue to wreak havoc even though advances have been made in mitigating the severity of the damage.

Needs and desires of the customer are becoming more complex. We are faced with providing both traditional as well as new utilities to support increasingly sophisticated facilities where loss of service can be extremely costly. Clear goals and objectives need to be established so that prioritization of utility needs can be established. For example, it may be prudent to segregate loads in a building where research labs, teaching labs, classrooms, and offices are combined within a single building. Too often entire buildings or even clusters of buildings are classified as "load critical," yet insufficient and

***Tony Litton is a principal with Sebesta Blomberg & Associates, Inc., Roseville, Minnesota, and can be reached at tlitton@sebesta.com. This is his first article for* Facilities Manager.**

unfocused resources are made available to protect and serve the aggregate load. Often there is not time or resources to make the necessary assessments to prioritize which loads should be served during times of crises when only limited service is available. This is a highly technical and political process that if not addressed may have significant financial impact.

The ability of a campus to provide utility service to its customers can be compromised anywhere along the energy supply chain. Identification and understanding of a supplier's weakness is an important part of assessing vulnerability. For example, during the August 2003 blackout in the Northeast U.S. and parts of Canada, the unanticipated failure of a number of municipal water supply systems occurred because the municipal onsite electrical backup systems did not function. An institution equipped to generate its own electricity may be unable to do so due to a requirement for makeup water in a cooling system that is dependent on that municipal water supply.

The United States' energy infrastructure is extremely complex and wrought with interdependencies. Energy infrastructure is inextricably interconnected with other critical infrastructures such as transportation, information technology, and water delivery systems. This interconnection of dependency is articulated in an article titled "Studying the Chain Reaction" by James P. Peerenboom, Ronald E. Fisher, Steven M. Rinaldi, and Terrance K. Kelly, published by Edison Electric Institute. The article is available at www.eei.org/magazine/ editorial_content/nonav_stories/2002-01-01-chain.htm.

Environmental regulations influence the way a campus converts energy and delivers utilities to its customers. On January 13, 2003, the Environmental Protection Agency (EPA) published proposed National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Industrial/Commercial/Institutional Boilers and Process Heaters, 40 CFR 63 Subpart DDDDD. NESHAPs are more commonly referred to as Maximum Achievable Control Technology (MACT) Standards, and this one has been dubbed "Boiler MACT." At a minimum, the MACT standard will require a higher level of testing and monitoring of industrial, commercial, and institutional boilers and heaters. The implementation of Boiler MACT may require fuel switching or costly equipment retrofits resulting in a major financial impact on the institution. As written, this regulation also applies to backup fuel systems. This could cause a facility to become deficient of firm capacity due to its inability to operate older noncompliant equipment even during emergency conditions. The anticipated promulgation date for this rule is February 2004. Rule and implementation information for this pending regulation can be found at www.epa.gov/ttn/atw/boiler/boilerpg.html.

Campuses must determine how they are going to manage their energy resources. A good resource management plan will address issues such as fuel flexibility, sustainable design practice, energy conservation, and alternative energy use. Those that are more adept at managing their resources will be in a better position to serve the next generation of students.

While implementing a project, the entire life-cycle energy impact of the project and its components should be considered, as well as the economic and environmental impact and performance. Design and construction practices that significantly reduce or eliminate the negative impact on the environment should be encouraged. A focus on efficient systems and energy conservation will result in reduced loads and may relieve the stress on existing infrastructure. Managing the use of energy is encouraged in part due to the fact that the easiest and most secure utility load there is to serve is the one that does not exist.

Regardless of the countless "what-if " scenarios or contingencies set in place to circumvent a utility outage, there are bound to be interruptions. However, the impacts associated with an interruption can be substantially reduced with proper planning. The Federal Emergency Management Agency (FEMA) has released a document entitled *Building a Disaster-Resistant University*. This document walks the reader through a four-phase process:

Campuses must determine how they are going to manage their energy resources. A good resource management plan will address issues such as fuel flexibility, sustainable design practice, energy conservation, and alternative energy use.

Recent Disasters and Universities

In July 1999, a heat wave resulted in a sustained power outage in New York City. The electricity went out at Columbia University and was not completely restored for 2-3 days. In the intervening time, researchers at Columbia's College of Physicians and Surgeons lost irreplaceable research materials–human tissue, enzymes, and cells–because there were not sufficient backup generators to keep freezers or incubators running. Damages to the $200-million research program were calculated at many millions of dollars.

Building a Disaster-Resistant University, FEMA August 2003 page 37

- Organize Resources
- Hazard Identification and Risk Assessment
- Develop the Mitigation Plan
- Adoption and Implementation.

This is a valuable resource that lays out a systematic approach to reducing vulnerabilities. It is available at www.fema.gov/fima/dru.shtm.

Delivering secure and reliable utilities is one of the major missions for facilities staff. It is a complex act of planning and implementation that is put to test everyday. Delivering on this mission requires balancing the needs of customers with meeting the goals and objectives of the institution. It requires continuous reassessment of the multitude of factors that have the potential to influence operations. It means developing an energy plan that addresses many of the same challenging aspects surrounding the development of our national energy policy. It means planning for hazards, whether created or natural, and enacting plans to protect life and property when these hazards occur. To the untrained eye, an "invisible" utility infrastructure is a routine expectation. To the facility professional it means so much more.

Useful Web Sites

For Easy Reference visit APPA *Facilities Manager* online and open this article for access to the hyper links

APPA	www.appa.org
APPA's *Facilities Manager*	www.appa.org/facilitiesmanager/
American Coal Council	www.americancoalcouncil.org
American Gas Association (AGA)	www.aga.org
American Petroleum Institute (API)	www.api.org
Council of Industrial Boiler Owners (CIBO)	www.cibo.org/
Edison Electric Institute— Studying the Chain Reaction	www.eei.org/magazine/editorial_content/nonav_stories/2002-01-01-chain.htm
Edison Electric Institute (EEI)	www.eei.org
Energy Central	www.energycentral.com/
Energy Information Administration	www.eia.doe.gov
Energy News	www.energyinfosource.com
Environmental Protection Agency (EPA)	www.epa.gov
EPA—Proposed rule for Industrial/Commercial/ Institutional Boilers and Process Heaters:	www.epa.gov/ttn/atw/boiler/boilerpg.html
EPA Colleges & Universities Sector Initiative Work Groups	www.epa.gov/sectors/colleges/index.html
Federal Emergency Management Agency (FEMA)— Building a Disaster Resistant University	www.fema.gov/fima/dru.shtm
Federal Energy Regulatory Commission (FERC)	www.ferc.gov
National Association of Regulatory Utility Commissioners (NARUC)	www.naruc.org/
New York Mercantile Exchange (NYMEX)	www.nymex.com
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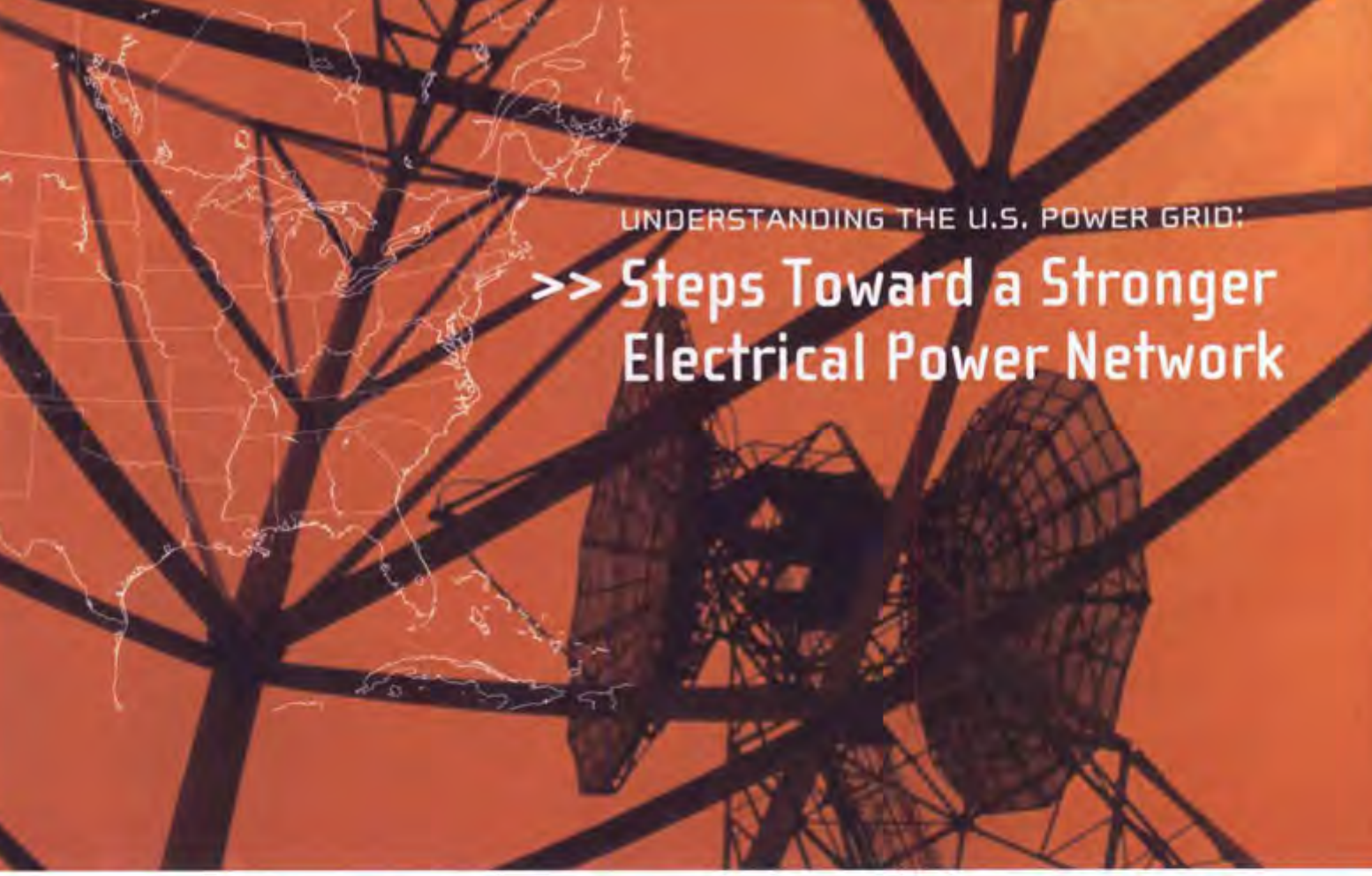
U.S. Department of Energy— Office of Electric Transmission and Distribution	www.electricity.doe.gov/index.cfm
U.S. Geological Survey	www.usgs.gov
U.S. Green Building Council	www.usgbc.org
U.S. Senate Committee on Energy and Natural Resources	www.energy.senate.gov/index2.cfm
Whole Building Design Guide	www.wbdg.org



UNDERSTANDING THE U.S. POWER GRID:

>> Steps Toward a Stronger Electrical Power Network

by Mohammad H. Qayoumi, Ph.D., P.E.

Recent power outages in North America have heightened everyone's interest, especially that of facilities and energy managers, about the condition of our electrical power system. While these blackouts have baffled many politicians, they have been no surprise to the technical community. In an effort to give the readers a better appreciation of the complexities relating to this topic, this article will briefly review these issues.

Unlike many other developed nations, the United States does not have a "national power grid." After the 1965 New York blackout affected more than 30 million people, the North American Electric Reliability Council (NERC) was formed in 1968. The NERC is an independent, self-regulating entity that seeks efficient ways to monitor the power grid and minimize major outages. The NERC divided the North American power systems into four regions, namely the Eastern, Western, Texas, and Quebec.

The Western Region includes New Mexico, Colorado, Wyoming, Montana, and other states west of these including the Canadian provinces of British Columbia and Alberta. The Texas Region only includes Texas. The Eastern Region includes all other continental U.S. states as well as Saskatchewan and Manitoba provinces. The balance of Canada's provinces is part of the Quebec Region.

In the beginning the primary role of NERC was promoting limited power exchanges among neighboring utilities and not necessarily developing a framework with a national outlook for power. Its role in addressing national power issues has evolved over the past four decades.

Overview of the Power Grid

Electricity is commonly generated at 20,000 volts. Using transformers, the voltage is raised to 230 kV, 345 kV, 500 kV, or 765 kV depending on the distance that the power needs to travel using transmission lines. Today the U.S. power grid system is a complex web of transmission networks that extend thousands of miles. In fact, the national power transmission network consists of more than 670,000 miles.

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The reason for converting the voltage to such high values for transmission is to reduce the physical size of the electrical conductors. For instance, when the voltage is doubled the power carrying capacity of the same conductor is quadrupled. The utilities substations reduce the voltage to 138kV, 69 kV, 13.8 kV, or 6.9kV and routes the power to commercial, industrial, and institutional consumers via distribution systems. At the customer site the power is reduced to 480/277 and 208/120 volts for use.

Normally in electric equipment the capacity is limited by thermal considerations. This means that at a steady-state condition the rate of rejecting heat from the device should be higher than the heat generated primarily due to the flow of electricity. For power transmission lines, other parameters such as power transfer and stability factors control the flow of electricity before approaching the thermal limits.

There are several underlying factors that make electricity unique among other major utilities. One of these factors is that given the current state of technology, we cannot store large amounts of electricity in a cost-effective manner. This implies that the generation supply and demand must be equal all the times. Second, unlike other regulated industries such as the telecommunication, natural gas, or transportation industries that are governed under federal laws, the electric utilities are regulated by every state's public utilities commission.

However, electricity flow is governed by laws of physics and not according to state rules or contractual arrangements. In fact, controlling power flow is not easy in most conditions, and given the current available technologies the operators can only exert limited control in directing the flow in every transmission line in the network.

One of the electrical concepts that is poorly understood by many non-technical people is the distinction between real and reactive power. As electricity flows along a conductor, it has two main components—namely real and reactive power. **Real power** is the power that is useful since it transfers actual energy. **Reactive power** is like a standing wave that travels back and forth similar to the ocean waves, but the net energy it carries is zero.

The flow of real power between two nodes in the power system is a function of their relative phase angle. In other words, the power flows from a node with the voltage wave leading the other nodes. Similarly, reactive power flows based on the voltage differences. The reactive power flows from the node that has a higher voltage to one that has lower voltage. Reactive power flow serves a critical role in the stability of the power system. According to one author, the need for reactive power is similar to the requirement to balance a bicycle while

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it is moving forward. When riding a bicycle, it not only moves forward, but it may move sideways and slightly up and down. Over time the net movements in the other directions except moving forward is zero.

Current Conditions

Over the past two decades the bulk power transfer among utilities has quadrupled. On the other hand the investment in new transmission lines has dropped significantly for over a decade by more than $100 million per year. For instance, in early 1990s, the amount of new transmission line added was over 13,000 miles annually, while in the past few years the number shrunk to less than half this number. There are two major reasons for this significant drop. First, the payback on a new gas-fired generation plant is less than five years, while it takes roughly 28 years to recover the investment cost of a transmission line. Second, in building transmission lines, the investors need to secure permission from a long list federal, state, and local agencies that could take many years, not to mention possible court challenges throughout the process. That is why, given the current tariffs, investing in transmission line is not a very attractive option in most cases. Finally, utilities deregulation has made the situation go from bad to worse.

To ameliorate the situation, NERC for the past five years has been asking for legislation to make its rules mandatory. Similarly, the Federal Energy Regulatory Commission (FERC) has been asking without much success for more oversight over the operation of the power grid. In the meantime the number of power transactions across the power grid has increased, outstripping any spare capacity that existed only a few years ago. One of the Department of Energy transmission experts stated to *IEEE Spectrum* magazine in 1999: "We were all just waiting for the big one." Similarly, a former EPRI (Electric Power Research Institute) expert had recently stated, "Everybody in the business knew something like this was going to happen. It wasn't a question of whether, but when."

Similarly, when New Mexico Governor Bill Richardson was the U.S. Secretary of Energy during the Clinton Administration and had referred to the United States as "the superpower with a Third World power transmission system," he was stating a harsh reality. Unfortunately, the policy makers did not take this warning to heart. According to Ilya Roytelman, a power engineer for Siemens AG who is familiar with the European power networks, "The U.S. grid system is 30 years behind the state of art" and "every system in Europe works better."

New Technologies

Given the speed of electricity, power outages usually cascade so quickly in just a few seconds from inception leaving little time for a human operator to

respond in a well-coordinated fashion. In other words, they cannot balance the supply and demand across the system without overloading transmission lines. Therefore, unless possible conditions are identified ahead of time and preprogrammed in a real-time computer system, it will be impossible to manually respond to abnormal power conditions adequately. To improve the power network in the U.S., new products and technologies must be used widely across the system. A brief summary of these technologies follows.

New SCADA Systems

Supervisory control and data acquisition (SCADA) systems in use today are able to assemble real-time information for the operators. However, recent breakthroughs in SCADA technology can enable these systems to effectively protect the power grid and prevent actions that may worsen the network conditions in an emergency.

WAMS

Wide area measurement systems (WAMS) collect a large amount of information about the system condition. The data can be extremely helpful in determining what actually happened during a failure. Although WAMS cannot protect the system per se, it provides valuable insights that can prevent future outages.

Transmission Line Monitors

The major problem of transmission lines is the thermal expansion under an overload. As the line expands, its capability to carry the electric flow further, while the losses continue to increase, make the conditions worse. New materials with lower thermal expansion have been developed for transmission lines, thus limiting the power carrying capacity in an overload condition. In addition, new technologies have been developed where fiber-optic strands are embedded inside transmission lines. This will enable the system to continuously monitor if the line is sagging and if so, the operator can take appropriate action prior to a failure.

FACTS

Flexible alternating current transmission systems (FACTS) are solid-state devices that enable power systems to control voltage and other parameters continually. Unlike the electromechanical controllers that are too slow to govern the flow of current quickly and prevent bottlenecks, these devices can act very fast and can provide real-time control. This level of control makes it possible to channel power to particular grid branches and enhance voltage regulation. More importantly, during peak demand conditions, with 50 percent additional power going through existing lines, the need to expand many transmission paths is reduced.

HTS

The recent breakthroughs in high temperature superconductor (HTS) technologies create excellent opportunities for

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transmission lines. First, the cables can carry more than 100 times the current than a copper cable of similar size when cooled around ten degrees absolute temperature. Second, during a short circuit as the line temperature increases, it loses its superconducting characteristics and thus can limit the current flow.

SMES

Superconducting magnetic energy storage (SMES) devices are energy storage devices that consist of a superconducting coil in a magnetic field. Such devices in the future could be utilized across the power grid to eliminate momentary voltage dips, thus stabilizing power networks and preventing costly power interruptions.

Concluding Remarks

The principal challenge of transferring large quantities of power from a generation site to a distant load through the transmission system is a difficult task. There are not enough mechanisms to control routing of power in the network to the degree that the operators desire. In reality, the route is indirect and is a function of the impedance of individual lines, the point where power enters and leaves the system, and other factors.

Under normal conditions and true competition, the marginal cost and marginal revenues can be equal where any power provider can bid to supply the system with power. However, under an overload condition, markets diverge quite rapidly. Power congestion in only a few lines can result in huge price variations in a localized area. Therefore, the salient features of the power grid, legal constraints, and line congestion can impede transfer of power between two areas. Consequently, transmission line companies can exercise quasi-monopolistic practices over local markets by exploiting bottlenecks, operational idiosyncrasies, and legal loopholes. That is why the general public gets baffled when they hear about localized price volatilities and power shortages.

Given what is stated above and the lack of a plan to address this as a national issue, it is safe to assume that things will get worse before they will get better. The role of electricity in the institutional mission of our colleges, universities, and other educational facilities is more critical than ever before. Given the complexity of the electrical network, it behooves power engineers and facilities officers to communicate the critical issues pertaining to the system more frequently and effectively with policy and decision makers.

Reference

http://www.spectrum.ieee.org/WEBONLY/special/aug03/black03.html.

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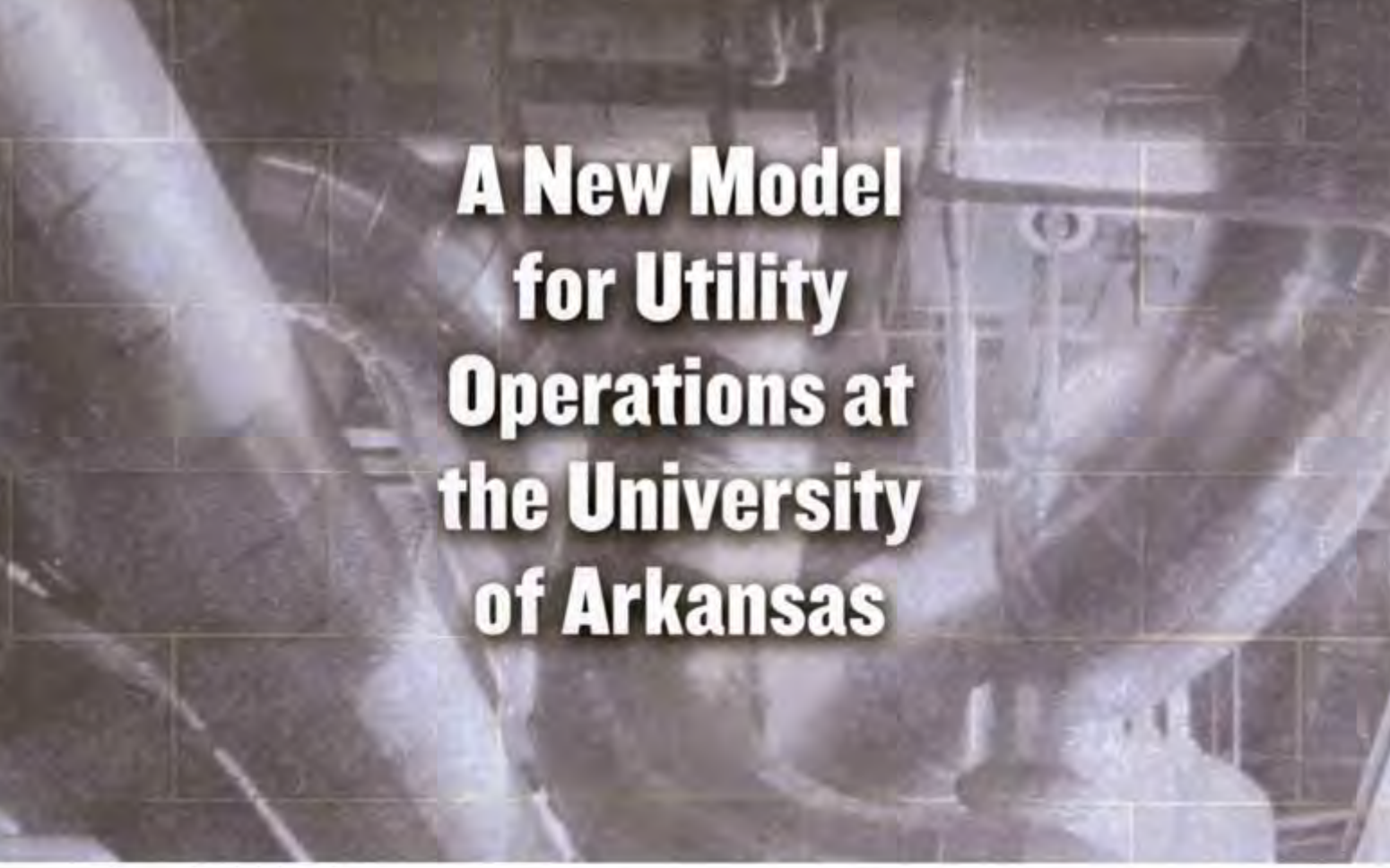

A New Model for Utility Operations at the University of Arkansas

by L. Scott Turley

Let's face it—addressing the growing list of deferred maintenance projects is one of the most difficult challenges we have as campus facilities managers. Within Utility Operations, the problem can be even more acute as our work is often out of the limelight. The impact of water dripping on a faculty member's desk will get first priority—that is, of course, until the lights go out or the air conditioning fails on a hot August afternoon. But for the most part, as long as our facility staff continue to work their magic and keep the utility plant and the HVAC (heating, ventilating, and air conditioning) systems functioning at acceptable levels, the only causalities are likely to be the utility budget and some sleepless nights on behalf of yours truly.

***Scott Turley is the associate director for utility operations at the University of Arkansas, Fayetteville, Arkansas. He is also a member of APPA's Information and Research Committee and can be reached at sturley@uafphpl.uark.edu. This is his first article for* Facilities Manager.**

The Rubik's Cube that is Deferred Maintenance Funding

The cold hard truth is that investment solves capital renewal and deferred maintenance (CRDM) issues. You can insert your own favorite cliché at this point about something for nothing, but it takes resources to address needs. If your organization has no hope of obtaining some form of financial support, then this article may not be of great help. But if there are resources out there, be they operating funds, revenue bonds, or performance contracts, then I think we have a story to tell that can help you convince the decision makers in your organization to support investment in your utility systems.

A Business Model for Campus Utilities

As the team responsible for utility system operation at the University of Arkansas began to take a hard look at the factors keeping us from making a quantum leap in improving energy efficiency, we faced the fact that we had a credibility problem with our administration. It was not as if we were using the "Enron Guide to Utility Management," but we needed the university administration's support for a major investment in utility infrastructure. They needed confidence that investment in these unseen capital assets was a fiscally responsible use of our limited capital resources and was in direct support of the university's mission and objectives. We needed a new game

Growth drives water and sewer infrastructure needs

plan for energy management and utility system operation.

Zen and the Art of Motorcycle Maintenance was a pop culture book from the 1970s that encouraged thinking in terms of the whole, not just the component parts. In the case of Utility Operations, we began to think not of chillers and air handlers, or in terms of the utility plant operators or HVAC crews, but as a whole team-driven enterprise that produces, distributes, and consumes energy.

One organization has "burner tip to air register" responsibility. Simple in concept? Sure it is. Common sense? Absolutely. Easy to put together and implement? Well that's a different matter....time will ultimately measure our success. But what I know is that over the past several years an integrated plan has emerged that combines targeted capital improvements, reinvestment of energy savings, and a hybrid organizational structure that is fundamentally changing Utility Operations here at the University of Arkansas.

The most crucial and distinctive change has not been the physical improvement program but the philosophical restructuring. The Physical Plant Department, in effect, has adopted an entrepreneurial business model for its Utility Operations. After all, we are a $10 million a year company for the university! This business unit within Physical Plant purchases raw utilities and delivers electricity, steam, and chilled water to 85 buildings and across six different customer groups.

The unit has developed rate structures for each utility, analogous to a public utility, and treats all customers the same, regardless if they are academic, housing, athletics, or other auxiliary operations. The new rate process provides financial incentives for energy efficiency, and sends monthly price signals on the cost of energy to encourage conservation. The result is a clear pattern of cash flow and cost allocation that clarifies the value utility operations provides to the campus, and greatly assists in explanations to the administration of what systems need improvement.

Strategic Utility Planning

Our first tasks were to develop a vision of what we wanted our utility operation to be and a roadmap that laid out the necessary utility infrastructure projects to get there.

In 1998, Chancellor John A. White called for creation of a campus master plan to support the university's academic goals. The campus master plan basically told us how much space was needed (square feet), what type of space it would be (research, office, classroom), and where it would be located on the campus. Armed with high-level information about future space requirements, Physical Plant began working with GLHN Architects and Engineers in 2000 to develop a utility infrastructure master plan. The full implementation of the utility development plan would require about $50 million—$26 million for existing utility infrastructure improvements, and the rest to accommodate student and programmatic growth. The sidebar on page 46 lists some of the specific projects that resulted from the utility master plan.

Besides the intuitive benefits of planning our infrastructure growth, there were two specific issues the utility development plan brought to light:

- It brought into focus for our administration the associated cost for infrastructure to support the academic plan. Now the academic mission is linked to enrollment, which is linked to facility needs, which is linked to specific infrastructure projects and associated capital costs.
- A less obvious result was that by linking the utility and growth plans together, the Administration is motivated to build out specific areas of campus just as a subdivision developer would, in order to maximize the value of their investment in utility infrastructure.

New 600-bed housing, dining, and commons complex

The Perpetual Financial Model

The second element of the new organization involved changing the financial perspective of Utility Operations. We needed accounting processes that clearly showed our admin-

Main chiller plant: the far tower will be replaced in 2004

Main chiller plant: 1969 vintage 2000-ton machine slated for replacement

Boiler controls slated for replacement using CRDM funds

New main plant air compressor

istration where the utility dollars were going, how specific investments were linked to the overall campus energy management effort, and reporting tools that documented the effect of the investments. The new plan involved more sophisticated utility rate schedules, implementation of a new automated metering and accounting system, and financial separation of the utility operation from the general facilities budget. No longer are utility dollars comingled with general Physical Plant operating funds, so financial and management accountability is clearly maintained. But the more significant financial changes were a result of this new holistic approach to energy management. The key features were an ongoing capital funding stream for new construction and a perpetual infrastructure renewal plan.

With this new level of financial accountability, the administration had confidence to "invest" in this new company, to the tune of $23 million in bonded capital for expansion and system replacement over the last four years! Note too that holistic planning takes a long-term commitment by decision makers, as utility infrastructure has a useful life of 25 years or more. Donald O. Pederson, our vice chancellor for finance and administration, and Leo Yanda, director of physical plant, emerged as strong advocates of the utility reorganization plan and the need for significant renewable investment.

These bonds are being repaid in one of two ways:

- New construction pays for new capacity.
- All utility customers pay to renew the overall utility system.

Regarding the utility master plan list of growth-related projects, each new construction project pays a "remote utility fee" based on the energy demands it will place on the district utility system. Capacity is not free, and our consultants know to include these charges as a part of the project budgeting process. The connection fees are set to reflect the value of the boilers, chillers, etc., that a project would normally have to fund were it a stand-alone facility. The growth triggers the necessary funds for the utility systems to keep pace.

The annual payment on the bonded debt to renew existing plant capacity or distribution assets is included in the utility rates as a debt service charge. That way everyone on the system helps support its energy efficiency and reliability. Because E&G (Education & General) is by far the largest customer of Utility Operations, it is noteworthy that the university administration showed 0their commitment by placing the annual

Southwest Chiller Plant condenser pumps

debt service for bonds into the utility rates in a time of tight budgets.

This addressed the "burner tip" in terms of production and distribution systems, but what about the "air register" aspect? We cannot optimize the energy management loop unless we address the building-side systems. We needed to establish an ongoing building mechanical system renewal stream as we did with plant and distribution assets.

Physical Plant had been undergoing a reengineering effort that included transitioning to a zone maintenance concept. In order to staff the zones and establish a facility condition baseline, the consulting team did a facility condition assessment, which included an equipment inventory and a cost estimate for the related CRDM backlog. This gave us the missing piece of the perpetual financial model—which is that we need to invest $1.2 million each year to keep our building mechanical systems performing at high efficiency.

Energy efficiency gains from the physical improvements to the plant and building systems now on the books will fund roughly half the building-side CRDM need. Again our administration has committed to "boot strap" the difference in the short run. Over the next five years, we expect that this ongoing mechanical system CRDM investment, implementation of continuous commissioning, and further cost reduction efforts will allow us to effectively self-fund ongoing needs and protect the efficiency gains we will have worked so hard to achieve.

A Hybrid Organization

Finally, we needed an organizational structure that gave our technicians and operators the best opportunity for success in implementing this aggressive energy management program. It only made sense if we were looking at the utility systems as a whole that this would be reflected in the organization. Again working with our consultants, we considered several different structures of how to integrate HVAC and utility staff into one

An Array of Energy and Utility Improvements

The University of Arkansas Utility Master Plan identified a wide variety of needs, opportunities, and growth-based projects. Many of the plan's improvements have been accomplished, but many more remain to be done. The primary components of the plan, and their approximate costs of implementation, are:

- **New Southwest Chilled Water Plant:** $7 million. The plant has 3000 tons of high-efficiency water chillers, variable-primary pumping, variable-volume tower water, hydronic free cooling, and new distribution infrastructure. It includes an open-protocol control system that allows communication between equipment purchased from different manufacturers.
- **Automated Metering and Cost Allocation System:** $1 million. A combination of metering, software, and hardware integration that will allocate all utility-related costs to users in a manner that provides prompt and accurate price signals and incentives for good behavior. It further provides real time tools for energy monitoring and continuous commissioning.
- **Consolidated Energy Procurement:** Purchasing of electricity and natural gas for all users on campus has been consolidated to achieve significant savings by reductions in coincident energy demands (not all facilities peak at the same time) and by taking advantage of declining block-rate structures (bulk purchasing lowers unit costs). Along with the consolidation of procurement, the university continues to hedge gas costs by purchasing futures contracts.
- **Central Chilled Water Plant Renovation:** $9 million. Replacement of an inefficient 3000-ton water chiller with two new high-efficiency chillers, conversion to variable-primary, variable-volume tower water, and replacement of the plant control systems.
- **Building HVAC Conversion to High Delta T/Low Flow:** $3 million. A retrofit of the entire chilled water system based on a system hydraulic model, replacing control valves, upgrading building control systems, modifying coil piping and modifying pumping systems. The changes will increase the chilled water Delta T (the differential between outgoing and returning water temperatures) from 10 degrees F to 16 degrees F, substantially reducing pumping energy and improving occupant comfort.
- **Cooperative Performance Contract with the Athletic Department:** $3 million. Still under negotiations, this contract will fund retrofits for lighting, controls, HVAC, connection to campus district utility system, and more in Athletic Department facilities. Under a special-rate utility contract, Utility Operations will "buy" a 1600-ton chilled water plant from the Athletic Department and operate it as a part of the university's district system.

overall utility operation, yet still respect the need to establish zone maintenance shops. To that end, the separate functions of the Heating Plant (production and distribution) and the HVAC Electronics Shop (building controls) were merged into a new unit, Utility Operations, that truly has "burner tip to air register" responsibility.

Each maintenance zone still has HVAC staff to allow prompt customer response, which is one of the hallmarks of the zone concept. But since the digital controls and central building EMCS (energy management control systems) monitoring is a part of the utility plant operation, we can more effectively manage the effects of building system alteration, field retuning, or emergency triage, and monitor the consequences on the energy efficiency of the system.

Where Utility Operations is Today

Our first major phase of new construction has been completed with the start-up of a new 3000-ton chilled water plant that will save us $200,000 a year in natural gas costs. A total of $4 million in new distribution infrastructure, water system improvements, and power grid capacity upgrades are in the ground to support current master planned growth. In early 2004 we expect to bid for installation of 4500 tons of replacement chilled water capacity that should yield $125,000 in electrical savings. Also, a comprehensive controls and metering project will improve chilled water Delta T, yielding an additional $150,000 per year. At the completion of all programmed system and building improvements, we expect a total annual savings of $600,000, which will be reinvested back into the mechanical systems to retire building CRDM.

I would like to tell you that we are all old hands at this new management paradigm and that the experience has been a rousing success. The truth is that we are just getting started. By the time you read this, we will have had our new team together for about a month. Much work remains to set up the accounting processes, to automate our reporting systems, and set up our ongoing CRDM program. Being a fan of military history, I have often said that large gains in energy efficiency can be had by waging large-scale epic battles with capital investment, but it is the day-to-day trench warfare of maintenance and operation that hold those gains. We've learned we must do both to be successful.

In summary, we now have an ambitious plan of what we need to do, a means to pay for it based on a real commitment to facilities by our administration, and a group of talented employees to make it all happen. I think I'll sleep much better tonight!

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An Owner's Experience with the LEED-EB Pilot Program

by Robin Smith and Steve Wiggins

Emory University of Atlanta, Georgia, recently completed its pilot program for the Leadership in Energy and Environmental Design for Existing Buildings (LEED-EB) process developed by the U.S. Green Building Council (USGBC). The results of the pilot were positive and successful. The process pointed out weaknesses in our existing construction and operations that were previously unknown to us, and these faults have been corrected as a result of this project.

These changes have resulted in considerable improvement in energy usage for the building. The calculated savings as a result of the pilot is $151,000 per year. This operating inefficiency had existed at this level for five years. As with all energy modeling systems lacking actual historic data backup, this figure is +/- 10 percent. Our cost for the total pilot effort was approximately $95,000 and includes all costs of the pilot, such as the changes, adjustments, and retrocommissioning. This process of improved operation will be carried to additional buildings on our campus.

Robin Smith is the manager of commissioning at Emory University, Atlanta, Georgia; he can be reached at rsmith@fmd.emory.edu. Steve Wiggins is a commissioning agent with Newcomb & Boyd Engineering, Atlanta, Georgia, and this is his first article for* Facilities Manager. *He can be reached at swiggins@newcomb-boyd.com.

The LEED Program for Existing Buildings

Unlike the conventional LEED certification program for new construction only, LEED-EB is for existing buildings and focuses on operations rather than on construction. The commissioning aspect of this program is a prerequisite and represents a major portion of this pilot study and, in our estimation, is the primary reason for its success.

The pilot for existing buildings brought a different set of issues to the forefront, particularly those of operation and maintenance of facilities and therefore, it was administered by Emory's Plant Operations Department and funded out of that budget. Many desirable "green" practices are standard operating procedures on our campus, such as recycling, commissioning, alternative transportation, environmentally sound housekeeping practices, as well as others. Considering these existing practices, our participation in the LEED-EB pilot seemed a good fit for us.

The next step was the selection of a suitable subject building for submission to the USGBC. Selection of the particular building was based on several criteria. The basic requirement for energy efficiency is that the building must meet the requirements of ASHRAE/IESNA 90.1-1999. This certification requirement dictates that a rather new or recently rebuilt building be used. Any existing building could be brought up to this level, but it would be a major expense on older buildings constructed before such demanding energy requirements were in place.

PHOTO BY J.J. WILLIAMS ARCHITECTURAL PHOTOGRAPHY, INC.

Goizueta School of Business

With these ideas in mind, the Goizueta Business School was selected for the pilot. Goizueta is a 120,000-square-foot general purpose classroom building, constructed in 1997 with typical design mechanicals for an Emory building. The footprint and orientation is excellent for natural lighting of the interior spaces and is a credit to the designers. This facility was considered one of our best buildings by the building occupants, students, and operating staff. A check of the request for service calls over the past year showed only 13 issues, none of which were of a serious nature. People were comfortable in and happy with the building. We did not expect to discover any major issues, or for that matter, any particular opportunity for improvement in this pilot experiment.

But we were wrong.

One of the prerequisites established by the USGBC for these existing building pilots was to commission the facility to verify operation of the mechanical systems, that is, to verify that these systems can deliver functional and efficient performance. This most important requirement was begun with a meeting between the Commissioning Provider and the building occupants along with the facilities staff responsible for this particular building. During the interview various items regarding the operation of the facility were discussed. The management of the building stated that to the best of their knowledge the occupants were very pleased with the indoor environment. As mentioned, service calls verified that there were no serious problems.

The Commissioning Provider outlined the purpose of the planned site visit and how the inspection would be conducted. Occupants would be encouraged to express their concerns or opinions about the building heating, ventilating, and air conditioning (HVAC) system. Again, there were very few concerns in this area.

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The visit to Goizueta by the Commissioning Provider started with a test of the building's pressure relative to that of the outside. This pressure relationship is one of the primary indicators of a facility's health and should be maintained in a slightly positive mode at all times. Without this protection a facility can develop environmental impact issues such as high humidity and eventually the growth of mold.

The initial test on the Goizueta building found the facility to be in an extreme negative pressure condition and apparently had been so since the building was first occupied five years ago. One existing condition that bore out this fact, upon later reflection, was that leaves were drawn into the corridors when the outside doors were opened, sometimes as far as 20 to 30 feet. No one paid attention to this abnormality, which was dismissed as "wind currents." A complete inspection of the HVAC system revealed several interesting facts that taught us a lot about basic building operation and occupant environment as well as energy management. The ductwork for three of the four main air handling units in the building was severely damaged and had experienced failure due to metal fatigue.

The Commissioning Provider believed the physical damage was due to high velocity and high static pressure within the mixing chambers of the air handling units. This high velocity was apparently caused by a change (shortly after the initial construction) in the intake side of all air handlers. The size of the outside air intakes was reduced in an effort to better control the intake but the size was too small, given the amount of air needed and considering that the four large relief fans on the top floor were left fully engaged. Additionally, the outside air opening on one air handler had failed in a fully closed position. The remote control's computer indicated the damper was fully open when actually it was fully closed. The outside wall on this air unit was pulled inward about two inches to allow the machine to get air from the outside.

People were comfortable in and happy with the building. We did not expect to discover any major issues, or for that matter, any particular opportunity for improvement in this pilot experiment.

The Commissioning Provider calculated the proper size for the duct opening for the outside air intakes for all four air units in the building. New sheet metal of the proper gauge and dimension was fabricated and installed. Static pressure transducers were installed in the mixing chambers of each unit. With these changes, testing began on the terminal units for the whole building. More than 90 percent of these units were found to be in the reheat mode, even though the outside temperature was over 50 degrees.

A detailed survey of these units determined that the minimum airflow volumes could be significantly reduced. This was done and resulted in considerable energy savings and an increase in occupant comfort. The energy usage savings was due to the reduction in the amount of heating and cooling that had been occurring simultaneously and the comfort level was improved due to the reduction in the heating and cooling cycle frequencies.

An energy analysis of the facility was conducted in order to determine the energy savings that were obtained with the modifications performed. An energy analysis cannot be verified unless proper historical utility usage data has been recorded. At the beginning of the energy audit it was determined that the metering data obtained for this facility was not reliable. As a result, Emory utility rates were used with energy modeling software to obtain energy usage estimates. The energy rates used in this program were $0.717/therm for chilled water, $1.074/therm for steam, and $0.400/kWh for electricity.

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PHOTO BY J.J. WILLIAMS ARCHITECTURAL PHOTOGRAPHY, INC.

Classroom, Goizueta School of Business

Further calculations verified that the building design met the ASHRAE/IESNA 90.1-1999 energy standard, which is an additional prerequisite of the USGBC LEED-EB pilot requirements.

One of the most important elements of fresh air intake for a building is the determination that the carbon dioxide (CO_2) accumulations are at a desirable level. This measurement is a reference of levels above the outside and is what ASHRAE 62-2001 is about. The CO_2 measurement for this building taken before the ductwork and fresh air changes showed levels of concentration that were above ASHRAE recommendations. After the modifications, levels met the requirements.

We decided that the implementation of this project would become a learning tool for our operations staff and the process as developed would be then applied to other buildings on our campus. We feel that most owners of campuses such as ours would also consider the total campus needs or effect of starting a program such as this and that the wider use of this "template" would further justify the effort and expense.

Sustainable Operation of Existing Buildings

The LEED-EB is a set of performance standards for the sustainable operation of existing buildings. It includes operations and upgrades of systems and/or processes that do not significantly change the building's interior or exterior. LEED-EB is a key operations issue; it focuses on efficient, sustainable building operation. In addition to cleaning and maintenance, LEED addresses several areas of operations and performance. A few examples include:

- ☐ Chemical use
- ☐ Indoor air quality
- ☐ Energy efficiency performance
- ☐ Water efficiency performance
- ☐ Recycling programs
- ☐ Exterior maintenance

- System upgrades improving energy, water, indoor air and environmental quality, and lighting.

In the area of "energy efficiency performance," commissioning is a prerequisite. We have discussed this fully thus far. Recommissioning or retrocommissioning will occur depending on whether a facility has been commissioned in the past. Even though commissioning for both new and existing facilities are similar, there are some important differences. For example, it is too late to affect design in an already constructed building. Design, however, is most critical to building operations. This specifically includes the indoor air quality, the energy efficiency, and the overall environmental impact.

The rating system used by the USGBC for the existing buildings in the Pilot program is based on the rating points for the LEED program for new construction. In calculating point requirements, many owners may find they are already performing several good practices that qualify for the LEED-EB program. Recycling is one example of a good practice in which many owners participate. Also, many owners may be employing various green chemical practices, as well as water conservation measures.

When we looked at the criteria setup for the LEED-EB pilot version, we realized that part of our normal practices covered several of these areas. Not only do we have alternative transportation, recycling, and custodial chemical practices, but commissioning is a base requirement of all construction and renovation. Definitive standards are present to cover the best in maintenance and operation. Furthermore, we have an excellent preventive maintenance program facilitating the ongoing indoor air quality, as well as a chiller maintenance program that helps in overall energy efficiency.

The selection of the Goizueta Business School was based primarily on the building's ability to meet the basic energy efficiency requirements of the USGBC. Our thoughts that this selection would require little effort or resources to successfully participate in the program were considered. This was our assumption but other aspects of the facility became issues as we progressed. Late in the original construction project, five years ago, a decision was made to commission the building. Due to this late start, there was neither a Design Intent document produced nor an opportunity for commissioning input in the design phase. This was our first attempt at commissioning and unfortunately, mistakes were made. As a result of scope and cost issues during construction, commissioning was not completed. Despite these difficulties, the facility was still considered one of Emory's best.

The pilot project criteria (with some modification) follows an outline established for the LEED of new construction. The basic approach is divided into five main areas of emphasis. The first area is "Sustainable Sites." This category has "erosion and sedimentation control" as its lone prerequisite. Under this issue, there are nine credits in a possible point count of 16. The credits are as follows:

- Site selection
- Urban redevelopment
- Brownfield redevelopment (not applicable)
- Environmentally preferred transportation
- Reduced site disturbance
- Light pollution reduction
- Green site and building exterior management

By not moving the building and continuing to occupy the site, we wisely availed ourselves of the point allowed for site selection. The location qualified for the density requirement to meet the urban redevelopment point. As noted, the Brownfield redevelopment is not applicable to the pilot LEED-EB program. Qualifications for credit in the environmentally preferred transportation area were met because of Emory's extensive alternative transportation program. Also, the exterior landscape

management practices allow qualification for the green site and building exterior management category.

The second focus area of LEED is "Water Efficiency." There are two prerequisites and three credit points in this category. The prerequisites are "minimum water efficiency" and "discharge water compliance." The credit points under these two requirements are:

- ☐ Water efficient landscaping
- ☐ Innovative wastewater technologies
- ☐ Water use reduction

The landscaping standards at Emory allow for credit qualification in both the water efficiency and water use reduction areas.

The third focus area is "Energy and Atmosphere." This is where the commissioning is housed and is covered in what we have already discussed.

The fourth focus in this pilot exercise is "Materials and Resources." The only prerequisite in this area concerns waste management. There are eight points for credit:

- ☐ Continued existing building use
- ☐ Construction waste management
- ☐ Resource reuse
- ☐ Recycled content
- ☐ Local/regional materials
- ☐ Rapidly renewable materials
- ☐ Certified wood
- ☐ Occupant recycling

Of the ten total possible points in this category, Emory expects to garner five. Some of these credits are more closely related to new construction or at least construction to some extent, but our project qualified in the areas of recycling and existing building use.

The final area of focus, not to mention one of the most important to the use and operation of a building, is "Indoor Environmental Quality." There are three prerequisites for this category, "minimum IAQ performance, "environmental tobacco smoke (ETS)," and "asbestos removal or encapsulation." In addition to these requirements, this area has nine points for credit:

- ☐ Carbon dioxide (CO_2) monitoring
- ☐ Increase ventilation effectiveness
- ☐ Construction IAQ management plan
- ☐ Low-emitting materials (NA)
- ☐ Green housekeeping
- ☐ Controllability of systems
- ☐ Thermal comfort
- ☐ Day lighting and views
- ☐ Contemporary IAQ practice

Of the total possible point count for this category, Emory expects to obtain nine. These points come primarily from the housekeeping practices, the ventilation, system controllability, and IAQ practices. A minimum of 29 points is expected for this project, which would meet the basic certification level.

Early calculations, still in progress, indicate that energy saved will result in a savings of approximately $12,500 per month, or savings in excess of $150,000 per year. As important as financial savings are, particularly at this time, the comfort levels and the controllability of the indoor environment will, most likely, have a greater impact on the future of the LEED-EB program at Emory University.

The results of this pilot and the optimism about the future of this program are encouraging. Emory is an acknowledged leader in the LEED movement for new construction, with the LEED certification acting as one of its guiding principles, and will continue to participate in the additional aspects of LEED that USGBC develops, such as commercial interiors, organizational practices, and others, in order to become one of the leaders in the "greening" of higher education.

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Structure

This exciting new program, developed for front-line supervisors and written by facilities professionals and trainers, will be held in Tampa February 1-5, 2004, alongside the Institute for Facilities Management. The training program consists of the following topics:

Schedule

Sunday, 10:00 am-2:00 pm
Module 1: Supervision, What Is It? Learn to define effective facilities supervision; identify the roles and responsibilities of supervisors; and understand four key functions of supervision.

Monday, 8:00 am-11:50 am
Module 2: It's More Than Administration. Learn to understand the supervisor's role in administering organizational policy and procedures; recognize the legal considerations in the facilities environment; and gain an awareness of resource management.

Monday, 1:00 pm-4:50 pm
Module 3: Communication, Let's Talk! Identify barriers to effective communication; demonstrate communication skills; and understand your role in the communication process.

Tuesday, 8:00 am-11:50 am
Module 3: Communication, Let's Talk!, continued.

Tuesday, 1:00 pm-4:50 pm: Module 4: If It Weren't for the People. Understand the importance of developing and maintaining effective relationships with others in the workplace; examine the different types of relationships that exist in the workplace; and identify strategies and skills for improving relationships with others.

Wednesday, 8:00 am-11:50 am
Module 5: Motivation and Performance. Identify methods of training and developing employees; ascertain methods of positive reinforcement; and understand the importance of performance management and evaluation.

Wednesday, noon
Free afternoon/lunch & dinner on your own.

Thursday, 8:00 am-11:50 am
Module 6: Customer Service Triangle. Learn to create a basic understanding of three major aspects of customer service which include process, experience, and recovery; examine the role of the supervisor in customer service; and help participants identify areas for improvement in service delivery in their organizations.

Thursday, 1:00 pm-4:50 pm
Module 7: Supervisors as Leaders. Master techniques to understand critical elements of leadership; transition from managing to managing and leading; and understand your own preferred leadership style, and
Module 8: Synthesis. Look at lessons learned, examine your toolkit, and evaluate the program's effectiveness.

Tuition

APPA members: $745
Nonmembers: $945

Meals

Several meals are included in the registration fee: breakfasts from Sunday through Thursday; lunches for Monday, Tuesday, and Thursday; reception and banquet Thursday; and refreshment breaks from Sunday through Thursday. All other meals are at the attendee's expense.

Materials

Materials will be provided to students at registration.

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Registration fees do not include lodging or travel and room reservations must be made separately.

Trainers

Michelle Estep is the training and development manager for facilities and administrative services at American University, Washington, D.C.

Carol Trexler is coordinator, facilities human resources, facilities business administration department, Rutgers University, New Brunswick, N.J.

For a more complete biography of the trainers for **Supervisor's Toolkit**, visit www.appa.org.

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Mold Control

Why has there been a sudden upsurge during the last few years in reports about buildings contaminated with mold and research linking negative health effects of people in these buildings to mold contamination?

The cause of the microbiological problems from mold today can be blamed on economics. The increased amount of insulation used in homes and various other buildings save money on heating and cooling of a facility or home. But the environment that is created by eliminating the flow of fresh air promotes the growth of bacteria and fungi. Most of our dwellings today are built with paper products, which hold moisture and grow mold.

Mold is a term used to describe a category of fungi, which is a large group of unique living organisms, that is neither plant nor animal, but rather a kingdom unto itself. Although all molds are fungi, all fungi are not molds. Mold is a type of fungi, found both indoors and outdoors, that produces spores that migrate through the air. These spores are smaller than the width of a human hair. When spores land in the right environment they grow rapidly. Moldy smells from damp materials indicate fungi are present. As the spores grow they actually fight their competition for space and survival.

Health effects and symptoms vary from mild to severe depending on the individual and the exposure levels. Many fungi such as stachybotrus chartarum, aspergillus, penicillium, fusarium, memnoniella and trichoderma can produce harmful potent mycotoxins. There are thousands of possible mold allergens that can trigger allergic reactions, asthma and other respiratory complaints, irritation to the eyes, throat and skin infections, fatigue, cough and flu-like symptoms. Individuals who suspect their persistent health problems are related to mold exposure should have their physician refer them to a practitioner who is trained in occupational and/or environmental medicine and who is knowledgeable about these types of exposures. However, mold spores do not negatively affect everyone, and typically a person's health improves after the exposure to mold is eliminated.

Costly building damage will occur if mold is not removed with speed and expertise. Porous materials such as ceiling tiles, carpeting, upholstered furniture and wallboard that have sustained extensive microbial growth usually have to be removed. Mold growth is abated from non-porous surfaces by vacuuming with a high efficiency particulate air filter vacuum and washing with a solution of biocide and detergent. Other, often unnoticed, reservoirs become breeding grounds for mold and must be addressed. It is important that humidity levels be controlled in workplaces and residences to help avoid mold growth.

Potential liability from workers compensation claims and other lawsuits has increased against landlords, municipalities and employers. Claims similar to those arising from the asbestos and lead paint health hazards are surfacing and some insurance companies have excluded mold damage from their general liability insurance policies. This exclusion leaves builders, contractors and building owners without coverage.

A certified industrial hygiene firm that has certified trained hygienists in mold remediation should be consulted when looking for a solution to mold related problems. Air sampling for fungi should not be part of a routine assessment, because air tests are prone to produce false negative results. Bulk or surface samples may be collected to identify specific fungal contaminants. A laboratory specializing in mycology should be consulted for specific sampling. Decisions about the appropriate remediation strategies will usually be made on the basis of a visual inspection.

A professional environmental contractor should be chosen to do mold remediation. The contractor should have the following qualifications, and resources:

- Experience with similar projects that involve containment and demolition.
- Licensed as an environmental contractor.
- Environmental general liability insurance and bonding.
- On-staff certified safety professional and/or certified industrial hygienist.
- Employees trained in respiratory and personal protection.
- Provision of a customized plan of action.

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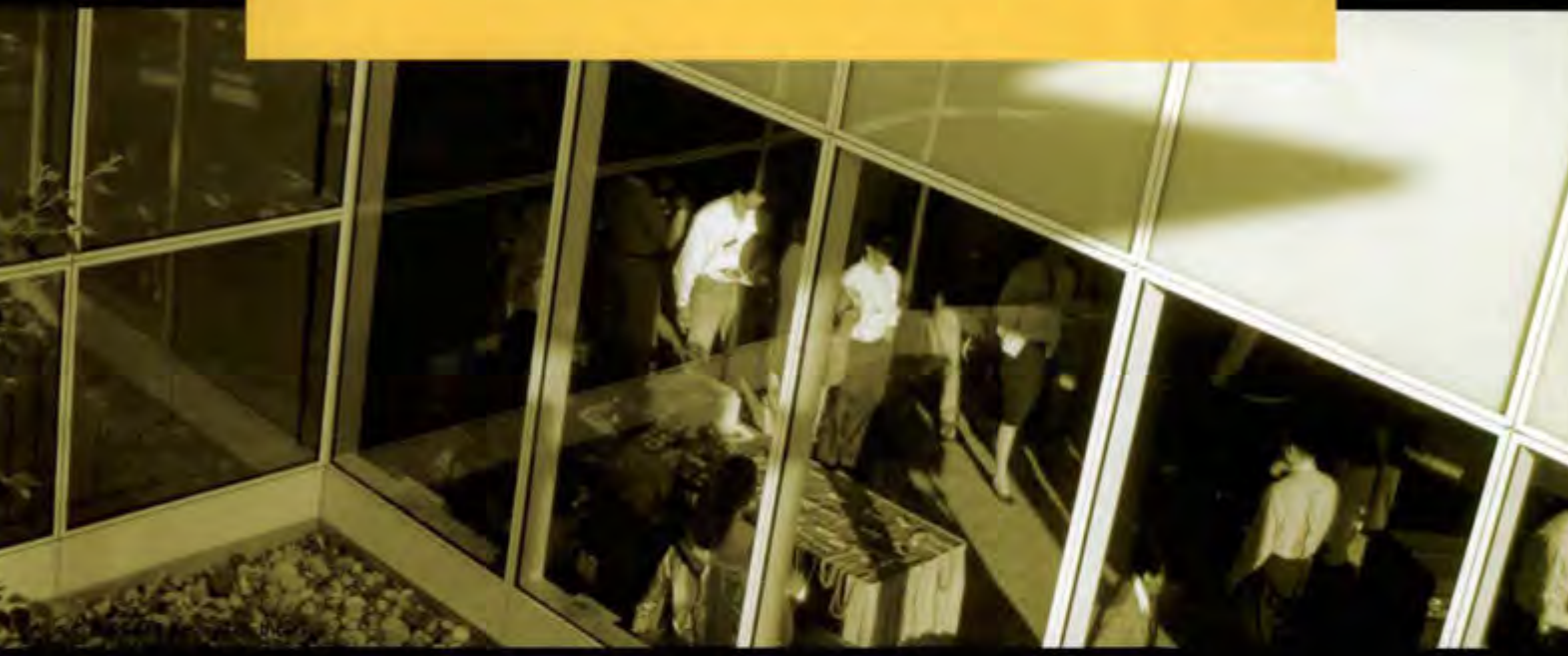

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Code Advocacy for the Educational Facilities Profession

by Thomas W. Jaeger, P.E.

In this article, we are using the term "code" to mean those codes and standards used to regulate buildings at higher educational institutions and the systems installed in these buildings. Likewise, we are using the term "advocacy" to mean influencing the requirements contained in the referenced codes and standards and to influence the building regulator process.

Although advocacy and lobbying are different, generally a good code advocacy program includes lobbying. What do we mean by this? Code Advocacy is an organized effort to influence the outcomes by gaining access and voice in the decision making of relevant codes and standards development organizations whose codes and standards are used to regulate your industry. Lobbying is the process of trying to influence the legislation that adopts the codes and standards on which your industry has had influence in the outcome of what requirements are contained in those codes and standards.

Code Advocacy is common in most industry associations whose members own, build, occupy, and maintain buildings. Some of the more active associations with strong code advocacy programs include the Hotel and Motel Association, the American Hospital Association, the American Health Care Association, the Home Builders Association, and the Building Owners and Managers Association (BOMA), just to name a few. The code advocacy programs of these associations have resulted in the savings of billions of dollars to their members. Just as important, their code advocacy efforts have resulted in allowing their members to build and operate their buildings in a manner advantageous to the members.

The majority of codes and standards are occupancy oriented, meaning that the requirements and standards are based on the occupancy classification of the building. Most associations generally represent a single occupancy, such as the previously mentioned associations, which individually represent residential, healthcare, or business occupancies.

Code advocacy for the higher education industry will be different. In U.S. Codes and Standards, there is no such thing

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as a higher education occupancy. Higher educational facilities comprise several different occupancies to include residential occupancies (dormitories, single family homes, Greek houses, etc.); office buildings (classroom buildings, administrative buildings, etc.); assembly occupancies (libraries, arenas, performing arts centers, cafeterias, gymnasiums, etc.); healthcare occupancies (clinics, hospitals, etc.); industrial buildings (laboratory buildings, etc.), and, of course, historical buildings. We will come back to this later as to why it is important to understand that higher educational facilities are actually composed of multiple occupancies.

Who develops the codes and standards used to regulate higher educational facilities and which of these codes and standards have the greatest impact on the cost and operation of your facilities? The answer is that there are hundreds of codes and standards used to regulate your facilities and dozens of organizations that develop these documents. What most of the organizations that develop these documents have in common is that they are nonprofit public entities. It might come as a surprise to many of you that the vast majority of the codes and standards—certainly the major ones—are developed in the private sector and adopted through a legislative process by government agencies. This is also true for those codes and standards used by the insurance industry, which also sets requirements for your facilities. Having 35 years experience in code advocacy, I can assure you that you do not want the government to develop these codes and standards. What is best for your industry is to partner with the private sector to develop the codes and standards.

Codes and standards are developed by technical committees of volunteers who are experts in the scope of each of these documents. This is called the consensus process. In the consensus process, the technical committees are made up of representatives who are impacted by the requirements contained in the documents or who enforce the requirements contained in the documents. This later group is referred to as "Authorities Having Jurisdiction" or AHJs.

The consensus process requires that the technical committees be "balanced" and that the codes and standards organizations have a process that allows for meaningful public review and input. Balanced means that no individual group or committee can have membership in excess of one-third of the committee membership. This is to ensure that no sector of those impacted by the codes or standards or who regulate the industry can dominate the technical committee.

Typically, those groups who are on the committees are **users**—those who pay for complying with the code or standard; **manufacturers**—those whose equipment systems/materials are regulated or required to be installed; **special experts**—those who design or consult in the design of buildings and systems; **enforcers**—those who regulate the use of the codes and standards; **insurance representatives** and **research/testing representatives**—usually these are the entities that test and/or list or approve the equipment or systems.

Higher educational facility representatives would generally be classified as users. Users historically are those who are most affected by the codes and standards, yet often are the group that is least involved in the codes and standards development process. I suspect many of the user groups who don't have a strong or active code advocacy program, such as the higher educational industry, do not have a program because they don't feel they can effect a positive outcome by participating. That could not be further from the truth. Those affected industries that have an active and sustained code advocacy program have each saved billions of dollars for their industry.

Industry groups who proactively and positively participate in the codes and standards development process can very much influence the process and outcome of what requirements are contained in the codes and standards. User groups collectively can be a powerful force within the process. Others who participate in the process, including the enforcing authorities, recognize that the users have to pay for the requirements in the codes and standards as the building owner. More importantly, others who participate in the process recognize that users best understand how their buildings should function and operate. Usually, if user groups are knowledgeable and reasonable, they can actually prevail in the process.

The other important ingredient is that whoever participates in the process must do so on a regular and long-term basis. You cannot expect to have an effective code advocacy program on a one-issue basis or with only a short time period of participation. Those user groups who have the most impact are those who have participated in the process for decades. (See the sidebar by Douglas Erickson on a brief description of the American Hospital Association's Code Advocacy Program.)

I have personally been involved in code advocacy for the American Health Care Association (AHCA), the national trade association for nursing homes. Just one example of AHCA's successful code advocacy program was when Federal Medicare & Medicaid Regulations in 1990 proposed adoption of a new edition of the NFPA (National Fire Protection Association) Life Safety Code that would be applied retroactively to every existing nursing home in the United States. In the proposed rule, the government estimated that the cost impact on the nursing home industry would be less than $100 million. A study by the industry identified 13 requirements in the Life Safety Code for existing buildings that, if applied, would cost $970 million, significantly more than the government's cost estimate. The proposed rule never went to a final rule.

In the meantime, AHCA, through its Code Advocacy Program, had these 13 requirements in the Life Safety Code for existing nursing homes changed without reducing the level of safety. The Federal Government again came out with a pro-

posed rule, which adopted the newer and changed the 2000 Edition of the Life Safety Code. The cost impact of the 2000 Edition on existing nursing homes was $48 million, representing a savings of $922 million from this one code advocacy effort.

The ASHE Experience

By Douglas Erickson, FASHE. The American Society for Healthcare Engineering (ASHE) of the American Hospital Association (AHA) has had a 30-year history of active advocacy on codes and standards. Within this 30 years it is estimated that there has been $62 billion in direct capital cost savings for compliance with a number of standards and regulation-making bodies. ASHE's advocacy is not simply about saving money at the cost of safety. It is about intelligent interpretation of existing codes to ensure the most cost efficient means and methods to meet the letter and intent of the codes allowing for cost effective management of our environments. Besides just existing codes, advocacy extends to analyzing and influencing code revisions before they are adopted as new codes. ASHE members and staff serve on numerous national committees to provide expert advice on proposed code revisions and proposed new codes that impact healthcare facilities on a daily basis. This ongoing representation is critical to advocate that codes are based on scientific principles, empirical data rather than anecdotal stories, and special interest groups' competitive advantages that add little or no safety value. Through this process, obsolete standards have been repealed and performance-based standards (based on actual safety outcomes, not prescriptive language) have been adopted.

The most impressive advocacy effort was with the Department of Justice and the Americans with Disabilities Act Accessibility Board. ASHE/AHA was an active participant in the ANSI A117.1 standards development process; when proposed language was released from the disabled constituency groups, we were able to work side-by-side with these advocacy organizations and the experts on the standards committees to compromise on the number of patient rooms, treatment spaces, and parking spaces needing to be converted for persons with disabilities. We also had great cooperation in writing language to keep standard design practices for medical care facilities for fire warning and safety systems so that we did not jeopardize the quality of care by installing extremely loud horns in critical patient care areas or strobe lights in all occupied spaces. It is estimated that the cooperative work performed saved healthcare organizations over $40 billion and made our buildings safer for use as medical care facilities by the staff and patients.

As previously stated, there is no such thing as a higher educational occupancy. That doesn't mean that proposals aimed specifically at higher educational buildings are not submitted. The two examples below are proposals currently in the National Fire Protection Association's system as proposals to change the requirements in the next edition of the Uniform Fire Code (NFPA 1) and the Life Safety Code (NFPA 101). Both these proposed changes are specifically aimed at higher educational residential buildings.

NFPA 101—Life Safety Code

Recommendation: Add a new 29.3.5.1 to read:

29.3.5.1 All existing dormitories shall be protected throughout by an approved, supervised automatic sprinkler system in accordance with 29.3.5.1.

NFPA 1— Uniform Fire Code

Recommendation: Add new text as follows:

20.8.2.6 Permitted and Prohibited Activities

20.8.2.6.1 Portable cooking equipment, candles, incense, and similar open flames or heat producing items shall not be permitted in student housing or student housing guest rooms or guest suites.

20.8.2.6.2 Permanent installation of cooking equipment approved by the AHJ shall be permitted.

20.8.6.3 Smoking shall be prohibited within student housing.

The NFPA Life Safety Code is the most widely used code in the United States for regulating existing buildings. Even when the Life Safety Code is not "legally" adopted in a given geographic area, it is used as the "standard of care" for existing buildings. The identified recommendation, if adopted, would require that all existing dormitories, not just high-rise dormitories, be required to be protected by automatic sprinklers. Please note that there is not even a "phase-in period," e.g. eight years to comply. Each of you can estimate the cost impact to your institution.

The second recommendation is to change the requirements in the Uniform Fire Code (NFPA 1). NFPA's Fire Code is the most widely adopted fire code in the United States, and the scope of the code is equally applied to both new and existing buildings. This is the code that fire officials apply to your

community. Although this is not the forum to go into details about the recommendation, I want to point out a few items. First of all, there is no definition in the Fire Code for "Student Housing," so your local fire official will decide what is to be considered as student housing. This could include both on- and off-campus housing, developer owned housing, Greek housing, campus owned single-family homes, etc. There is no exception in the recommendation, so you would not be permitted microfridges, microwave ovens, or toasters, even in apartments and single-family housing. You would require specific permission of the fire official to have stoves, ovens, etc. in kitchens of apartments and single-family housing. Smoking would be prohibited in "all areas" of student housing and you would be required to regulate the prohibition on smoking. The question you need to ask is, Who will represent higher educational facilities at the technical committee meetings and at the membership meetings when these two proposed recommendations are debated and voted upon?

Every code advocacy program must have two essential elements. The first element is a core of dedicated and knowledgeable member volunteers who will represent APPA on the technical committees and at the membership meetings of the codes and standards development organizations. The volunteers must represent APPA and not their individual institutions. By representing APPA, you would represent the industry and not your individual facility. Your membership would be classified as an "organizational" member representing many individual facilities allowing you a louder voice in the process than if you just represented one facility. The second element necessary in Code Advocacy as an organizational member is the organization, in this case APPA, would be required to have an internal mechanism to give direction to the volunteers who represent APPA. This internal mechanism would also be used to develop APPA positions on the various requirements contained in the codes and standards that impact your industry.

As previously stated, there are hundreds of codes and standards that affect your industry and dozens of organizations that develop these codes and standards. Compounding this is the fact that higher education campuses are comprised of buildings of multiple occupancies, with each occupancy having a different set of requirements. You would first need to decide which codes and standards have the greatest impact on your industry and devote your limited resources to those documents. It is most likely that "codes" have more impact on your facilities than "standards." Codes tell you "what" you have to do, and standards tell you "how" to do it. For example, a code would tell you the quality of indoor air you must maintain, while a standard would tell you how to design the systems so you can maintain your buildings to the quality set by the code. Another example would be that a code would tell one whether a building is required to have sprinklers, and a standard tells one how to install the sprinklers.

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Those who are not involved in code advocacy often have a misconception that the only purpose of code advocacy is to reduce the costs of construction and operation of buildings. This is not true. Code Advocacy is also working toward influencing the codes and standards to allow you to operate your buildings the way you, the owner, want to operate your buildings.

The codes that will most likely have the biggest impact on your campuses are building codes, fire codes, life safety codes, electrical codes, air quality codes, mechanical codes, elevator codes, accessibility standards, and energy codes. These are developed by such organizations as the International Code Council (ICC), the National Fire Protection Association (NFPA), the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), the American National Standards Institute (ANSI), the American Society of Mechanical Engineers (ASME), and similar organizations.

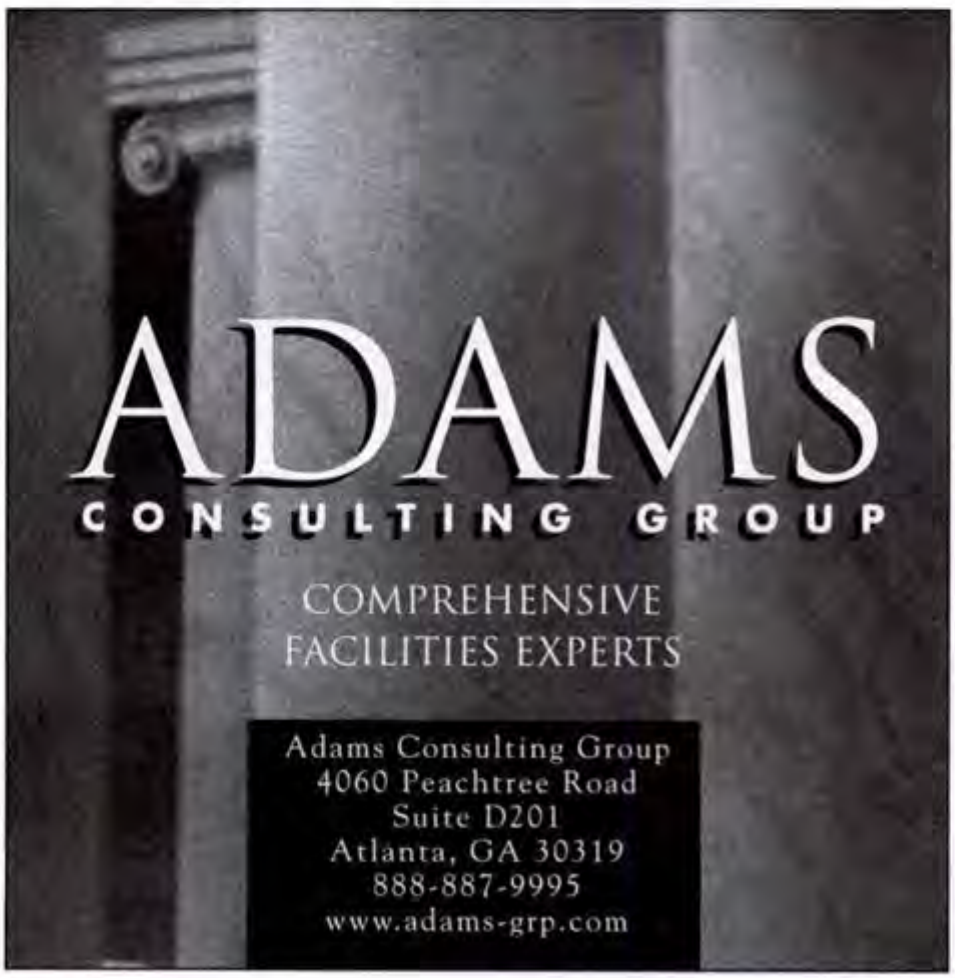
Although most government agencies use national consensus standards developed by the private sector, there are some government agencies, particularly federal agencies, that develop their own standards and enforce them through regulations. For example, the American with Disabilities Act (ADA) is developed and enforced by the Department of Justice and uses standards developed by the Architectural Barriers Board. This would also be true for such federal agencies as the Environmental Protection Agency (EPA) and the Department of Energy (DOE). Code Advocacy Programs can have a positive impact even with federal agency regulations and standards. This is particularly true when several trade associations collectively address problems and issues with federal agencies.

Those who are not involved in code advocacy often have a misconception that the only purpose of code advocacy is to reduce the costs of construction and operation of buildings. This is not true. Code Advocacy is also working toward influencing the codes and standards to allow you to operate your buildings the way you, the owner, want to operate your buildings. For example, many of you may want to operate your buildings at a higher level of security, but the fire codes prevent you from providing this higher level of security. Other industries have had the same problem, but through their Code Advocacy Programs they were able to negotiate code changes to allow them to operate their buildings in the manner that is best for their industry.

What are the major benefits of Code Advocacy?

- Reducing both construction and maintenance costs.
- Influencing the requirements in the Codes and Standards.
- Increasing the industry's knowledge of the requirements of Codes and Standards.
- Fulfilling the mission of your association.
- Increasing knowledge to reduce liability.
- Eliminating unnecessary requirements.
- Making your job easier.
- Making sure your industry voice is heard.

Code advocacy need not be expensive. Many organizations, through educational programs, fully fund their Code Advocacy Program. Those members of your industry who are involved in the Code Advocacy Program become a cadre of knowledge members who can be used as instructors for income producing educational programs. For every dollar you invest in your code advocacy program, you will get back thousands of dollars in savings in the cost and operation of your buildings. It becomes a win/win arrangement for everyone.



Pipes, Wires, and BTUs—What are you doing with them?

by James E. Christenson

For the industrial nations to continue to depend on Middle Eastern oil in the way current trends indicate means heavy reliance on a region of high political tension and risk.

Robert Stobaugh and Daniel Yergin in *Energy Future*, 1979

The problems of utility reliability and conservation are not new. In 1960, I worked with a team of engineers to conduct a formal study of reliability and conservation efforts at a major naval base in Europe. Even then, 13 years before the U.S. energy crisis, there was some awareness that there was a finite supply of oil and gas and that that limitation could some day create the ultimate reliability problem—no fuel! Current news reports suggest that the concerns of 1960 and the later risk assessment of Stobaugh and Yergin should be taken even more seriously today.

Utilities Support

Reliable utilities support is crucial to the institution, particularly to those universities performing medical and biological research. Reliability requires periodic inspections, preventive/predictive maintenance, replacement of components on schedule, and, as required, expansion to meet growing demands. Most of all, dependable systems require skilled people to operate them. At the same time, we are continually reminded that funds are scarce, that component or system replacement will have to wait a few years. In the same breath we are also

told to be sure we don't lose power or heat! What are the cures to this dilemma?

If you don't already have a utilities enterprise, work with your administration to create one. Each institution should have its own in-house utility company if it is to provide necessary support. Under an enterprise system, funds for purchasing utilities are in the hands of the customers. One of the customers, of course, is the group of building coordinators and users supported by the general education fund. That utility budget may be managed by the chief facilities officer or by someone outside the facilities organization.

An effective utilities enterprise has a master plan for major repairs/replacements and expansion based on the institution's master plan. Deferred maintenance is minimized by performing capital renewal before the annual costs of inefficiencies and excess maintenance equal the annual cost of paying off a bond that would underwrite the repair, replacement, or upgrade. Bond amortization, salaries, and all other anticipated costs are computed and summed so that the projected unit rates for each utility can be determined.

The greatest benefit of the utility enterprise is that components can be replaced when required to provide the degree of reliability needed by the campus community; the "utility company" can operate as a well-run, non-profit business. However this doesn't solve all the money problems. An informal or formal "public utilities commission" will keep appropriate pressure on the enterprise to be sure the rates do not become excessive. But the enterprise makes everyone aware of the real cost of utilities, encourages conservation, and provides actual data that can be used for comparison and decision making.

Energy Conservation

At many institutions, energy conservation is an unwanted relic of the past. Yet, current conditions in the Middle East could well result in an updated version of the October 1973 crisis. And today's pinched budgets certainly would benefit from a reduction of energy costs. In the January/February 2002 issue of *Facilities Manager*, I suggested this order of attack on energy usage:

1) eliminate pure waste,
2) ensure that the HVAC systems are well-maintained and calibrated,
3) adjust temperatures to seasonally appropriate levels such as 78°F in summer, 68°F in winter,
4) restrict hours and days of building heating/cooling, and
5) invest money in energy conservation measures, usually retrofits, that have a payback of five years or less. A brief review of three actual situations may be instructive.

"Steam consumption for fiscal year 1980-81 was one-half of that used in 1972-73, the base year for which comparisons are made" according to a July 1981 news release at a northern university. How did it happen? Answer: Steps 1 through 5 in the previous paragraph applied with a bit of cre-

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ativity, such as installing an industrial-grade sewing machine in the power plant to fabricate insulated fiberglass removable blankets for steam valves and for all other uninsulated components. Not only did the university benefit financially from this dramatic reduction in consumption, it then found it had enough excess capacity to ship steam to an adjacent technical college and a nearby hospital. All parties benefited. The university, using coal, could sell its (now) excess steam at a cost significantly lower than outside customers could produce on their own and those customers could also reduce their staffing needs. The university benefited by being able to spread fixed costs over a broader production base than would otherwise be possible, thus reducing steam rates for everyone. The university also gained the boiler redundancy that it had never had before by arranging to have the hospital boilers retained so that enough steam to cover the deficiency could be shipped in reverse should the university lose a boiler.

Sometimes, unfortunately, an administration is unwilling to entertain the idea of conserving energy. When drastic budget cuts were announced at one public research university, the physical plant director suggested that most of the shortfall in facilities funds could be accomplished by implementing steps 3 and 4 in a way that would not cause real harm to academic support. The director's supervisor was unwilling to consider anything that might upset the faculty. Instead, he directed what became a 20 percent reduction in physical plant staffing. The result was catastrophic. The lesson to be learned is that the chief facilities officer must be willing to carry the issue to the institutional president, if necessary, to prevent the implementation of a shortsighted decision.

Another major research university also was somewhat reluctant to make faculty members uncomfortable. But they were creative enough to immediately follow early implementation of steps 1 and 2 with a generous starter fund to pay for energy conservation measures (ECMs) having a short payback. The cost avoidance from implementation of the ECMs was calculated each year and equivalent funds allocated to replenish the ECM fund. Through the infusion of the money saved, the fund continued to grow with a snowballing effect, markedly reducing energy consumption and cost from what it otherwise would have been.

If all five steps can be used, go to it. If not, balance the chances of success against the risk. But do something. Your budget and the fragile dependability of the energy supply dictate action.

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An Alternative View of Depreciation and Recapitalization Costs

by Peter Lufkin

In this column I suggest that what is known (or just assumed) about the physical depreciation of facilities has little use in the estimation of recapitalization costs. I then argue that results from the study of economic depreciation provide a much better tool for this purpose.[1]

A key concept in facility management is the physical depreciation of fixed assets over time. Conventional wisdom is that facility condition declines with age as shown in Figure 1. Some variation of this graphic is found in many of the facility management textbooks and papers published in the last decade. It is also built into the forecast models used by many facility consultants. It is a plausible concept repeated so often I suspect many of us assume it is demonstrable fact.

However, I think this figure overstates our knowledge of the physical depreciation process and distracts us from other concepts more useful for determining recapitalizing costs.

To use Figure 1 as the basis for an actual funding plan—that is, how much need be spent on recapitalization as a facility ages—one would need the following things:

- ***A comprehensive measure of facility condition.*** Reducing the results of a condition assessment to a simple ratio, such as the facility condition index (required repair costs divided by total replacement

costs), is an oversimplification. For example, an airport with inoperable runway lights can have a "good" condition rating according to this index but be virtually unusable for evening flights. Other measures such as mission and safety must be included, though to date little or no work has been done for developing a multidimensional index of facility condition.
- ***An objective estimate of facility service life.*** What service life should we plan for a particular facility or group of facilities? Much of what we think we know is based on opinion and anecdote rather than documented fact. For example, U.S. federal agencies still depend heavily on asset lives defined by committee for the Bureau of Internal Revenue in 1918. Regulated industries such as utilities keep scrupulous records on facility retirements and estimated service life—the justification of the "plant depreciation" part of your light bill—but consider this information proprietary and will not share it with us. Commercial construction cost publishers—such as R.S Means or Marshall & Swift—may provide detailed service life estimates, but these are based on appraiser opinions and undocumented studies.
- ***An empirically derived depreciation curve.*** Even with proper maintenance, the condition of a facility reaches a zero point at some age, according to Figure 1. Yet, there is no study that we are aware of that demonstrates the actual decline of condition—however that is measured—with

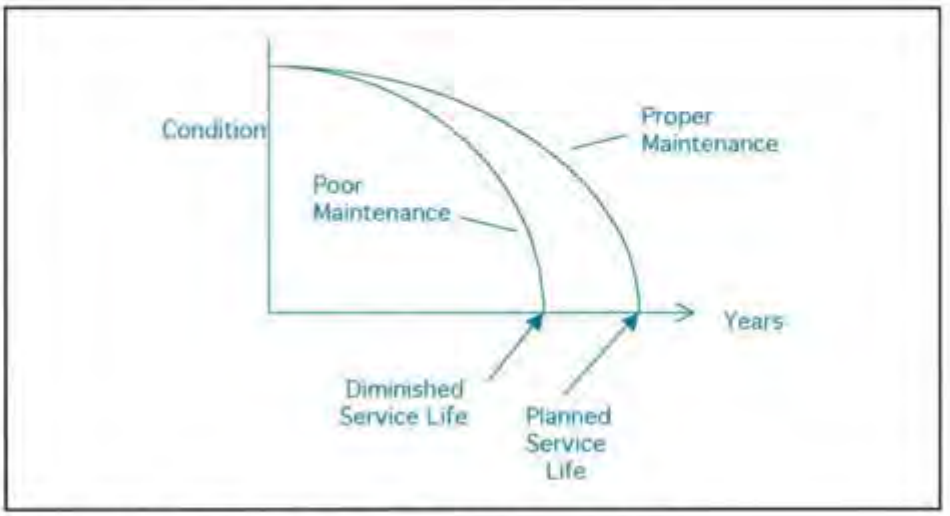

Figure 1. Physical Depreciation of Facilities (hypothetical)

***Peter Lufkin is principal and senior economist at Whitestone Research. He can be reached at plufkin@whitestoneresearch.com. This is his first article for* Facilities Manager.**

facility age. How do we know the depreciation curve is concave (accelerated toward the end of service life) rather than convex (accelerated at the beginning of service life), or some other shape? And if we don't know the shape of the depreciation trend, how can we know how much funding is necessary to reverse it?

Thus, I would argue we know very little about the relationship shown in Figure 1 and would recommend that in not be used as the basis for prudent recapitalization estimates. Any proposal to use this approach should be met with a simple reply: show me the data.

An Alternative View

In the 1970s and early 1980s, economists Hulten and Wykoff published a number of papers describing the economic depreciation they found in a large sample survey of non-residential facilities.[2] The definition of economic depreciation is (my paraphrase) "...the decline in value that arises from wear and tear, obsolescence, change in use, or accidental damage not restored by ordinary maintenance and repair."

Hulten and Wykoff's basic finding was that the economic (that is, productive) value of structures depreciates according to a geometric trend as shown in Figure 2. They derived economic depreciation rates for 14 classes of structures. Others have adapted these results for a broader class of fixed assets.[3]

In comparison with the view of physical depreciation shown in figure 1, the example of economic depreciation calculated for office buildings (shown in Figure 2) is considerably different.

First, it shows that depreciation is slightly concave rather convex, suggesting in practical terms that the productive value of facilities declines much more quickly in the first part of service life than indicated by the hypothetical trend.

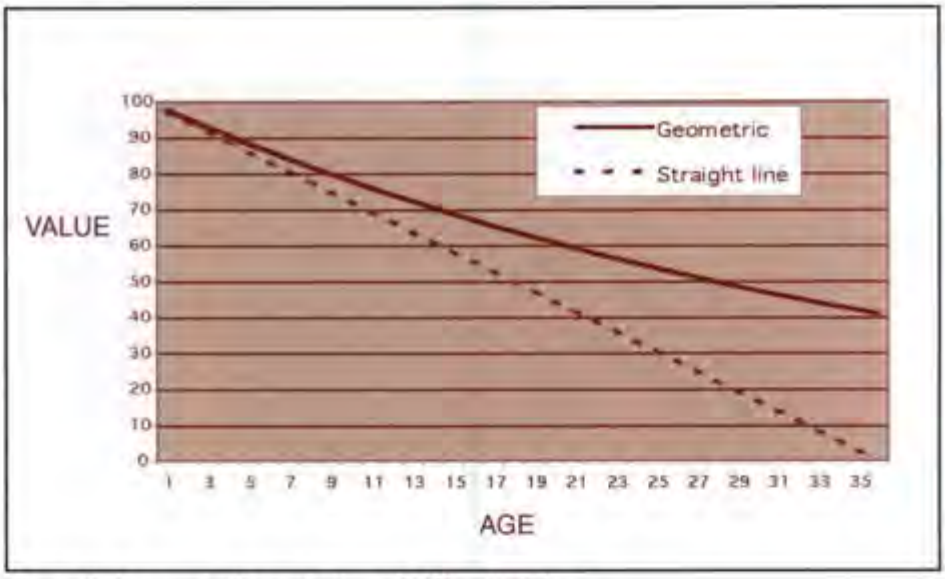

Figure 2. Economic Depreciation of Office Buildings

Second, at the end of typically cited service lives, say 35 to 40 years, an office building without the benefit of recapitalization still retains 30 to 40 percent of its productive value. This is different than the straight-line calculation often used for tax purposes, and is also different than the hypothetical trend showing facility condition coming to an abrupt end at some foreseen point. However, it is consistent with surveys showing that much of the national facility inventory aged well beyond its depreciated tax life.

And third, the depreciation trend shown in Figure 2 is based on actual data, rather than the hypothetical relationship shown in Figure 1.

These differences demonstrate an alternative view of depreciation and recapitalization worthy of consideration by asset managers. In contrast to the empirical weakness of the hypothetical model, the economic depreciation approach offers an objective and validated model—for example, the U.S. Bureau of Economic Analysis uses depreciation rates derived from the Hulten & Wykoff work.

Also in contrast to the hypothetical model, recapitalization estimates derived from economic depreciation curves address the restoration of the productive value of a facility, rather than facility condition. While the two objectives may be closely related, it would seem the former should be the primary responsibility of the asset manager.

Notes

1. Recapitalization is the funding necessary to restore an asset to its full productive state. It is the opposite of depreciation, which is the erosion over time—through obsolescence, accidents, change in use, neglect—of a facilities productive capacity.
2. See Hulten and Wykoff, "Economic Depriation and the Taxation of Structures," in *The Measurement of Capital, Studies in Income and Wealth*, Vol. 45, Ed. Dan Usher; Chicago: University of Chicago Press. 1980.
3. See Fraumeni, "The Measurement of Depreciation in the U.S. National Income and Product Accounts," *Survey of Currents Business*, July 1997.

Bookshelf

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

This column generally covers technical subjects, but occasionally I am able to stray a little from this area and include other subjects that affect facility officers or perhaps catch an historic perspective. This is one of those columns. While not truly technical, the financial aspects of facility management are an essential job skill; understanding finances and management in an historical context is also essential. The two books presented this month will provide enjoyment without too much technical detail.

* * *

The Facility Manager's Guide to Finance & Budgeting, by David Cotts and Edmond P. Rondeau, New York, New York: AMACOM, 2003. 266 pages, hardcover.

People with a technical background and/or job have a tendency to think about the physical things rather than the financial things. That's why this book by Cotts and Rondeau hits the reader right between the eyes in the very first chapter. It hurts, but it's true; many of us don't like thinking like a bean-counter but we have to.

Facilities are a cost and while they support the mission, they do not contribute directly to it. That statement hurts and is a justification for the viewpoint "The best college is Mark Hopkins at one end of a log and a student on the other," James A. Garfield, Williams College, Class of 1856, said when referring to a Williams College professor and president. In other words, the ideal college education is provided irrespective of facilities. Knowing that many people share President Garfield's perspective, the facility officer must come armed with the ability to think like the CFO and run the facilities operation while recognizing that it is considered either not important to the educational mission or, at best, a high, indirect cost that should be reduced whenever possible.

Cotts and Rondeau do an excellent job of presenting financial material. They introduce each chapter with the important points *(pulse points)*, present keywords, introduce the issues, define the problem, and then discuss approaches and solutions to the problem. The book contains some great diagrams that can be used to explain to the CFO why more time is needed for planning; there is also a great diagram in the appendix that I would only show to a CFO with a good sense of humor.

The authors discuss planning, budgets, capital projects, cost controls, project accounting, leasing, leadership, and some recent trends such as outsourcing, deregulation, third-party ownership, etc. These are the same great topics that we are always discussing and sometimes facing. The appendix is full of valuable information—charts, tables, and explanations—I just wish the font were larger.

In short, this is a valuable book for every facility officer. More likely than not, you will buy it and put it on the shelf, but don't. Read it as soon as it arrives. This will save you a long and frustrating night trying to quickly educate yourself when you are forced to justify your budget the next day or week.

* * *

Triangle: The Fire That Changed America, by David Von Drehle, New York, New York: Atlantic Monthly Press, 2003. 268 pages, hardcover.

Knowing where we come from or where the rules and regulations we work under come from has always been an interest of mine. It helps me understand why things are the way they are and helps me better interpret nuances in the rules and their application. That's why I enjoyed reading *Triangle*, by David Von Drehle.

My original reason for reading *Triangle* was to learn more about the origin of building fire codes. While my understanding of fire codes may have improved, what I really learned about was how people can effect change through the processes that are available. Notice that one must not necessarily be in power to make changes; however there are some distinct advantages to being on the side of power when one wishes to effect change quickly.

Triangle is the story of the worst loss-of-life event (and quickest) in

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New York City prior to 2001. On March 25, 1911, a fire broke out in the Triangle shirtwaist factory. Within minutes 146 innocent, hard working young women and men (123 of them women) died, in part because they worked in a facility with inadequate fire escapes and other forms of fire protection, such as unlocked exit doors. Worse yet, there was sufficient knowledge at the time of the fire to have prevented the enormous loss of life by any one of several means. Sadly, despite the years of learning and experience, similar (smaller) tragedies still occur; events at night clubs in 2002 in Rhode Island and Chicago come to mind. In reading *Triangle* you can gain a deeper appreciation of the reasons for fire codes and be satisfied.

It is also possible to read *Triangle* and improve your understanding of this country's progressive, reforming influences that have made society better over the last century. *Triangle* chronicles the early years of America's great reformers, not all, but some notable ones, who had an issue or idea and who utilized the moment to initiate substantive changes on society and our lives. While some readers may not subscribe to all the social changes that are presented and espoused by the author, it is impossible to disagree with the outcome. We are a safer, better protected, healthier, and better off society than we would be because of the reforms effected by this tragedy.

> My original reason for reading Triangle was to learn more about the origin of building fire codes. While my understanding of fire codes may have improved, what I really learned about was how people can effect change through the processes that are available.

Triangle provides a good history of the time through a tragic vehicle. Whether you read it for its description of social changes, its brief history of New York politics, architectural history, or building code development, it is a good read. The first two chapters put the reader in the factory as the fire begins and spreads; if you don't care to read the gory details of the fire, skip these chapters and enjoy the other seven.

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New Products listings are provided by the manufacturers and suppliers and are selected by the editors for variety and innovation. For more information or to submit a New Products listing, contact Gerry Van Treeck, Achieve Communications, 3221 Prestwick Lane, Northbrook, IL 60062; phone 847-562-8633; e-mail gvtgvt@earthlink.net.

Preferred Seating introduces the Champion Seat, a seat designed for sport complexes and auditoriums which can be offered as a floor, riser, or bleacher mount. Champion Seat can be retrofitted onto preexisting bleachers. A 21st century breakthrough, this seat is constructed of the new, no-break plastic. No-break plastic is an automotive grade, high density, high impact, corrosion and chemical resistant material and is comparable to steel in durability. For additional information, please call Preferred Seating at 866-922-0226.

HSS RentX, a national rental specialist offers more than a thousand models of tools including small- to mid-size equipment for facility and maintenance managers, municipalities, contractors and builders, remodelers, material handlers, landscapers, and more. Request this FREE rental rate and spec guide by e-mailing: catalog@rentx.com, or call HSS RentX toll free at 877-711-7368.

Eurotex presents Lanai wall carpet and Tahiti floor carpet in a coordinates package for commercial and institutional users. Both products are woven wool. They share the same texture along with many of the same colors—the color palette is deep in grays and naturals. The compact surface expresses an articulated linear design. Lanai Wall Carpet absorbs sound and helps control costs by protecting walls. The unitary back is flame proof and both products are rated class A for resistance to flame and smoke. For more information, call Eurotex at 800-523-0731.

Hilti, Inc. announces the release of its newest innovation, the WSR 900-PE Reciprocating Saw. Satisfying the need for performance, durability, and handling, the WSR 900-PE incorporates a smart power system which combines efficient gearing and a load management sensor to continually monitor blade speed when under load. This means no more stalling while in the middle of a cut. Regardless of the base material, from metal to PVC, the WSR 900-PE yields up to 20 percent less vibration, allowing operators to make smooth, even cuts with reduced fatigue. For additional details, call Hilti, Inc. at 800-879-8000.

Ladder-Max introduces the new Ladder-Max stand-off stabilizer. A safe, strong, stable working tool when attached to extension ladders up to 40 feet, Ladder-Max allows a stand-off space of 19 inches which simplifies work around overhangs, windows, and other obstacles. Ladder-Max's contact tips are made of soft, orange-colored, non-marring plastic. No tools are needed when installing; it works equally well with fiberglass, aluminum or wood ladders. Ladder-Max attaches in seconds and is secured in place with spring steel loops and lock pins. For complete information, call Ladder-Max at 866-772-4223.

Fire Control Instruments launches NetSOLO Broadband. Developed to meet the widest variety of applications using minimum equipment, NetSOLO Broadband is the first product to deliver full-network control and communications, digital messaging, live voice instructions, and fire fighter telephone communications through a distributed network fire alarm system—all on a single pair of wires. Because NetSOLO incorporates the existing 7100 panels, the system doesn't need to be redesigned and can be expanded as the user's application grows. For full details, call Fire Control Instruments at 781-471-3000.

Coming Events

Coming Events

For more information on APPA seminars and programs, visit our website's interactive calendar of events at www.appa.org.

APPA Events - 2004

Feb 1-5—*Institute for Facilities Management.* Tampa, FL.

Jun 20-24—*Leadership Academy.* Fort Lauderdale, FL.

Jul 25-27—*Educational Facilities Leadership Forum.* Washington, D.C.

Sep 12-16—*Institute for Facilities Management.* Montreal, Canada.

APPA Regional Meetings - 2004

Sep 18-21—*RMA Regional Meeting.* Jackson Hole, WY. Contact Mark Shively, 307-766-2537 or e-mail mshively@uwyo.edu.

Sep 22-25—*PCAPPA Regional Meeting.* San Diego, CA. Contact Scott Burns, 619-594-6001 or e-mail sburns@mail.sdsu.edu.

Sep 26-29—*ERAPPA Regional Meeting.* Syracuse, NY. Contact Robert Britton, 315-443-3529 or e-mail rkbritto@syr.edu.

Oct 8-13—*CAPPA Regional Meeting.* Kansas City, MO. Contact Darrel Meyer, 816-759-1061 or e-mail MeyerDA@ac.kcmetro.cc.mo.us.

Oct 28-Nov 3—*SRAPPA Regional Meeting.* New Orleans, LA. Contact Marion Bracy, 504-483-7507 or e-mail mbracy@xula.edu.

Oct 31-Nov 3—*MAPPA Regional Meeting.* Cleveland, OH. Contact James Cesen, 216-368-6537 or e-mail jac5@po.cwru.edu.

Other Events

Feb. 4-5—*Roof Technology and Science I.* Dallas, TX. Contact Roof Consultants Institute, 800-828-1902 or event website www.rci-online.org.

Feb 5-6—*Roof Technology and Science II.* Dallas, TX. Contact Roof Consultants Institute, 800-828-1902 or event website www.rci-online.org.

March 9-11—*National Facilities Management and Technology Conference/Exposition (NFM&T).* Baltimore, MD. Contact Tim Rowe, 414-228-7701, tim.rowe@tradepress.com or event website www.nfmt.com.

May 11-14—*DOE's 2004 National Conference for States & Communities.* Minneapolis, MN. Contact Ron Santoro, 202-586-8296, ronald.santoro@ee.doe.gov or event website www.2004nationalconference.com.

May 12-14—*Challenge and Response COAA Spring Owners Leadership Conference.* Orlando, FL. Contact Construction Owners Association of America, 800-994-2622, coaa@coaa.org or event website www.coaa.org.

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