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NUMBER 1

Facilities Manager

THE OFFICIAL PUBLICATION OF APPA

ENERGY AND UTILITIES

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Facilities Manager

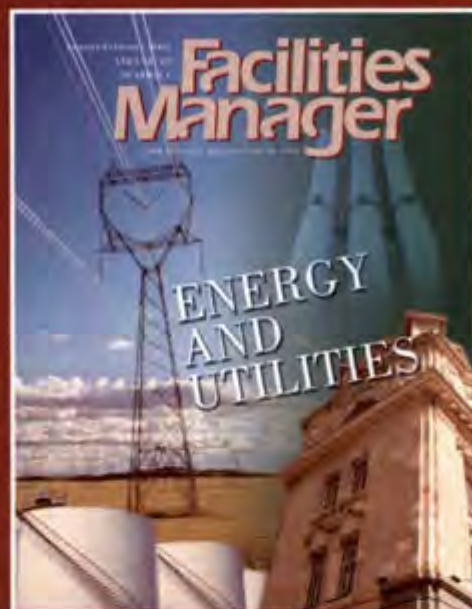
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From the Editor

by Steve Glazner

Resolve this year to write an article for *Facilities Manager* or conduct a research project through APPA's Center for Facilities Research (CFaR). In 2006, there were 37 first-time authors published in the magazine. That averages more than six new writers per issue.

We welcome new ideas and perspectives, as we know there is so much more going on in educational facilities management than even we have been able to promote or highlight.

Articles should be 1,500 to 2,000 words in length, and because of the varied roles and responsibilities within educational facilities, we are interested in articles that stem from our four core competencies: administration and management (includes leadership and finance); maintenance and operations; energy, utilities, and environmental stewardship; and planning, design, and construction.

If you have an article idea for *Facilities Manager*, please send an abstract or outline to me at steve@appa.org.

CFaR is APPA's premier research initiative, and we are seeking research projects on any topic affecting educational facilities. For more information, visit our website at www.appa.org/cfar.

There are many opportunities for you to share your knowledge and experience with fellow facilities professionals. Consider writing an article or conducting a research project. We look forward to working with you in 2007. 🏛️

Awards Applications Close February 15!

The deadline for APPA's individual and institutional award applications and nominations is midnight Greenwich Mean time (7:00 p.m. EST), February 15, 2007. To apply for an award, please visit www.appa.org/ recognition. Good luck!

Correction

Due to a formatting error, a Total Cost of Ownership formula in the November/December 2006 issue of *Facilities Manager* was rendered unintelligible. On page 29, in the article "Designing for Stewardship: Aligning Project Decisions with the Total Cost of Ownership" by Don Guckert and Jeri King, the formula should read as follows:

Total Cost of Ownership = Total Project Cost + Operating Costs + Capital Renewal or Deferred Maintenance + Decommissioning

The article has been corrected on the APPA website at www.appa.org/facilitiesmanager. Our apologies to the authors for this error.



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by Kisha D. DeSandies

APPA Publishes Thought Leaders Report

APPA has published its first annual Thought Leaders report, *University Facilities Respond to the Changing Landscape of Higher Education*, which stemmed from a summit of educational leaders including university presidents, provosts, trustees, and senior facilities officers. The report includes a list of the current Top Ten Critical Facilities Issues.



The report has been sent to all APPA Institutional representatives and is available in PDF format at www.appa.org. A printed copy may be requested by calling 703-684-1446.

Free Resume Posting for APPA Members

If you are seeking a job in the educational facilities field, as an APPA member, you may now post your resume on the Job Express Resume Bank for free. This online database provides job seekers direct access to preferred employers. Non-members pay \$60 for a 6-month or \$90 for a 12-month resume posting. Job Express has weekly U.S. and Canadian openings in: General Administration & Management; Maintenance & Operations; Energy & Utilities; and Planning, Design & Construction. Post your resume at www.appa.org/jobexpress.



View of Elon University campus in North Carolina. Elon was one of six universities and colleges to win the prestigious Grand Award in the 2006 PGMS Green Star Awards competition.

Supervisor's Toolkit

Nuts and Bolts of Facilities Supervision

Sign up for Spring Toolkit

A special spring offering of the Supervisor's Toolkit will be held April 15-19, 2007 in San Jose, California. Registration opens February 1. The Toolkit is a unique program, taught by Master Trainers in human resources and tailored specifically to the education facilities professional. It provides a pragmatic approach to developing supervisors through personal and professional growth. To register, call 703-684-1446 or visit www.appa.org/education for more information.

APPA Offers Reference Books

The APPA bookstore has a variety of professional book packages available in topics such as communications, writing, customer service, and facilities management guidelines. You can order book packages at a discount or purchase books individually.

APPA's Bookstore also features DEWALT pocket guides for HVAC, plumbing, electrical, datacomm, and

more. With quick and easy access to hundreds of charts, illustrations, formulas, laws, conversions, tables, and symbols, the DEWALT Series delivers what facilities professionals need, in an easily accessible format.

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PGMS Announces Grand Award Winners

The Professional Grounds Management Society (PGMS) recognized six universities and colleges as Grand Award winners in its 2006 Green Star Awards competition. Four others were named as Honor Award winners.

Grand Award winners in the University and College Grounds category include: Elon University; Pomona College; University of California at Davis; and University of Wisconsin at La Crosse. The University of Tennessee at Martin and Harvey Mudd College received Honor Awards in this category.

Honorees in the Urban University Grounds competition include Grand Award winners San Francisco State University and Xavier University in Cincinnati, as well as Honor Award

winners University of Maryland and University of Southern California.

RecycleMania Continues

Are you part of the mania? RecycleMania is a 10-week competition among university recycling programs in the United States that provides students with a fun, proactive activity in waste reduction. This year's competition will run from January 28, 2007 to April 7, 2007. Last year, participants recycled a record 18.6 million pounds.

For more information, visit www.recyclemaniacs.org.

Nalco Becomes ENERGY STAR® Partner

APPA Business Partner member Nalco Company recently became an ENERGY STAR partner to better help customers maximize energy savings and minimize total cost of operations.

ENERGY STAR is the U.S. Environmental Protection Agency's (EPA) national program for superior energy management. Energy is the single largest operating expense for most of Nalco's industrial and institutional customers, including commercial buildings.

The EPA estimates that by 2010, the savings from energy-efficient investments will reduce annual greenhouse gas emissions in the United States by 2.4 million and save taxpayers more than \$750 million per year.

EPA to Launch Compliance Center for Colleges

The National Association of College and University Business Officers (NACUBO) and the EPA recently agreed to a \$350,000 five-year plan to build a compliance assistance center for colleges and universities. This will enable higher education institutions better understand and

comply with environmental laws. APPA is a participating organization in the center's development.

The center, which will also benefit grade schools, will be the 15th in a network of EPA-supported centers for various economic sectors. Specifically, it will provide tools and information for improving environmental management on campuses. It will also offer a virtual campus tour online that will enable users to quickly and easily target priority issues.

The environmental performance of colleges and universities is profiled in EPA's 2006 *Sector Strategies Performance Report*. The report highlights proactive programs at a number of schools to reduce air emissions, minimize waste, conserve water, and practice green construction. The report is available at: www.epa.gov/sectors/performance.html. ▲

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APPA 2006 Regional Reports

Eastern Region

Keith Woodward

ERAPPA Vice President of Technology
& Communications

The 56th ERAPPA Annual Meeting, Preserve the Past, Chart the Future, was a milestone event, which took place October 15-18, 2006 in Mystic, Connecticut.

Plenty of exciting changes were implemented under the leadership of President Leon MacLellan.

The first major change was in how education programs are selected. The Education Committee took a more active role in the process to ensure quality education programs.

"Host committees often struggle in the early stages of developing the educational program. Early support and involvement from across the region will help significantly in sustaining a high quality program," said Willy Suter, president-elect.

Since ERAPPA has used the Internet, there has been a significant increase of communicating on the Web. The decision to post annual meeting information via the Internet



President Leon MacLellan presents Norm Ricker with his certificate of emeritus membership.



Ten of the last 13 ERAPPA presidents were on hand in Mystic, CT.

has been met with great enthusiasm. We were encouraged that 95 percent of call for presentations submissions came electronically and most of our business partners used our website for conference information. Based on those two successes, a decision was made to announce that registrations would open via the Web.

The keynote speaker for the annual meeting was the extraordinary Dr. Robert Ballard, best known for his 1985 discovery of the Titanic. Ballard has succeeded in finding other significant shipwrecks, including the German battleship Bismarck. He discussed how technology will advance not only underwater discoveries, but related the information to educational institutions.

"He was perhaps the best speaker we have ever had at ERAPPA," said Leon MacLellan. "He was absolutely captivating and his breadth of knowledge about how the world will be a different place in 10 to 20 years, based on technological changes that are in their infancy today, was incredible."

There was a productive and engaging town-hall style meeting at the annual business meeting on Tuesday.



Glenn Smith (1) accepts the ceremonial gavel from outgoing President Leon MacLellan.

This format gave members the first opportunity to speak about current issues facing ERAPPA and APPA in an open forum. Meeting attendees and ERAPPA Board members were impressed with the level of members' participation.

Four new officers were elected at the meeting: Willy Suter, president-elect; Jim Barbush, secretary; Dana Peterson, vice president of education; and Sarah High, vice president of membership. They were installed at the annual banquet with Glenn Smith,



The 2006 Host Committee breathes a sigh of a relief at the Tuesday night banquet.

president and junior APPA representative; Lou Dursi, treasurer; Fred Long, vice president for chapter affairs; Keith Woodward, vice president of technology and communication; and Leon MacLellan, past president and senior APPA representative.

Fred Klee and Norm Ricker were awarded emeritus status. Both have served ERAPPA well over their tenure in the organization as well as at the chapter level at Delaware Valley.

Other issues still being resolved include: bylaw revisions, an update to the annual meeting guide, an affiliate agreement with the chapters and APPA, membership, and first-time member initiatives.

Last fall, in response to feedback from ERAPPA members, the region's Education Committee worked to develop training sessions that explore one particular topic in depth. The goal is to develop a curriculum of education sessions that offer new management tools to professionals. The first training took place at Bryn Mawr College and discussed Stewardship of Building Envelopes.

The 57th Annual Meeting will be in Ottawa, September 30 - October 3, 2007. Themed "Capital Ideas for Sustainable Resource Management" the meeting will be held at the Ottawa Marriott & Crowne Plaza, and the closing banquet at the Museum of Civilization, located on the banks of the Ottawa River, near Parliament Hill.



Dana Peterson takes over as vice president of education.

Southeastern Region

Kate Van Sant

SRAPPA Vice President for Communications

The 55th Annual SRAPPA Conference, "Green Leaders in the Bull City" was hosted by Duke University, October 14-17, 2006 in Durham, North Carolina. The Sheraton Imperial was the official Conference hotel, with excellent accommodations and facilities for exhibitors, and a dedicated and friendly staff anticipating every need.

Festivities began on Saturday with a golf tournament at the Duke University Golf Club—a course originally designed by Robert Trent Jones—

located at the Washington Duke Inn. Unfortunately no one made a hole-in-one on the 15th hole to win the grand prize (a new Toyota). Alternate activities included shopping trips; tours of the impressive Duke Gardens, Chapel, athletic facilities, and Nasher Art Museum; and the Duke vs. Florida State football game.



Duke's Blue Devil hams it up with APPA Executive Vice President Lander Medlin.

The Diversity Reception was a success; 46 attendees exchanged ideas and strategies for increasing diverse SRAPPA participation. The Early Bird Dinner was a "Ballpark Buffet" featuring Wool E. Bull of the Durham Bulls.

A Barney Fife impersonator was the featured guest at Sunday's luncheon. He doled out citations for a number of frivolous transgressions and showed everyone how nice and shiny he kept his one bullet.



The Duke University Team worked hard to organize a fabulous conference.



Sam Polk from Tennessee State University makes a point.

The First Timers' meeting was very well attended and a large Burt's Bees basket was awarded as a door prize.

Sunday evening's reception and dinner were held at the gorgeous Washington Duke Inn, with entertainment by the Fabulous Hot Dog Daddios.

Attendance was high at the educational sessions Monday and Tuesday. There was a NASCAR theme at Monday's luncheon and the Duke Blue Devil mascot was the special guest at Tuesday's luncheon.

APPA President Chris Ahoy was present to swear in SRAPPA elected officers for 2006-2007: Ron Brooks, president; Glenn Reynolds, president-elect; Larry Blake, first vice president; John Malmrose, second vice president; Jeff Turner, vice president for long-range planning; Kate Van Sant, vice president for communications; Sylvester Johnson, vice president at-large; Curtis Reynolds, secretary/treasurer; Marion Bracy, APPA representative-elect; Joseph Fisher, junior APPA representative; Robert McMains, senior APPA representative; and Steve Glazner, APPA liaison to SRAPPA.

Tuesday's reception was held in the Crystal Coast Ballroom, followed by

the annual banquet. Brian Davis, managing partner of the Blue Devil Ventures, LLC, and former co-captain of the Duke Basketball team, gave an inspiring talk about his company's role in urban renewal, renovation and giving back to the community. James Adams of Fisk University won two round-trip airline tickets (valued at \$500 each) and Martin "Dale" Masuda of Sewanee University won the grand prize of two Carnival Cruises (valued at \$2,500 each). AAA Travel provided these prizes.

The 2007 Conference will be at Northern Kentucky University, and in 2008, SRAPPA will meet at the Medical University of South Carolina in Charleston.

**MAPPA Region
Ernie McVay
MAPPA Newsletter Editor**

Autumnal warmth accompanied MAPPA in the "Race to Indy"—home of the Indy 500 and the NCAA Hall of Champions—October 1-4, 2006 for the Educational Conference and Annual Meeting, host-

ed by Indiana University-Purdue University Indianapolis (IUPUI).

With its central location, Indianapolis was the ideal venue for 194 attendees, 5 spouses, and 138 vendors. Early Sunday morning 64 MAPPA members enjoyed the extraordinary opportunity to golf at the Brickyard Crossing. This unique course has two holes located within the track of the Indianapolis 500 and dazzled those who participated.

The official kickoff for the conference was the opening reception held at the NCAA Hall of Champions. Surrounded by exhibits extolling the



The conference took place in the heart of downtown Indianapolis, across the street from the Indiana State Capitol building.

efforts of scholar-athletes, we were all inspired to reach for our goals as we attended the educational sessions on Monday and Tuesday.

During Monday's welcome breakfast, Emily Wren of IUPUI introduced representatives from the Ronald McDonald House, the charity for the conference. Through donations from our members, the organization was presented with a check for \$1,280, to assist families with hospitalized children.

Keynote speaker Walt Stasinski, entertained us with magic and humor. He advised the audience that "being serious to be a success" is a myth; instead, humor promotes creative thinking by activating the right side of the brain. He recommended everyone



MAPPA members listen to updates and relevant committee information at the business meeting.

live by the African word "moomba" which means, "let's get together and have fun."

Three concurrent educational sessions were offered and it was difficult to choose from these pertinent and timely topics: Custodial Staffing by Kirk Campbell (Carleton University); Sustainability by Art Chonko (Denison University); and Buildings . . . The Gift That Keeps On Taking by Terry Ruprecht (University of Illinois). Additional stimulating workshops

included: Best Practices in HR-Hiring and Exit Interviews with Terry Burke (Ball State University); LEED Projects with Dave Hall (Geupel Demarrs Hagerman, LLC), Steven Park (Moake-Park, Inc.) and Thomas Werling (Hagerman Construction Corporation); and a facilitated learning environment session.

Participants browsed through the 54 exhibits and booths of our valued business partners. The extended hours of the tradeshow gave all attendees a

chance to interact with our business partners. The afternoon was spent in the perennial favorite—the experience exchanges. The exchanges were well attended and members shared many experiences offered various solutions to problems. Becky Hines (Ohio State University) facilitated the large-school session and Ralph Zia (Northeastern Illinois University) facilitated the small-school exchange.

The first half of the annual business meeting session was held Tuesday morning. MAPPA leadership provided updates and relevant committee information. The minutes and budget were also approved. Educational sessions continued Tuesday with Leadership Characteristics—Panel Discussion by Emily Wren, Jeff Plawecki and Jon Ray (all from IUPUI); Commissioning with Scott Bowman (KJWW); and Inventory Management—a facilitated discussion. The morning's sessions were rounded out with Conflict Management by Dan Griffith (IUPUI); and facilitated discussions on Energy Savings and Quality Work Environments.

The second half of the business meeting continued during lunch, when we also recognized our gracious hosts for coordinating the first-class conference and displaying sound financial stewardship. The meeting concluded with the election of new officers for the coming year. The MAPPA officers for 2006-2007 include: President Fred Plant (Valparaiso University), President-elect Martha May (Purdue University), Secretary John Ott (The Ohio State University OARDC), and Treasurer Brandon Baswell (Michigan State University).

The educational sessions ended Tuesday afternoon with: Managing Customer Expectations co-presented by Marshall Skule and Ruthann Manlet (both from the University of Minnesota); Making the Case for Strategic Funding of Facilities with Pat Walsh and Michael Quickle

Continued on page 13



Past President Jerry Carlson (l) from Butler University passed the presidential gavel to new President Fred Plant of Valparaiso University.



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(both with Sightlines, LLC); and HR Genre/Issues in Managing Human Resources—a facilitated discussion.

The conference concluded with dinner at the Dolphin Pavilion at the Indianapolis Zoo. Jerry Carlson from Butler University passed the presidential gavel to incoming President Fred Plant of Valparaiso University. After dinner, attendees enjoyed a delightful and educational program featuring the zoo's dolphins.

Special thanks to our educational programs and host committee members whose hard work resulted in MAPPA Race to Indy.

Save the date! MAPPA will be "navigating the Grand Rapids of facilities" October 7-9, 2007.

Central Region

Vickie Younger

CAPPA Newsletter Editor

Four hundred and four members, business partners, guests, and other friends gathered September 29 - October 4, in San Antonio, Texas, for the 2006 Annual CAPPA Conference. Hosted by John Greene and his outstanding staff at Trinity University, the theme was River of Knowledge.

The conference began on Friday with the executive board meeting and 14 participants in the APPA Supervisor's Toolkit. Committees gathered Saturday morning for a group breakfast session, where David Millay and John Greene gave committee members direction and encouragement for the coming year.

San Antonio is a beautiful city and a bustling cosmopolitan area. However, the rich history and tradition has been retained and attendees happily submersed themselves in the culture (and the food). Trinity University staff arranged tours of the Riverwalk, the



Entertainment at the banquet included country music and the song "Davy Crockett." Past President David Millay got to wear the honored raccoon hat.

Mission Trails, the Alamo and time to play golf at the Pecan Valley Golf Club. There was also a tour of Trinity's



Members take a break from playing golf at the Pecan Valley Golf Club.

campus, which included an old fashioned chuck wagon breakfast.

Monday and Tuesday were filled with high-quality educational sessions on Geo-Thermal Heating and Cooling, Effect of Educational Facilities on Students, Commissioning Facilities Equipment Using In-House Maintenance Personnel, A Primer on University Finances-Public and Private, Holistic Vision-Casting for Facilities, Campus GIS Applications, Customer-oriented Custodial Services,

and Campus Feral Cat Management: The Trinity Experience. Attendees included distinguished guests Lander Medlin, APPA executive vice president; Jack Colby, APPA past president; and Gary Reynolds, one of the principle investigators who presented "The Effect of Educational Facilities on Recruitment and Retention of Students."

There are 651 CAPPA members and 198 institutional members. More than 170 people attended Technology 2006, which included the Supervisor's Toolkit and a well-attended Custodial Program. In addition, scholarship information was provided and drive-in workshops offerings were presented.

Information Services continues to provide an excellent forum for communication between members by supporting the listserv and Web pages. Terry Major and Miles Abernathy are responsible for the smooth operation of these electronic programs.

During the banquet, Supervisor's Toolkit graduates were recognized; John Greene received the Newsletter award; Matt T. Kadavy and Terry Major were honored with Certificates of Meritorious Service; Darrel Meyer and Pat Apel each received the President's Award; and Kevin B. Folsom was honored with a Distinguished Member Award.

The 2006-2007 officers are: John Greene, president;



Supervisor's Toolkit class, missing the St. Mary's crew.



Pat Apel was given a President's Award for the many contributions he's made to the organization in various capacities, including the CAPPA Technology Conference.

David Millay, immediate past president; Mike Johnson, first vice president; J.B. Messer, second vice president; Larry Zitzow, third vice president; Arthur Sykes, secretary; Ron Smith, senior representative to APPA; Darrel Meyer, junior representative to APPA; Neal Swarnes, treasurer; Pat Apel, education chair; Randy Culver, membership chair; Terry Major, information services chair; and Vickie Younger, newsletter editor.

We are so proud of the accomplishments of our members; it has been a wonderful year in CAPPA-land!

Mark your calendars! CAPPA 2007 will be October 20 - 24, 2007, in Fayetteville, Arkansas, and will be hosted by University of Arkansas.

Rocky Mountain Region

Eakle Barfield

RMA President

The 54th RMA Meeting was held October 20-22, 2006 in the new Downtown Confer-

ence Center at Montana State University—Billings. Our theme was "Seeking New Frontiers" in celebration of the Lewis & Clark bicentennial.

The conference was preceded by an offering of "The Supervisor's Toolkit." The first official conference activity was an early Friday morning 10-boat fly fishing trip down the renowned Big Horn River. Then a group of golfers set out to conquer the Eagle Ridge course with the first three holes being played in the snow. Later in the day, a bus full of adventurers traveled to Pompey's Pillar, a major landmark from Lewis and Clark's epic "Corps of Discovery" journey, followed by a tour of the historic Little Big Horn battlefield. That evening our fabulous



Early morning fly fishing excursion on Big Horn River nets a big catch.

business partners hosted a reception at the Crowne Plaza Hotel.

APPA representatives Lander Medlin (executive vice president) and Alan Bigger (president-elect) welcomed the attendees at the opening breakfast Saturday morning. Futurist David Pearce Snyder delivered the keynote address on the "Future of Higher Education."

Thirteen educational sessions presented a broad range of topics from Energy Management (Mo Quoyami, University of California, Eastbay) to the Impact of Facilities on Student Recruitment and Retention (Gary Reynolds, Colorado College), which



Contestant rides a fierce bull at the National Finals Rodeo.

highlighted an outstanding educational venue. Additionally, 30 of our business partners showcased the latest technology advancements, products, and services. That evening, after a western BBQ, we attended the National Finals Rodeo.

At our annual business meeting, held on Sunday, members approved a major restructure of our organization by separating leadership roles from the responsibility of hosting our annual educational conference and adding our APPA committee chairs as members of the Board. These changes provide significant new opportunities for members to get more involved in our organization in a shorter time frame. We also approved the 14ers Club which recognizes a member's longevity and commitment to advancing the goals of RMA, as well as fostering communication and camaraderie within the region.

New officers installed during our awards banquet include: Mark Shively, senior APPA representative; Tommy Moss, junior representative; Eakle Barfield, president; Mary Vosevich, first vice president; Kevin Hansen, second vice president; John Morris, secretary/treasurer; Joseph Metzger, newsletter editor; George Stumpf, awards & recognition committee chair; Nancy Hurt, membership committee chair; Lorenzo Cotton, information & research committee chair; Dave Button, professional affairs committee chair; Sharilyn Philpott, educational programs committee

chair, and Wayne White, annual meeting coordinator.

The following were recognized for receiving APPA awards: Nancy Hurt (Colorado State University) and John Morris (University of Colorado) received APPA's Pacesetter Award; Harvey Chace (University of New Mexico) received APPA's Meritorious Service Award; and Gary Reynolds (Colorado College) received APPA's Fellow Award.

RMA awards were presented to the following: Jonathan Ford (Montana State University—Bozeman) received the Val Peterson Award; GLHN Architects & Engineers received the Lee Newman Award; and Harvey Chace (University of New Mexico) received the President's Award.

The recipients of the Golden Nugget Award, which recognizes universities (by enrollment category) registering the most participants at the conference, were Sheridan College (enrollment under 5,000), Montana State University—Bozeman (5,000-10,000), and the University of New Mexico (over 10,000).

We also recognized loyal business partners for five consecutive years of participating in our annual forums: J.E. Dunn Construction, Spirotherm Incorporated, and Maximus. Nalco Company, Waxie Sanitary Supply, NSS Enterprises Incorporated, Arizona Group & GLHN, Chevron Energy Solutions, Stanley Consultants, Johnson Controls, Lerch Bates & Associates, and SSR/Gordon Gumeson and Associates have participated for ten consecutive years.

The highlight of the banquet dinner entertainment was Alan Bigger revealing his "cowboy legs" and joining in a rousing rendition of "Bob the Ram" with our country western entertainment, the Ringling 7.

Special recognition and thanks to Lea Geraud, all our conference committee members, and the staff of our Downtown Campus for an outstanding conference.

The RMA 2007 Educational Forum will be held jointly with our neighbors PCAPPA October 11-14, 2007, in Albuquerque, New Mexico. See you there!

Pacific Coast Region

Scott Burns

PCAPPA President

Learn, Implement, Evolve was the theme of the 55th PCAPPA Annual Meeting and Educational Conference held in San Jose, California, September 30 to October 4, 2006. It was a successful, meaningful, and memorable event which offered dynamic speakers and sessions on key issues and trends in facilities management and plant organization.

The well-organized conference was hosted by Tony Valenzuela, vice president of the annual meeting and associate vice president, Facilities Development and Operations at San Jose State University.

work." It was clear that this event was the place to share with peers what works.

Monday and Tuesday sessions provided further thought and instruction on leadership and employee development. The conference theme was reinforced in Monday's keynote session "The Leader Within" presented by Tom Hinton, founder and CEO of California Quality and Excellence.

Additional concurrent sessions ranged from topics on Creating a Hero Mentality to Preparing Operating Engineers for the Latest in Energy Efficiency and Technology. Information on conservation and effective use of energy was also presented in several sessions, with particular attention to LEED certification projects, photovoltaic cell installations, GIS technology implementation.

The popular discussion "What Can PCAPPA Do for You?" resulted in valuable comments and observations which will help membership outreach efforts and organizational goal development.



(From l to r) Bob Brown, Mary D'Agui Wells, and Laura Tantillo, of CSU Monterey Bay, are recognized for their work on the annual meeting by Scott Burns, PCAPPA President.

World renowned keynote speaker John Alston delivered the opening address Sunday, outlining the principles of altering how employees think, approach life, and meet challenges. With humor and engaging storytelling Alston illustrated that "what works, works and what doesn't work, doesn't

The conference ended with the banquet Tuesday evening. We were pleasantly entertained by the jazz quintet, Terminal 5. In his closing keynote address, John Alston admonished attendees that if they returned to their workplace after the conference and continue to approach



The host committee from San Jose State University, in blue shirts (l to r) Dennis Suit, Bob Andrews, Cindy Soto, Betty Luna, and Rosemary Kokes, with Scott Burns, PCAPPA President and Dorothy Love of Loyola Marymount.

projects as they did before, then the conference would be a waste of their time. With an event so varied and rich in content, it is unlikely that anyone returned to work to do things in the same way.

At the banquet, new officers were installed and charged with leading the organization through another year of challenges and rewards. Officers for the next year are: Towny Angell, APPA senior representative (Reed Col-

lege); Scott Burns, APPA junior representative (San Diego State University); Berger "Buzz" Nelson, president (University of Nevada/Reno); Tony S. Valenzuela, president-elect (San Jose State University); Mark Hunter, vice president Annual Meeting (Cal Poly, San Luis Obispo); Robyn Pierce, vice president-elect annual meeting (Portland State University); and Brian Worley, secretary/treasurer (University of La Verne).

PCAPPA recognizes, and sincerely thanks, our 21 sponsors and 39 business partners, who continually make it possible for its members to learn, implement, and evolve. San Joaquin Chemicals, Inc. has also been a generous supporter of our efforts to gather



Tony Valenzuela of San Jose State University, accepts a recognition plaque from Scott Burns of San Diego State University.

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Special thanks to San Jose State University, our host campus, and the host committee (Betty Luna, Robert Andrews, Dennis Suit, Cindy Soto and Rosemary Kokes of SJSU; Bob Brown and Mary D'Agui Wells of CSU Monterey Bay), for a wonderful schedule of events.

We also thank the educational committee chaired by John Eaddy, SDSU (Paige Macias, UCI; Kathleen Schedler, University of Alaska, Fair-



Bob Notary of the University of New Mexico (left) shares ideas for the 2007 annual meeting with Dennis Suit of San Jose State University.

Don't miss the 56th Annual Meeting October 11-14, 2007 in Albuquerque, New Mexico. The 56th conference promises to be informative and will provide new networking opportunities as PCAPPA will be co-hosting the event with RMA. 

banks; Jeffrey Madsen, Idaho State University; Robert Andrews and Dennis Suit, SJSU) for an agenda of good speakers on topics of current interest.

Finally, we thank APPA President Chris Ahoy for his attendance and support throughout the conference and especially appreciate his remarks on APPA's Seven Key Strategies and participating in the swearing in of the new PCAPPA officers.

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Executive Summary

Energy Benchmarking Survey—Interim Results

by E. Lander Medlin

APPA, in association with Sebesta Blomberg & Associates, Inc., began an initiative to study, evaluate, and develop an energy benchmarking tool to integrate into both the EPA's Energy Star Portfolio Manager for higher education and APPA's annual Facilities Core Data Survey. Our goal is to create a campus energy performance database for effective benchmarking, which is sorely needed since:

- goal-setting for energy consumption is blind without benchmark reference;
- energy costs are becoming a greater portion of campus operating costs;
- institutions are missing substantial potential energy-reduction opportunities;
- no reliable peer-to-peer utility consumption profiles for campus settings exists; and
- energy conservation needs analysis, is time- and cost-prohibitive.

In the past, benchmarks for energy consumption did not incorporate the fluctuations that occur on college campuses or allow facilities professionals to compare statistically reliable campus energy consumption profiles with their peers. APPA has been working with Sebesta Blomberg for more than a year on the initial data-gathering phase and benchmarking study process necessary to create a statistically reliable and repeatable program.

Data Collection Process & Timing

During the summer and fall of 2006, an initial solicitation was distributed, a survey questionnaire was completed, several data requests were posted to the

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



membership, and a webcast was conducted to provide further information and clarification on the process, program, and expected results. The initial data request was closed in late November and the resulting information has been assembled and evaluated. Data collection from the Phase I survey generated data from approximately 125 institutions, consisting of nearly 600 million square feet, for approximately 14,300 buildings throughout the United States and Canada. This information has been extracted and assembled in a variety of databases so the statistical modeling processes could begin to evaluate the data and develop trends and relationships in energy consumption profiles.

Preliminary Results

Some interesting trends are beginning to emerge as we compare our preliminary findings with information from the 1976 ACE/APPA/NACUBO *Energy Cost and Consumption Report*. Initial highlights include:

- Total energy consumption on college and university campuses is comparable without regard to heating and cooling degree days. When comparing campuses based on latitude of the city location, the degree days are essentially equal. Further comparison indicates a slight difference in the

consumption of electricity versus heating fuel. However, when combined to total energy consumption, the differences are negligible. As a result of this finding, the APPA Facilities Core Data Survey will no longer require weather information for energy profile comparisons.

- Energy consumption for four-year+ research institutions is higher than other types of institutions by approximately 20 percent.
- Total energy consumption by function/space type varies dramatically among the sample size submitted.

When we extracted information from the 1976 energy report for the same campuses that submitted information for this survey, and the energy consumption compared at these campuses today, findings show:

- Campuses have grown in square footage significantly since 1976. The median growth per campus is approximately 96 percent with ranges from 29 percent to more than 340 percent.
- Energy consumption trends per square foot are down, though the difference in building functions vary.

Results from this broader, Phase I survey will be published (with institutional confidentiality and anonymity) in mid-February.

For the final tool to be credible, it must be based on detailed, robust data that appropriately characterizes the range of facilities found on college and university campuses. This underlines the importance of the Phase II consortium portion of the data collection effort and the incorporation of this type of ongoing data collection within APPA's annual Facilities Core Data Survey.

Next Steps

Our next steps consist of finalization of the Phase II consortium members and development of the detailed benchmarking database for those participants. Site visits, evaluation of information, configuration of the database analysis tools, and testing of the models will be required before a true benchmarking analysis can be achieved. Deliverables for the Phase II consortium members include: 1) a visit by a Sebesta Blomberg team to validate and normalize data, document building system and function profiles; 2) a summary report by the team to document observations and identify opportunities for utility savings on the campus; 3) a customized report that provides an energy and utility audit for the specific campus and benchmarks the institution's energy performance by individual building, building function, and campus totals; and 4) an energy

profile and benchmark by building normalized with the consortium peer group.

Annual energy costs nationally range from \$2 to more than \$10 per square foot for higher education campuses. If one-half of one percent of the average energy consumption is saved in documenting and analyzing data and implementing implications, the return on investment for consortium participation is less than six months. If you are able to participate at the consortium level, we urge you to do so—the potential savings are significant.

Outcomes

A reliable database for benchmarking campus energy consumption can ultimately be used to:

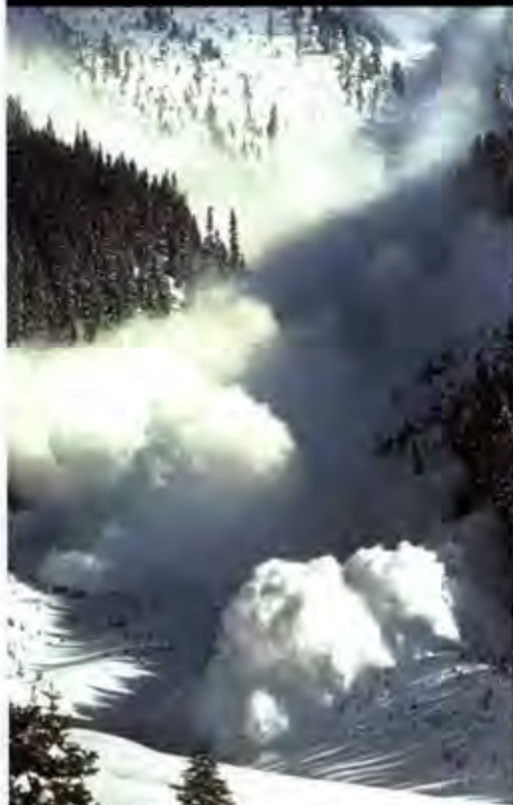
- set realistic energy conservation goals, prioritizing buildings by function, system type and energy consumption;
- forecast energy consumption profiles

- for renovated and new buildings;
- allow peer-to-peer comparison for developing support for energy and environmental emission reduction programs for the campus;
- help define impacts to energy use of proposed mechanical system configurations; and
- budget and plan in pre-design phases of future projects.

Integration of this information into APPA's Facilities Core Data Survey database and forms will streamline the energy profiling modules and improve the output of the program.

This detailed survey tool will contribute greatly toward the final database development, information collection, and validation process ultimately required by the EPA Energy Star staff as it further develops its Energy Star Rating Tool and online Portfolio Manager for more effective use by colleges and universities. ▲

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Homeland Security to Regulate Chemical Facilities

by Barry M. Hartman and Erika Kane

Last fall, President George W. Bush signed the Department of Homeland Security (DHS) spending bill for fiscal year 2007. The bill includes landmark language authorizing the Homeland Security Secretary to set and enforce performance standards for chemical plants that pose a high risk to the nation's security.

This compromise legislation was enacted after almost four years of debate that saw the proposal of no less than four different stand-alone chemical facility security bills, including bills offered up by both houses earlier this year.¹ The most significant feature of the legislation may be what it does not do: it defers virtually every major issue that has prevented passage of previously proposed stand-alone legislation to the rulemaking process. Moreover, the law requires that DHS promulgate regulations governing these issues within the next six months.²

Who is Covered?

There has been extensive debate over the most fundamental question: what kind of facilities will be required

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THE LEGISLATION PROVIDES THAT:

- ♦ regulations will apply to those "chemical facilities" that the Homeland Security Secretary determines (at the Secretary's discretion) "present high levels of security risk;"
- ♦ a regulated facility's "site security plan" cannot be disapproved based on the presence or absence of certain security measures, but the Secretary may disapprove a plan that fails to meet the "risk-based performance standards" which are in turn prescribed by regulation issued by the Secretary;
- ♦ the Secretary may approve "alternative security programs established by private sector entities, Federal, State, or local authorities, or other applicable laws," so long as they satisfy any regulations promulgated by the Secretary;
- ♦ the regulations will not apply to: facilities regulated under the Maritime Transportation Security Act (MTSA), drinking water utilities, wastewater treatment facilities, facilities owned by the Departments of Defense and Energy, and facilities subject to regulation by the Nuclear Regulatory Commission;
- ♦ the Secretary's authority under the new legislation terminates three years after its enactment date, and the interim final regulations may be superseded by regulations promulgated pursuant to other laws;
- ♦ if a facility violates the regulations, the Secretary must provide it with written notice and issue an order mandating compliance. If the facility does not comply, the Secretary may order the facility to cease operation until compliance occurs.³ Civil penalties may also be assessed.

to conduct vulnerability assessments and implement security measures? Previously proposed stand-alone chemical facility security legislation, dating back to 2003, attempted to use section 112(r) of the Clean Air Act as the triggering mechanism.⁴ This pro-

vision currently imposes obligations on facilities to "prevent the accidental release and to minimize the consequences of any such release"⁵ of those hazardous substances that "pose the greatest risk of causing death, injury, or serious adverse effects to human health or the environment from accidental releases."⁶

This obligation is imposed on facilities where certain chemicals are present in certain amounts. The previously-proposed bills directed the DHS Secretary to impose the toughest security requirements on those facilities that handle substances of "greatest risk."¹⁰ There was extensive debate, however, over whether such a triggering mechanism, created to address accidental chemical releases, was appropriate when considering dangers from intentional acts of terrorism.

Signaling a marked change from the prior standalone bills, this new legislation gives the DHS Secretary broad and somewhat largely undefined powers to define what it means to be a "high risk" "chemical facility," and thus subject to regulation. It is unclear whether Congress's ultimate rejection of the 112(r) trigger should be taken to mean that DHS should employ some alternate measure when determining which facilities pose a high security risk.

What Must the Regulated Community Do to Comply?

The legislation authorizes DHS to establish "risk-based performance standards" but does not define the term. Again, reference to the protracted history of legislative efforts concerning chemical facility security demonstrates just how contentious this term can be. The fact that Congress could not reach agreement on a

more well-defined standard suggests that debate during the rulemaking process—where these lingering ambiguities must be resolved—will be significant.

Indeed, the standards established by the Secretary could take on a number of forms. For example, DHS could craft a standard requiring that each facility create a site plan that limits the risk of a terrorist successfully breaching facility security, or the regulations might require that each facility craft a plan that limits the risk of release of a dangerous chemical, should a security breach occur. Both approaches were debated in Congress.¹⁹

It does appear, however, that the use of a "risk-based performance" approach, which typically focuses on the outcome desired rather than the method used to achieve that outcome, may result in facilities maintaining a considerable level of discretion in determining how to meet the standards. This potential outcome is reinforced by the new law's provision that prevents the Secretary from disapproving a site security plan merely because it employs a certain type of security measure. A sticking point in past proposals was the issue of whether Congress should mandate that facilities consider specific changes in processes, such as the implementation of "Inherently Safer Technology" (IST), when creating security plans.

What are "Alternative Security Programs"?

In the years leading up to this new legislation, there have been multiple efforts by a variety of industrial sectors to adopt alternative security programs. For example, the American Chemistry Council developed a security program for its members following the 9/11 attacks.²⁰ New Jersey now requires high-risk chemical plants in the state to complete vulnerability assessments, consider the use of ISTs, and submit security plans to the state's environmental protection



department.²¹ The federal law appears to contemplate that, in lieu of a site security plan crafted in response to DHS regulations, the DHS Secretary may approve of a security plan prepared pursuant to an alternate program, so long as that program meets the federal standards.

Additionally, once DHS determines that an alternate program is adequate,

it is not known whether the program will have to be reapproved by DHS each time the entity maintaining the program modifies it.

What Will Be the Role of State and Local Regulatory Efforts?

The new federal legislation provides that facility security programs created pursuant to other laws—including state and local law—may satisfy the new DHS requirements; however, it does not expressly bar states from imposing additional security-based regulations on chemical facilities within their own borders. Moreover, the new bill does not address whether federal regulations will preempt state legislation that imposes stricter or different standards, or whether the Secretary of DHS has authority to promulgate a regulation that preempts such state or local laws. Because of this, organiza-



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tions with facilities in multiple jurisdictions may face additional burdens.

For example, because an organization-wide plan that satisfies federal DHS standards may not necessarily satisfy additional requirements imposed by state and local authorities, organizations with facilities in multiple jurisdictions may be forced to either implement jurisdiction-specific plans or, alternatively, craft an organization-wide plan that satisfies the strictest jurisdiction in which they have a facility.

How Will DHS Promulgate Regulations in Just Six Months?

Normally federal regulations take years to promulgate. They often begin with Advanced Notice of Proposed Rulemaking, followed by a formal proposal and comment process, followed by extensive agency review. Typically agencies must also certify the impact of new rules on small busi-

In the past, DHS has invoked the exception in order to fast-track certain security regulations.

ness and must consider the paperwork burdens that the rules may impose.¹⁴ In addition, the Office of Management and Budget has its own extensive internal review process for all major new federal regulations.¹⁵ This process often includes extensive involvement by other agencies. In this case, there is little doubt that the Environmental Protection Agency (EPA) will be involved deeply in this interagency effort.

Under this new legislation, Congress has given DHS only six months to craft and issue the interim final regulations; accordingly, DHS may not have the ability to allow for significant public comment before the

regulations come into effect, much less complete the otherwise lengthy promulgation process, at least as it is usually followed. The Administrative Procedure Act (APA) contains good cause exceptions.¹⁶ Pursuant to this exception, an agency may forego, at least temporarily, the APA "notice and comment" requirements when it determines that it is "impracticable, unnecessary or contrary to the public interest" to follow them.

In the past, DHS has invoked the exception in order to fast-track certain security regulations. For example, in crafting regulations designating certain classes of aliens for removal from the country, DHS cited to the regulation's impact on national security, along with the fact that the enabling statute left the details of the designation to the complete discretion of the DHS Secretary, as reasons for forgoing the notice and comment period.¹⁷ In this case, given the six-month deadline, coupled with the fact that Congress has left essentially all of the substantive regulatory decisions to the discretion of the DHS Secretary, DHS could invoke the good cause exception and order regulations effective without the opportunity for comment.

With this in mind, it is clear that promulgating a chemical security program within six months of the bill's enactment will be a challenge of enormous proportions for DHS. Stakeholders may wish to involve themselves early and often in this process.

The Impact of the Three-Year Sunset Provision

It is entirely unclear what the impact will be of the bill's three-year sunset provision. In addition to the sunset, a security program established pursuant to this legislation can be superseded by regulations promulgated pursuant to other legislation, which could make it through Congress as early as this year.¹⁸ This aspect of the bill likely will impact both DHS's rule-making process and targeted facilities'



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methods of compliance with the new requirements.


Clearly, facilities targeted by the interim regulations face the possibility of investing significant resources to meet the interim standards, and there is no guarantee that those efforts will be adequate under any superseding legislation. Additionally, facilities such as drinking water utilities and wastewater treatment plants, which are expressly exempt under the current law, may face regulation under subsequent legislation. Thus, even after DHS completes its rulemaking, all potential stakeholders in this process will be left with some level of uncertainty.

What Will be the Impact of Legal Challenges on These Regulations?

Regulations issued by the DHS Secretary are governed by the provisions of the Administrative Procedures Act;¹⁸ these provisions allow aggrieved parties to seek judicial review of agency actions.¹⁹ Parties adversely affected by DHS regulations have invoked the APA in the past to challenge, successfully, final rules promulgated by the agency²⁰; accordingly, those entities aggrieved by rules ultimately promulgated under the chemical security legislation could pursue judicial review as one method of relief.

Finally, it should be noted that parties on all sides of the chemical security debate believe that this legislation is a stop-gap measure added to an appropriations bill during a midterm election cycle, with the operating assumption being that comprehensive regulation is certain to follow. This would not be the first time, however, that a program was established as an interim security measure and then never replaced.²¹ Moreover, sunset provisions are often extended.²²

Given the largely undefined powers conferred on DHS under this new law and the interim nature of the legislation, facilities that may be sub-

ject to regulation—as well as those organizations that could face regulation under subsequent, related legislation—should make efforts to monitor the rulemaking process, provide input to DHS when appropriate, and watch Congress for continuing developments in this area. 

Notes:

1. See Barry M. Hartman, et al., *Senate Considers Competing Bills to Address Security at Chemical Manufacturing and Processing Facilities*, K&L Homeland Security Bulletin (July 2003), available at http://www.klmg.com/files/Publication/0e5662c8-f3da-4943-b0b7-37f4925610d9/Presentation/PublicationAttachment/7f69bfc3-b8b4-459e-8b0e-0fcffdc5ca10/hsb_0703.pdf see also Chemical Facility Anti-Terrorism Act of 2006, S. 2145, 109th Cong. (2006); Chemical Facility Anti-Terrorism Act of 2006, HR 5695, 109th Cong. (2006).
2. Under the terms of the new law, DHS must issue "interim final regulations establishing risk-based performance standards for security of chemical facilities and requiring vulnerability assessments and the development and implementation of site security plans." Pub. L. No. 109-295 § 550(a).
3. *Id.*
4. Specifically, "Public Water Systems, as defined by section 1401 of the Safe Drinking Water Act, Public Law 93-523, as amended." Pub. L. No. 109-295 § 550(a).
5. Specifically, "Treatment Works, as defined in section 212 of the Federal Water Pollution Control Act, Public Law 92-500, as amended." Pub. L. No. 109-295 § 550(a).
6. The co-authors of the bill, Senator Collins (R-ME) and Representative King (R-NY), have asserted that it "gives the secretary the strongest possible authority: the power to shut down dangerous plants." Susan M. Collins and Peter T. King, Letter to the Editor, *Chemical Plant*

Security, N.Y. TIMES, Sept. 28, 2006, at A22.

7. See Chemical Security Act of 2003, S. 157, 108th Cong. § 3 (2003); Chemical Facilities Security Act of 2003, S. 994, 108th Cong. § 3 (2003).
8. Clean Air Act § 112(r)(1) (codified at 42 U.S.C. 7412(r)(1)).
9. *Id.* § 112(r)(3); see also 40 C.F.R. § 68.130 (listing chemicals subject to regulation pursuant to 112(r)).
10. See, e.g., S. 2145, § 3(c).
11. See, e.g., 151 CONG. REC. S14065-68 (2005) (noting that "sometimes the best security will come not from adding guards and gates but from reexamining the way chemical operations are carried out") (statement of Sen. Lieberman); see also H.R. 5694, 109th Cong. (requiring that high risk facilities craft site security plans that address both facility security and release mitigation).

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12. See American Chemistry Council, Responsible Care Security Code, available at http://www.americanchemistry.com/s_acc/bin.asp?CID=373&DID=1255&DOC=FILE.PDF
13. See Best Practices Standards at TCPA/DPCC Chemical Sector Facilities available at <http://www.nj.gov/dep/rpp/download/ChemSectBPStand.pdf>.
14. Regulatory Flexibility Act, Pub. L. No. 96-354, 94 Stat. 1164 (codified at 5 U.S.C. § 601); Paperwork Reduction Act, Pub. L. No. 104-13, 109 Stat. 164 (codified at 44 U.S.C. § 3501 et seq.).
15. See U.S. General Accounting Office, OMB's Role in Reviews of Agencies' Draft Rules and the Transparency of Those Reviews, GAO-03-929 (Washington, D.C.: Sept. 22, 2003).
16. 5 U.S.C. §§ 553(b)(3)(B); 5 U.S.C. 553(d)(3).
17. See Designating Aliens For Expedited Removal, 69 Fed. Reg. 48887, 48880 (Aug. 11, 2004).
18. See Press Release, Senate Committee on Governmental Affairs and Homeland Security, Congressional Spending Panel Approves Senator Collins, Rep King's, Chemical Security Provision (Sept. 25, 2006) available at http://hsgac.senate.gov/index.cfm?FuseAction=PressReleases.Detail&Affiliation=C&PressRelease_id=1340&Month=9&Year=2006 (noting that the current legislation provides interim authority until "permanent, comprehensive authority" is enacted).
19. 6 U.S.C. § 112 (e).
20. 5 U.S.C. § 702.
21. See *Nat'l Treasury Employees Union v. Chertoff*, 385 F. Supp. 2d 1 (D.D.C. 2005), *aff'd in part and rev'd in part*, No. 05-5436 (D.C. Cir. June 27, 2006) (holding that certain regulations governing collective bargaining for DHS employees were unlawful).
22. For example, many provisions in the USA PATRIOT Act, scheduled to sunset in 2005, were renewed in late 2005 and ultimately made permanent in 2006. See USA PATRIOT Improvement and Reauthorization Act of 2005, Pub. L. 109-177, 125 Stat. 192 (2006).
23. See *id.*



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Membership Matters

Seven Ways to Engage Young Professionals

by Misti Burmeister

Last year was a milestone for baby boomers, as they began to turn 60 and move toward retirement. The organizations that employ this generation—the largest generation in history—are beginning to realize the importance of “knowledge transfer” or “succession planning,” and are beginning to ask, “How do we recruit and retain the next generation of leaders?”

The answer lies in the approach to understanding, motivating, and mentoring this generation that grew up with/in an environment of instant gratification and a lack of parental guidance. Recognizing these differences, and the way they view the world is critical to meeting them where they are and developing them into the next generation of leaders.

I hear frustration from organizational leaders that the younger generation has an “entitlement mentality,” they lack loyalty, and don’t want to pay their dues. Generally, they do have different values which create those perceptions. Organizations and leaders can respond in a number of ways: they can churn these employees until they find some with the “proper” attitude; they can hire them and try to mold them into the corporate structure; or they can avoid hiring them.

The most successful companies will be those who can attract young professionals, create an environment in which they can thrive, and learn to shape their differences into assets for



the company. Just as successful companies have learned to respond to market threats and opportunities, they too will find the opportunity provided by the perspective, attitudes, and skills of the new generation.

The following tips will help foster a greater understanding of Generation X and Y employees; what they may be looking for, ways to gain their commitment and loyalty, and how to tap into their uniqueness.

1. Mentorship

As an organization leading this generation, you must make a commitment to creating effective mentoring programs. The younger generation is impatient, raised in a fast-paced world dominated by technology and instant gratification—they need guidance.

While the younger generation is screaming for balance in their lives, they are also craving challenging work. They want the challenge and they need the guidance.

2. Coaching—Communicate and Connect

Separate and distinct from mentorship, coaching goes to a much deeper level. While mentoring is about showing the way, sharing experiences and transferring knowledge, coaching is about helping them get to know what they want, who they are and what experiences might serve their needs best.

Providing feedback and support to this generation is essential—they want to grow—AND—they want to know what they can do to contribute to their company and their community.

3. Provide Training and Development

Much like the baby boomers, young professionals love to learn. In fact, many experts label this group as the most education-oriented generation in history. If we do not provide training and development to this gen-

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eration, they will quickly lose interest and become disengaged in their work.

4. Design a Plan

With both parents working, this generation was raised by institutions and the media. Now they are in the workforce, which requires them to know how to manage their time, set goals for their future, and manage their career. They do not know how to do this.

Help them to create a plan for their future will help them to be present and motivated in their current role. Without a plan they will not understand why it might be good to stay a few extra hours to complete an assignment—they need to see and be excited about the bigger picture.

5. Be Flexible—Balance

Encourage their values. The younger generation has seen what

working 80 hours a week can do to their health and their families. They desire a workplace and a workload that will allow them to have the flexibility to balance the many different components of their lives, thus an 8 to 5 work day may not work for all employees.

Truth be told, some people do their best work at midnight so why not let people work during the times they are at their best? Set expectations and goals for each project and meeting and let them figure out the rest. After all, getting the work done well is the key outcome.

6. Opportunities to Give Back—Volunteer

This generation has an intense desire to make a difference in the world. Allow them to take paid time away once or twice a month for community service. It will increase their loyalty and provide a positive outlook the community will have on your company!

7. Responsibility

This generation seeks freedom and desires responsibility; they want to be a part of the decision making process. Assign a project, set a deadline, be available for questions/support and then let them figure out how to get it done on time. If they can't manage to get their work in on time, you might ask how you can help them reach their deadlines. 🏠

Below are some messages to motivate our youngest talent (Zemke, 2000):

- You'll work with other bright, creative people
- You and your coworkers can help turn this company around
- You can be a hero here
- Do it your way
- We've got the newest hardware and software
- There aren't a lot of rules here
- We're not very corporate



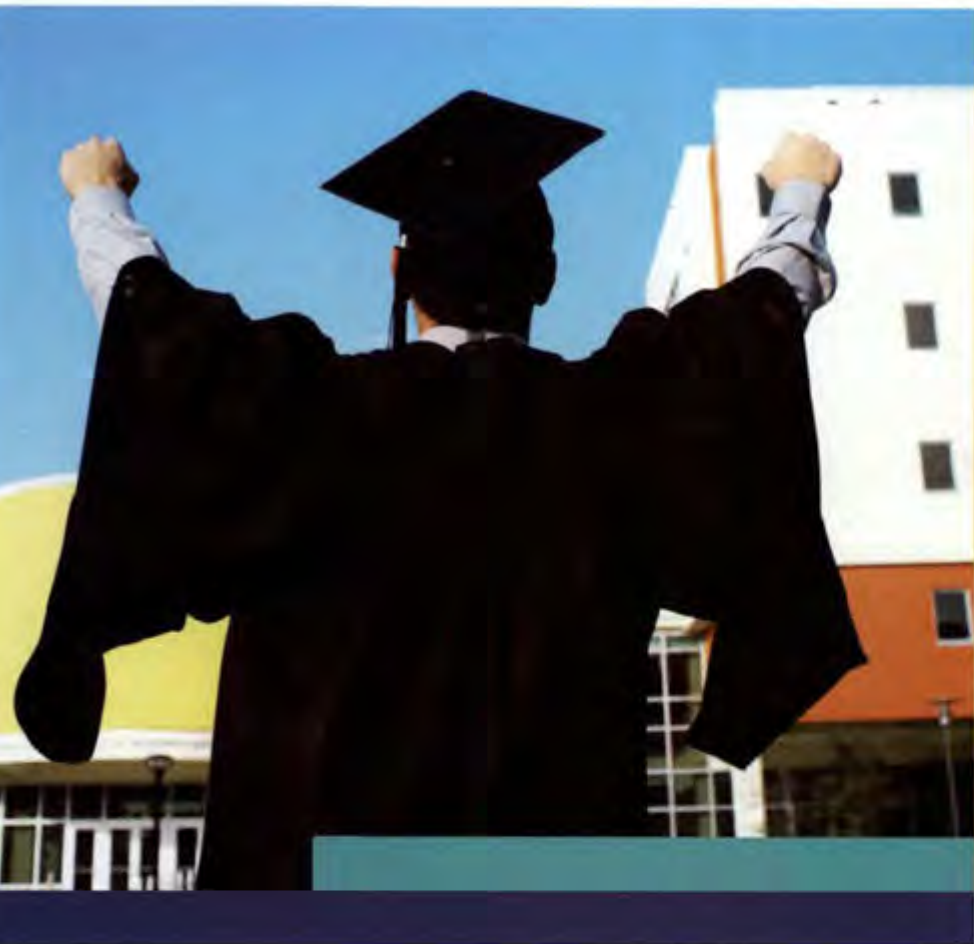
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Demographics of Students at Canadian Institutions

by Gary L. Reynolds

The research we have reported on the Impact of Facilities on the Recruitment and Retention of Students thus far has focused on students attending institutions in the United States. While the last column centered on the observations and opinions of the students attending Canadian institutions, this time we will examine the demographic differences of these students by gender.

Again, 16,153 students responded to the survey with 2,313 students (14.4%) responding from two institutions in Canada. This is a relatively small sample of Canadian students.

Demographics from the Canadian student respondents include:

- 66.6 percent were female and 33.4 percent were male.
- 84.1 percent were Caucasian, 7.8 percent Asian and very small percentages for other races.
- 93.8 percent were full-time students and 6.2 percent were part-time.

The initial question on the survey asked the students to rank in importance 18 general characteristics of an institution. The characteristics are listed in Table 1 in the order they were presented in the survey. The table identifies whether Men or Women (or they ranked them at the Same level of importance) ranked the characteristic statistically more important. The table also provides a comparison to the responses of students attending U.S. institutions.

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The next question asked the students to rank how important each facility was during their deliberations. The facilities are listed in Table 2 in the order they were presented in the survey. The table identifies whether Men or Women (or they ranked them at the Same level of importance) ranked the facility statistically more important. The table also provides a comparison to the responses of students attending U.S. institutions.

We also asked which facilities were important to see during a campus visit. The facilities are listed in Table 3 in the order they were presented in the survey. The table identifies whether Men or Women (or they ranked them at the Same level of importance) ranked the facility statistically more important. The table also provides a comparison to the responses of students attending U.S. institutions.

When asked if the students had rejected an institution because an important facility was missing 25.6 percent of the men (27.2 percent of U.S. Men) and 23.9 percent of the women (30.3 percent of U.S. Women) said, "Yes." While women attending U.S. institutions tended to reject an institution more often than men be-

cause an important facility was missing, for students attending a Canadian institution, there was no statistical difference.

The students were also asked if they rejected an institution because an important facility was inadequate. 19.3 percent of the men (24.3 percent of U.S. Men) and 19.4 percent of the women (27 of U.S. Women) rejected an institution because of an inadequate facility. Once again women attending a U.S. institution tended to reject an institution more often than men because an important facility was inadequate while, for students attending a Canadian institution, there was no statistical difference.

Finally, the students were asked if they rejected an institution because an important facility was poorly maintained. Seven percent of the men (13.1 percent of U.S. Men) and 6.2 percent of the women (18.3 percent of U.S. Women) rejected an institution because an important facility was poorly maintained. For this question also, women attending U.S. institutions were more discriminatory about the maintenance of facilities versus those at Canadian institutions where there is no statistical difference be-

tween men and women. Note in all three cases all students attending institutions in the United States were more discriminatory about missing, inadequate or poorly maintained facilities versus their Canadian counterparts.

When asked if, "The good condition of the facilities on campus was important in my choice of this college," 47.3 percent of the men and 50.7 percent of the women Strongly Agreed or Agreed with this statement. Statistically women more strongly agreed with this statement.

The students were also asked if they agreed with the following statement, "When I first saw the campus, I knew it was the right college for me." 29.8 percent of the men and 33 percent of the women Strongly Agreed or Agreed with this statement. Statistically women more strongly agreed with this statement.

Finally, the students were asked to choose the one facility that had the greatest impact on their decision. The top three choices for men were Facility in My Major (37.4 percent), Other (20.1 percent) and Technology (10.3 percent). The top three choices for women were Facility in My Major (41.5 percent), Other (24.3 percent) and Research/Lab Facilities (5.9 percent).

In general the data show that there are statistical differences in importance and interest in various institutional characteristics and facilities between men and women attending Canadian institutions, as there were with students attending U.S. institutions. Thus, recruiting strategies, academic and student life programs and their supporting facilities and operational decisions may need to take into account these differences.

In a future column we'll take a look at how satisfied students attending Canadian institutions are now that they are on campus. ▲

TABLE 1. Comparative Analysis of Gender versus Institutional Characteristic

CHARACTERISTIC	CANADA	UNITED STATES
Preparation for a Career	Women	Women
Strong Major in your Field of Interest	Same	Women
Preparation for Graduate or Professional School	Women	Women
Overall Quality of the On-campus Facilities	Women	Women
Excellent Teachers	Same	Women
Prestige or the Academic Reputation	Women	Same
An Attractive Campus	Women	Same
Opportunity to Play Intercollegiate Athletics	Same	Men
Accessible Professors	Women	Women
Many Extracurricular Activities	Same	Same
Excellent Academic Advising	Women	Women
Many opportunities for Hands-on Learning (Internships)	Women	Women
Challenging Courses	Same	Women
The Ability to Customize Your Education	Women	Women
The Climate and Weather	Same	Same
Recommended by Friends and Family	Same	Same
Technology Capabilities	Same	Men
Location of the Institution	Same	Women

TABLE 2. Comparative Analysis of Gender versus Importance of Facilities

FACILITY	CANADA	UNITED STATES
Student Center/Union	Women	Women
Dining Hall(s)	Same	Women
Residence Hall(s)	Men	Women
Varsity Athletic Facilities and Fields	Men	Men
Student Recreational Facilities	Same	Men
Library	Women	Women
Facilities Related to Your Major	Same	Women
Classroom Buildings	Same	Women
Science or Engineering Facilities	Men	Men
Sophisticated Technology for Academics	Men	Men
Facilities for Intramural Sports	Men	Men
Exercise Facilities	Same	Women
Open Space or Quads on Campus	Same	Women
Bookstore	Women	Women
Performing Arts Center	Women	Women
Visual Arts Center	Same	Women

TABLE 3. Important To See During a Campus Visit

FACILITY	CANADA	UNITED STATES
Residential Facility On-campus	Same	Women
Residential Facility Off-campus	Same	Same
Facility in My Major	Same	Women
Classrooms	Same	Women
Library	Women	Women
Computer and Technology	Men	Men
Research/Lab Facilities	Same	Men
Varsity Athletic Facilities	Men	Men
Student Union	Women	Women
Recreation/Fitness Facilities	Women	Same
Open Space	Same	Women
Other	Same	Same
Did not Visit	Same	Same



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Preliminary Schedule

Sunday, July 15

Focus on Energy Strategies

- Opening Breakfast
- Opening Keynote
- Ribbon Cutting for Hall of Resources
- Hall of Resources & Lunch
- General Session
- Panel Discussions
- Breakout Sessions
- Awards Reception

Monday, July 16

Focus on Workforce Demographics

- Hall of Resources Breakfast
- General Session
- Panel Discussions
- Hall of Resources & Lunch
- Breakout Sessions
- Regional Business Meetings
- Awards Banquet

Tuesday, July 17

Focus on Emerging Technologies & Professional Development

- Hall of Resources & Closing Breakfast
- General Session
- Panel Sessions
- Breakout Sessions
- Lunch
- Breakout Sessions
- Closing Keynote



Strategic Energy Planning:

A STEP ZERO APPROACH

With sharp increases in the costs of natural gas and fuel oil over the last few years, facility managers have begun facing significant new challenges to successful implementation and operation of energy-related capital projects. Consider the case of a university that installed a new \$7 million natural gas engine-driven central chiller plant in 2003, which now sits idle due to the high cost of natural gas. As a result, the new plant had to be expanded to include electric chillers to reduce operating costs.

Unfortunately, many educational institutions are now struggling with similar unexpected capital expenditures. However, these surprises can be avoided through strategic energy planning.

A New World

Historically, owners have used a two-step process for completing energy-related capital projects. Step 1 is commonly referred to as a project development or feasibility study phase, in which scopes of work, schematic engineering designs, detailed cost estimates, energy calculations, and related documents are developed for a given project. For example, if a chiller plant is beyond its useful economic life, a project will be developed to replace the existing chiller plant, usually with a similar plant that minimizes the initial capital cost. Once Step 1 has been completed, the owner typically moves to Step 2, referred to as the implementation phase, in which the project is constructed.

Before mid-2003 this was a reasonably effective way to complete a project. Energy prices had remained relatively stable for the previous 15 to 20 years, so an owner could calculate a simple economic payback based on a "snapshot" of the current price at any given time with reasonable assurance that the variables in this formula would remain consistent over the life of the project. Now, however, the cost of natural

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by Mark Webb, P.E., CEM, and Joe Sugg, P.E.

gas and fuel oil have rapidly increased, and they are not likely to come back down anytime soon, if ever. In fact, most experts predict that the costs of fossil fuels generally will continue to rise even though there may be periodic price fluctuations. As a result, the traditional two-step process may lead to projects with poor outcomes.

In addition to the energy price issue, environmental compliance has also changed permanently. For example, in September 2006, the U.S. Environmental Protection Agency (EPA) began to enforce significantly more strict emission limitations on fossil fuel-fired sources via the Industrial Boiler MACT Rule. Additionally, in September 2007, California Gov. Arnold Schwarzenegger signed into law the "Global Warming Solutions Act," which attempts to limit greenhouse gas emis-

If the facility department can develop a capital project that complements and strengthens the university's disaster recovery plan, the project has a much better chance of approval, regardless of the simple economic payback, as it helps to mitigate the overall risk on the campus in the event of a natural disaster.

sions. In attendance at the signing of this law were the governors of Arizona and New York, leading many to believe that this type of legislation will soon be passed in other states.

As a result of these order-of-magnitude changes in the energy environment, owners and facility managers can no longer rely on the traditional two-step project development and implementation process and the tried-and-true formula for simple payback without risking significant and costly miscalculations.

A Step Zero Approach

Owners and facilities managers who have recognized the realities of the new energy environment are taking an important step back—or Step Zero—developing a strategic energy plan *before* project development and implementation. They simply refuse to spend millions of scarce capital dollars on an energy-related project until they have fully analyzed all the factors and trends that may affect their project, including the energy market; environmental legislation; renewable energy sources, such as solar energy and biomass; financial incentives, such as tax credits, rebates, and grants; and creative project financing options.

The following are some of the key questions that should be investigated during development of a strategic energy plan:

1. Should I make a significant capital investment without a strategic energy plan?
2. What are the long-term energy costs forecasts?
3. When do my contracts for electricity, natural gas, and fuel oil expire?
4. Should I have multiple fuel flexibility?
5. Should I consider new renewable/sustainable technologies (solar, biomass)?
6. What are the upcoming environmental regulations?
7. What are our future campus expansion plans?
8. Are there any financial incentives, tax credits, or rebates available?
9. Do we have the necessary multi-disciplinary (engineering, project finance) expertise in-house?
10. What impact would this project have on the institution if it were to fail?

The other critical success factor for development of a world-class strategic energy plan, as well as any energy-related capital project, is a strong relationship between the facilities department and the institution's chief financial officer. The CFO may be the one individual on the entire campus who completely understands the institution's strategic direction, operation, priorities, financial condition and, in

particular, key performance indicators. The facilities department must understand these key performance indicators, whether they are Btu (British thermal unit)/student, Btu/square foot, cost/square foot, or utility cost/student.

Presenting the Business Case

Once the key performance indicators are fully understood and a strategic energy plan is developed, the facilities department can develop a solid business case for any project request that goes well beyond the traditional simple payback analysis. This comprehensive business case will analyze the life-cycle cost of the project, reflect the institutional key performance indicators, complement the long-range campus plan, and support the overall strategic vision of the university. As a result, the facilities department is likely to gain more approvals for their capital projects and become much more effective in their ongoing efforts to renew the physical plant—while avoiding costly miscalculations.

This approach requires a change in mind-set from a narrow view of project development and implementation ("Step 1, Step 2 ...") to a broader view of outcomes when developing infrastructure renewal projects and capital budgets:

- Think "Strategic"—not "Tactical"
- Think "Life-Cycle Costs"—not "Simple Payback"
- Think "Investment"—not "Cost"
- Think "Long-Term Forecasts and Predictions"—not "Snapshots"
- Think "Risk Mitigation"—not "Luck / Hope"
- Think "CFO Business Case"—not "Capital Project Request"

As an example of this new way of thinking, many institutions are now implementing business/disaster recovery plans in the event of a natural disaster. According to the U.S. Federal Emergency Management Agency (FEMA), approximately 22 states have a significant probability of being impacted by a flood, an earthquake, and/or a hurricane. If the facility department can develop a capital project that complements and strengthens the university's disaster recovery plan, the project has a much better chance of approval, regardless of the simple economic payback, as it helps to mitigate the overall risk on the campus in the event of a natural disaster.

For example, the installation of electric self-generation typically has a poor simple economic payback period. However, if the installation helps the university to recover more quickly after a natural disaster by being independent from the electric

utility grid, then the project will stand a much better chance of approval and funding.

Case in Point: Santa Clara University

The facilities department of Santa Clara University (SCU), California, reflects this new way of thinking. SCU is a Jesuit Catholic university located in the city of Santa Clara, adjacent to San Jose. As a relatively small institution, SCU cannot put "big numbers" on the board about energy consumption or savings. However, the process SCU uses may be valuable to other institutions, regardless of its size, in developing or tweaking their energy strategy.

SCU's strategic energy plan shares certain goals with most academic institutions:

- Reduce costs by managing energy use
- Reduce costs by managing energy commodity costs
- Sustain business operations by also managing availability
- Reduce greenhouse gas emissions

In developing a strategic energy plan, SCU first examined energy use, analyzing energy consumption in the form of HVAC, lighting, plant optimization, and miscellaneous equipment in the academic buildings. This has guided common-sense initiatives almost across the board to manage energy consumption.

Following are some of the examples of SCU's conservation measures and associated savings (as a percentage of total energy savings):

Many universities, including SCU, have serious initiatives in the area of reducing greenhouse gases and implementing sustainability policies and projects.

- Lighting (30%): retrofits, sensors, controls
- Equipment (20%): chiller, variable frequency drives (VFD), energy management system (EMS), mini-plant
- Maintenance practices (10%): planned maintenance, plant optimization (re-commissioning)
- Building design (15%): envelope, daylight, ventilation
- Operation practices (20%): scheduling, load shedding, seasonal adjustments
- Culture (5%): temperature, lights

SCU's energy management system enables the facilities department to monitor performance and maintain a continuous effort to improve efficiency as conditions change.

Overall, the university has reduced demand charges by 3 percent and reduced cost per square foot by 8 percent over the past six years, even while the growing campus has expanded 27 percent in total building area and increased enrollment 11 percent.

The university is also taking actions to manage energy costs. Currently, SCU is working on several major initiatives: photovoltaics, ice storage, and distributed cogeneration, taking advantage of new technology generation and heat recovery systems, such as micro-turbines, and possibly fuel cells and small capacity absorption chillers.

Sustainability Initiatives

Beyond efforts to reduce the amount and cost of energy, the university must also look ahead to ways of mitigating cost and availability fluctuations. One helpful approach has been the university's sustainability policy, which champions a number of sustainability initiatives, including energy conservation. A significant outcome has been the realization that energy needs can be met while reducing dependency on fossil fuels.

For example, the university now gets 48 percent of its energy from non-fossil fuel sources, including 5 percent from university-owned wind generation. This provides new opportunities to refocus the long-term strategic energy plan by diversifying energy sources to help en-

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Many universities, including SCU, have serious initiatives in the area of reducing greenhouse gases and implementing sustainability policies and projects. It is evident that many institutions are doing more than just passing policy language—they are actually developing, approving, and funding actual capital infrastructure projects to support a sustainable campus. In addition to being good stewards of the environment, another major driver is that of competition for students, many of whom value an institution that has an aggressive and visible sustainable program. As a result, many colleges and universities are implementing major infrastructure renewal projects such as photovoltaics, fuel cells, water conservation, and energy management systems.

Understanding Needs and Goals

A prelude to developing the long-term strategic plan is to understand the university's needs and goals, so the facility department studied SCU's energy needs (as a percentage of total) to support various stages of operations in the event of a long-term utility outage resulting from a natural disaster:

- Emergency operations: 20%
- Critical operations: 10%
- Initial business recovery: 20%
- Sustained business recovery: 30%
- Full Operation: 20%

The study also looked at how energy needs in a "business as usual" mode:

- Base load: 30%
- Sustained load: 45%
- Peak load: 25%

The Long-Term Plan

Translating these requirements into a long-term strategy is guided by cost, reliability, environmental impact, and regulatory mandates. Actions focus on ways to mitigate cost and availability fluctuations, expand sources and means of providing energy, and ensure energy for business recovery after a major disaster.

Overall, SCU's long-term energy strategy strives to:

- Reduce dependency on fossil fuels
- Reduce dependency on the grid
- Balance cost, environment, risk, and business recovery
- Leave flexibility for future unknowns

SCU has proven that one can manage both energy consumption and energy cost. While continuing to improve those results, the university also sees the need

to have a much more comprehensive strategy for the future—one that will ensure Santa Clara University remains a viable and competitive university.

That is the value of a strategic energy plan: the all-important "step back" that looks toward the future. ▲



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Critical Operations Power Systems:

THE GENERATOR IN YOUR BACKYARD

By Michael A. Anthony, P.E.

The subject of electric power security opens onto a minefield of sensitivities about boundaries and budgets, risk, and civil readiness. Some see power security as a business investment; others see it as an expense. Everyone agrees that power security is a classic public good that challenges traditional payback methods. But what role does government have in determining how much we should pay for power security, and who should pay for it? If one out of every six dollars spent on power equipment is spent on the secondary, backup systems¹, doesn't a more attractive alternative lie in allocating scarce capital to make the primary system more reliable?

It is onto this minefield where new requirements for "critical operations power systems" (COPS) will appear in the 2008 National Electric Code. Article 585 is the work of a new NEC technical panel, Panel 20, and this work will appear in Chapter 5 of the NEC—the Special Occupancy chapter—where installation requirements for healthcare facilities, places of assembly, also appear. The implications of this article of the NEC should be considered in programming emergency and standby power sources.

During threats to the campus and/or host city, local leadership (e.g., mayor, university president, county executive, civil

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defense experts, etc.) may need to meet in one or more Designated Critical Operations Areas (DCOAs). First responders and other emergency personnel may also need to assemble and communicate at one or more facilities equipped to carry out the rescue and recovery functions of government. Mutual aid agreements between the university and the city should be clarified with respect to critical operations power supply.

For higher education facility managers, noteworthy features of Article 585 are as follows:

- a) A COPS is a system within a facility, "classified by municipal, state, federal, or other codes, by any governmental agency, having jurisdiction or by facility engineering documentation establishing the necessity for such a system." The DCOA will be an area within a facility or site designated as requiring critical operations power.
- b) Risk assessment for the DCOA shall be conducted and documented. Threats—both naturally occurring and human made—shall be identified. Mitigation strategies shall be developed and be part of the documentation. This documentation shall be submitted to the authority having jurisdiction (usually the electrical inspector or fire marshal) to demonstrate conformity.
- c) Physical security of the DCOA shall be accomplished with several prescriptive requirements: flood plain protection of feeders, enhanced fire ratings of the building envelope, and signaling conduit. Site selection of the DCOA should limit access to qualified personnel as well as assure the safety of the fuel and water supply.
- d) The normal source of power shall have a backup source. Storage batteries, fuel cells or generator sets qualify as backup sources. The source shall be capable of running 72 hours without refueling. There must be an exterior plug to provide power from a mobile generator while the first generator is being serviced. Water supply shall be available for cooling generators.
- e) The DCOA shall be commissioned for service and tested periodically according to NFPA 110, *Standard for Emergency and Standby Power Systems*, NFPA 1600-2004, *Standard on Disaster/Emergency Management and Business Continuity Programs*, provides additional guidance concerning risk assessment and hazard analysis. There are numerous references to related codes and standards that govern life safety, healthcare facilities, and maintenance.

The foregoing summary is based upon the written record of Panel 20 work so far. The complete record of Article 585 development is accessible at: www.nfpa.org/assets/files/PDF/ROP/NEC2008Article550-647.pdf.

To develop the first draft of Article 585, NFPA (the National Fire Protection Association) selected representatives from industry and government—code veterans that know how to write code that is enforceable but satisfies the competing technological requirements of stability and dynamism. Keep in mind that the final draft of Article 585 may be affected by public comments during the December 2006 meetings and at the NFPA Standards Council meeting in May 2007.

Many believe that it is better to have an imperfect Article 585 now than a perfect Article 585 later. Consensus

Mutual aid agreements between the university and the city should be clarified with respect to critical operations power supply.

documents like the National Electric Code achieve their credibility by being hammered upon in a public forum. In the code business there is no writing—only rewriting. Article 585 will elicit many of the same passions that have animated recent technical discussions over flash hazard and overcurrent selectivity. Such code controversies expose the divide between the people who want the NEC to be general (performance based) and those who want the NEC to be specific (prescriptive).

Perspective

Power reliability and power security are often used interchangeably and have become the focus of an expanding intellectual history involving the combined—but not always harmonious—efforts of code writers. Putting together a new NEC panel to craft Article 585 is part of a wider effort by the NFPA to focus its 200-odd standards workgroups to meet the government's need for improved power security standards, not the least of which is the Department of Homeland Security (DHS). That is why you see the NFPA documents referenced so liberally in government regulations (those promulgated by OSHA are another example). Consensus standards developed in the private sector are closer to industry action and are quick to be adopted as law. Government needs the dynamism of private industry.

The NFPA, with its tradition of high-level relationships in the federal government, has been involved in power security issues for the better part of its hundred-year history. Only recently has its work been so closely linked to national security. NFPA involvement ensures that relatively newer organizations (such as the North American Electric Reliability Council and various state public service commissions) do not reinvent the wheel in effort to respond to DHS requirements for power security at the building premises level². In its announcement at the October 2005 Standards Council meeting the NFPA explained the effort of new Panel 20.

Recent terrorist events and natural disasters, including the World Trade Center attack, the 2005 hurricane season, most notably Hurricane Katrina, have brought to light the need to assess the adequacy of current requirements in the National Electric Code relating to electrical infrastructure protection and reliability.

Interdependent systems that support electricity supply are not perfect and institutional mechanisms to support reliability, security, and survivability need to strengthen at the building premises level. If we start work on the critical power systems at the building premises level, then we will have taken a significant step in the direction of a more distributed

If we start work on the critical power systems at the building premises level, then we will have taken a significant step in the direction of a more distributed power generation regime.

power generation regime. Distributed generation (DG) is widely accepted as the platform for improved power system economy and security.

The Loyal Opposition

The public record of the work of Panel 20 tracks agreement on core issues (that much could be borrowed from military logistics, for example). There was then discussion that ran the other way:

- Some panel members asserted that the requirements of Article 585 are subjective, difficult to enforce for a particular installation, and may not be needed for all critical operations power systems.
- Which governmental agency will actually class such systems? Did Panel 20 contemplate that any electrical engineer can class a system as a COPS?
- Article 585 seems to have gone outside the long-standing NEC committee charter, "to minimize the risk of electricity

as a source of shock and as a potential ignition source of fires and explosions."

- The highly technical debate over overcurrent selectivity in NEC Articles 700 and 701 appears again in Article 585. There is a material conflict between the IBC—which requires conformity to NFPA 110 (where selectivity is not required) and NEC (where selectivity is required). A design engineer cannot do both.
- The original draft of Article 585 permitted a separate utility service as a redundant power source. This allowance was eventually withdrawn. The panel stated in its substantiation: "The Panel agreed that a utility supplied second service to the building or facility does not meet the expectations for continuity of operations during the events Article 585 is designed to handle."³

The loyal opposition suggested that Article 585 be issued as information in a "Recommended Practice" or as an optional system. Two annexes were added to provide guidance on signaling and quantitative methods for analyzing reliability. Additional references and line print notes reach deep into management and operation practice.

Recommendations

Most electrical engineers are able to tell you how to wire a generator; fewer are able to tell you if you need one at all. Existing NEC articles on emergency, standby, and legally

required standby power remain silent on the "if" side of the engine-generator question; there are other ways of generating emergency power other than with combustion engines (batteries, fuel cells, and photovoltaics, for example). Even now, the existing NEC articles 700, 701, and 702 only say: "This is how you wire the emergency power source generator once the electrical and telecommunications engineer, Fire Marshall, Architect, elevator engineer, ADA office, and the electrical inspector have all agreed an engine-generator set is necessary to meet the requirements of the life safety and building code "Not even, NFPA Standard 110—Standard for Emergency and Standby Power Sources will explicitly tell you that an engine-set is required. The decision is made by implication, based upon the performance requirements for life safety.

The 2008 NEC will be available for public use as early as October 2007. Some actions items might be:

1. Determine if you already have a documented designated critical operations area. You probably have

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Now communities, colleges, and universities are looking for ways to afford DG while they lament the complexity of siting the generating facility, getting fuel and cooling water to it, etc. College and university planners have the same lament.

one or more of these but they may not be documented as such. Few have heard of the "facility engineering documentation" cited in Article 585, but it is likely you will know it when you see it. Assess what processes are already in place identify the DCOA(s).

2. Review mutual aid agreements with the emergency authorities in your host city, if any. Determine if honoring a mutual aid agreement will require additional generation on either or both sides of the agreement. Search for ways to share emergency power resources.
3. Review existing protocols for power emergencies with the local utility. While investor-owned utilities are typically governed by another code—the National Electric Safety Code—they all have knowledgeable people available to help their customers conform to the NEC. Reliability data from the utility may be required in the COPS documentation anyway.
4. Plan generator sets with an eye toward meeting the requirements of the Life Safety Code and Article 585 simultaneously. It is less expensive to install generator sets when conformity to the Life Safety Code puts them in the first cost of a new building. Since Article 585 covers COPS in portions of buildings as well as in dedicated free-standing buildings, consider strategic sizing of generators and COPS rooms for a future DCOA. There is risk in overreacting to what some have called the "doom boom" in Homeland Security, but codevelopment (and cofinancing) of generator facilities spreads the risk and uses capital more efficiently.
5. Consider application of methods that emerged from the Total Quality Management movement such as Quality Function Deployment (QFD). Reference to this approach appears in Article 585 as a non-mandatory suggestion. QFD is a flexible and comprehensive group decision-making technique used in product or service development, brand marketing, and product management. QFD can help an organization focus on the critical characteristics of a new or existing product or service from the separate viewpoints of the customer market segments, company, or technology-development needs. The results of the technique yield transparent and visible graphs and matrices that can be reused for future DCOAs.

Conclusion

Victor Hugo once said that there is nothing more powerful than an idea whose time has come. With all the talk in recent years about distributed generation, there has been nothing to give impetus to the resolution of complicated site-specific bar-

Q1. What are examples of facilities that may require a COPS (critical operations power system)? Central station service facilities, communication centers, emergency evacuation centers, fuel supply pumping stations, hospitals, water and sewer treatment facilities, police, fire and civil defense facilities, radio repeater operations.

Q2. What will Article 585 conformity cost us?

Most certainly it will mean more investment in redundant power systems for COPS. Spare transformers may be part of a mission survivability plan. It is noteworthy that in September 2006 the U.S. Federal Energy Regulatory Commission permitted public utilities to recover the cost of spare transformers dedicated for power security. It remains to be seen whether a case can be made to the various government agencies that expenses related to Article 585 conformity can be similarly recoverable by colleges and universities.

Q3. Shouldn't campus power security be circumspect? Article 585 requires a risk assessment for critical power operations power systems including identifying the hazards, their likelihood of occurrence and the vulnerability of the electrical system to those hazards. Although the panel did not address the issue of who gets access to the COPS information my personal belief is that these assessments should be distributed on a need-to-know basis. Most state public service commissions make publicly-owned utility reliability data public⁴. Some method must be developed to meet the competing requirements for access to reliability information and the physical security of the primary power delivery network.

riers to DG such as: community acceptance, utility easement, fuel supply and containment, emissions, etc. One of the reasons Edison's model of the neighborhood generation facility failed 100 years ago was that Westinghouse's remote generating stations were located farther away from population centers. While the bulk transmission grid had an economy of scale that allowed U.S. manufacturing industries to prosper during the middle part of the last century necessarily caused us to rely on a single source of (distant) power.

Now communities, colleges, and universities are looking for ways to afford DG while they lament the complexity of siting the generating facility, getting fuel and cooling water to it, etc. College and university planners have the same lament. Even the publicly traded companies that have the term "distributed" in their corporate names are in the business of selling products—not solutions for difficult site specific barriers to DG.

Using the necessity for redundant power sources in designated critical operations areas, new NEC Article 585 may stimulate distributed generation (or at least raise the level of the discussion), and thereby strengthen the networks that provide power during normal operation. A different economy of scale may emerge from all of this which will drive down the

cost of solving site-specific problems that must be considered whenever new generation facilities are built.

Three code cycles from now we may look back to see that we have engineered ourselves back to the neighborhood power system of Edison's original conception. ▲

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Small Campus Reaps Results through Energy Management

by Glenn Gilbert



Curbing utility costs has become a high priority for all institutions during the last year. While consideration of new forms of energy production such as wind power and solar collection is increasing and evaluating how we purchase energy is important, nothing can reduce energy costs faster than conservation. Goshen College, a small four-year residential Christian liberal arts college operated by the Mennonite Church and located in northern Indiana, has developed a good program of conservation through the use of technology, education, building facility upgrades, and the cooperation of faculty, staff, and students.

Glenn Gilbert is the utilities manager at Goshen College, Goshen, Indiana; he can be reached at glenn@goshen.edu. This is his first article for Facilities Manager.

Managing Energy

In 1990, Goshen College applied for and received an energy conservation grant through the State of Indiana to implement the beginnings of a computerized energy management system on campus. Prior to that time, academic buildings were heated as if they were occupied 24 hours a day, seven days a week. It was not practical to shut down equipment or set back temperatures. If mechanical equipment failed in the middle of the night, such as a boiler malfunction or a broken pump or fan, it most likely wouldn't be noticed until a college employee came in the next morning. It was not uncommon for students in residence halls to control their temperature in the winter by opening windows.

The early management system was modest—making simple temperature setbacks based on time-of-day scheduling and adjusting the heating system based on outdoor air tem-

perature. At first, fewer than half of the buildings had any computer controls or monitoring. But slowly, over time, the energy management network grew, until now, 16 years later, hundreds of small controllers spread around campus are networked to larger field cabinets linked via the campus fiber optic network to a server that controls and monitors literally thousands of points of information in every building on campus, including most of the off-campus small group houses.

Not only does the energy management system stop and start equipment and set back temperatures at night; it also:

- Controls most of the outdoor lighting. Goshen College operates over 50 kilowatts of outdoor lighting, which costs about \$4 per hour to operate. By using the energy management system rather than a photocell to turn the lights on at dusk and off at dawn, and turning off about a third of the outdoor lights in no-traffic areas off at 1:00 a.m., the energy management system saves about \$4,400 annually without compromising safety.
- Maintains fresh air by monitoring carbon dioxide levels in the theater, performance halls, church sanctuary, and the library. When those spaces are empty or minimally occupied, air is efficiently recirculated, but when carbon dioxide-producing people are present, the system responds and introduces the required fresh air.
- Measures indoor and outdoor enthalpy to provide "free cooling" with outdoor air in a number of buildings; not all cool outdoor air is appropriate for cooling the indoors if the humidity is too high.
- Determines when heating systems should be shut down and air conditioning systems started up, based on the time of the year and outdoor conditions. Several buildings are "two-pipe systems" requiring changeover from hot water to chilled water seasonally. Automation quickly translates into improved comfort and reduced labor costs.
- Monitors steam pressure in the central power plant and sends an alarm to maintenance staff if a boiler should fail.
- Monitors the campus electrical system, so a one-megawatt emergency generator can be started if needed.
- Monitors refrigerators and freezers in the cafeteria kitchens, and sends an electronic page to maintenance staff if the temperatures get out of range (this has saved thousands of dollars worth of food over the years). This system also alerts kitchen staff when a door is left open too long.
- Detects moisture to anticipate and prevent floods in basements and technology centers. Overflow sensors on condensate pans of air

conditioning units protect ceilings and other occupied spaces from water damage.

- Monitors air flow in fume hoods in the our science building labs. Proper building and room pressurization is also maintained to ensure that fumes travel in the right direction without excessive exhaust.
- Provides control and safety with temperature and humidity sensors located across the campus.
- Stops and starts campus fountains. In one case the height of the fountain is also controlled to prevent overspray, using an anemometer to check the wind speed and reduce the circulation pump speed of the fountain on windy days.
- Monitors CO sensors in mechanical rooms and laundries in our campus housing facilities to protect our students from potential carbon monoxide poisoning.

How Have We Been Doing on Energy Consumption?

We have all heard and felt the impact of the sharp spike in natural gas prices this past year. For a college campus, the ramifications are considerable. In our case, in October 2004, Goshen College consumed 27,368 therms of natural gas at a cost of \$19,165; in October 2005, we consumed 3 percent less gas but it cost the college \$35,564—an 85 percent increase in cost. Electricity prices are also climbing as the utilities make fuel-cost adjustments.

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As a response to the increased energy costs, Goshen College, like most other institutions, looked closely at how we used our energy and how we might be able to make cutbacks. Some institutions arbitrarily set back thermostats system-wide and imposed deep temperature setbacks at night. Such measures can create unhappy building occupants and these changes, while effective in the crisis, are difficult to sustain.

At Goshen College we took a different approach. We chose to meet with representatives from every department in every building on campus to discuss temperature setpoints and occupancy schedules that they thought they could live with. We discussed the particular characteristics of the spaces that they occupied and the possibilities and limitations of the HVAC systems in their buildings. These conversations yielded several important results. As building operators, we learned how the occupants were experiencing their environment. At the same time, the occupants learned more about how the systems functioned. We were able to agree on setpoints and occupancy schedules that they felt were sustainable, and we learned about other ways that they thought energy might be saved. Over time, the good will and cooperation of everyone involved yielded substantial energy conservation.

Because Goshen College had invested in computerized energy management over the years we were in a much better position to customize adjustments and tailor temperature settings so that energy could be saved without compromising comfort. Individual classrooms, labs, and offices could have temperatures adjusted from hour to hour, providing heat (or air-conditioning) only when the spaces are occupied. Computerized controllers can look at outdoor and indoor temperatures and anticipate how soon heating and air-conditioning needs to be started to bring a space to satisfactory temperatures at the time of occupancy.

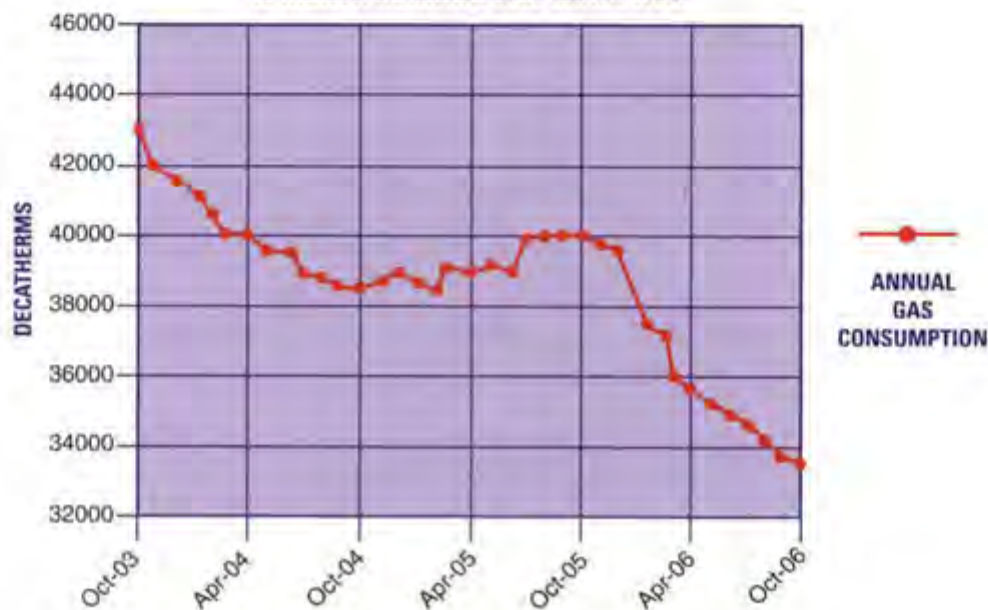
In addition to the commitment to reduce consumption through the utilization of our building control systems, Goshen College has made numerous other investments to our infrastructure to reduce energy costs. In addition to switching off unneeded lights, dialing down thermostats, and using less air-conditioning, some of the other energy conservation measures we have taken recently, or are currently in progress, include:

- Building envelope improvements such as window upgrades and additional insulation in our roofing systems
- Conversion from antiquated steam heat to high efficiency local hydronic boilers
- Lighting retrofits in the gymnasium and exercise areas of the recreational fitness center
- Conversion to higher efficiency lighting throughout campus
- Increased use of motion detectors and timers for controlling lighting in restrooms, library stacks, and other public spaces with intermittent usage
- Installation of variable frequency drives on circulator pumps and fans to reduce electrical consumption
- Additional capacitors for power factor correction
- Improved ambient lighting controls to reduce the unnecessary lighting during daylight hours
- Installation of an automatic swimming pool cover, to reduce dehumidification and heating costs.

The following graphs of our central gas and electric meters show the results of these initiatives. In the last three years our overall gas consumption has declined 23 percent in spite of increasing our campus square footage by over 42,000 square feet.

Our electrical consumption in the last two years has declined almost 10 percent while at the same time we have

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added air conditioning to our major residential halls and built new housing facilities.

While there are good reasons to be apprehensive about high energy costs these days, this is also a great opportunity to reevaluate our lifestyle choices and day-to-day habits to find new ways of being better stewards of our limited resources. Certainly technology can help us make better uses

of energy, but the best means of conservation come through the personal choices we make. At Goshen College, through the use of available technology, we have found many ways to reduce our consumption of our energy resources resulting in both immediate and long-term savings to our operating budget. ▲

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The implementation of the 7 Key Strategies established by APPA in December 2005 continues. The strategic action plan and the 7 Key Strategies were developed under the leadership of 2005-06 President Jack Colby and provide continuity in APPA's effort to solidify our position as the association of choice in the educational facilities field. This phase in APPA's evolution is like the era when APPA created the three Cs (Competency, Collaboration, and Credibility) as the backbone, which has ably guided APPA for desired outcomes for its members.

The Campus of the Future

I was honored to be installed as APPA's 92nd President in Honolulu, Hawaii at The Campus of the Future: A Meeting of the Minds, jointly hosted by APPA, NACUBO, and SCUP. I have been a member of each of these associations for many years, but unable to attend all the conferences due to each association holding their annual conference around the same time in July. The conference location provided many opportunities to visit with friends and colleagues from the three different associations and participate in the many educational session offerings.

In addition to the Campus of the Future, I visited two regional meetings this year, PCAPPA and SRAPPA, and one HEFMA international conference in Pretoria, South Africa.

Chris Ahoy is APPA's 2006-07 President. He is associate vice president for facilities at Iowa State University, Ames, Iowa, and can be reached at cahoy@iastate.edu.



Collaborations and Outreach:

A President's Mid-Year Report

By Christopher K. Ahoy

service to the Awards and Recognition and Professional Affairs committees.

PCAPPA's 2006-07 leadership teams will be looking at differences in the membership fee structure at the region and international levels, as well as narrowing gaps in alignment with APPA in the coming year. Implementing these initiatives lays the foundations for positive relations with PCAPPA and

PCAPPA

My first visit as APPA President to a regional meeting was in San Jose, California attending the PCAPPA annual conference. Host chair Bob Anderson and his team at San Jose State University provided first-rate hospitality during my time there. Bob and I struck a common chord immediately as fellow state-based Baldrige Examiners.

Thanks to PCAPPA President Scott Burns and his leadership team for the warm Pacific Coast welcome and for inviting me to be present at their board meeting. Scott Burns, Towny Angell, and Dan Johnson did a good job of promoting APPA's 7 Key Strategies at the board meetings, breakfast business meetings, and at the new member orientation session. The APPA CD presentation package was well received by all.

At the banquet, PCAPPA honored its members who received APPA recognition: Mark Hunter, California State Polytechnic University, APPA Pacesetter Award 2006; Chris Christofferson, Stanford University, PCAPPA representative to APPA Board; Debbie Aguilar, University of Southern California, service to the Information and Research Committee; and Dan Johnson,

APPA for the greater common good in making APPA the "association of choice."

SRAPPA

My second visit was to the Southeastern Region's 55th Annual Conference. Thanks to Kate Van Sant, SRAPPA's vice president for communications, for arranging my stay in Durham, North Carolina, and to Glenn Reynolds and his team at Duke University as wonderful hosts. Thanks also to 2005-06 SRAPPA President Marion Bracy, and his team for their warm southern welcome, hospitality, and for making me feel at home at the SRAPPA board meeting.

Ron Brooks, University of Memphis was elected as SRAPPA president for 2006-07.

Much appreciation goes out to Marion Bracy for performing SRAPPA presidential duties all year, while dealing with the aftermath of Hurricane Katrina, which seriously damaged his home and workplace (Xavier University of Louisiana). The impact of that devastation persist today, especially with the recovery and rebuilding efforts.

The SRAPPA Board shared the 7 Key Strategies and showed the APPA CD for SRAPPA at their board and breakfast business meetings and at the new member orientation session. Dr. Sam Polk, former APPA vice president for educational programs, was quoted in the presentation, which was well received by the SRAPPA membership.

I was also able to attend the special diversity session that SRAPPA has implemented in their annual scheme conference. I was impressed by SRAPPA's funding of their scholarship. They have set aside \$120,000 for their membership for APPA's educational courses, as well as training and development. The theme of the conference centered on "Sustainability."

At the banquet, SRAPPA honored its members who received APPA recognition: Ron Brooks, for service on the Awards and Recognition Committee; Randolph Hare, for service on the Information and Research Committee; Jewell Winn, for service on the Membership Committee; and Sam Polk, for service on the APPA Board and as vice president for educational programs.

SRAPPA's 2006-07 leadership teams will be looking at differences in the membership fee structure at the region and international levels, as well as narrowing gaps in alignment with APPA in the coming year. Implementing these initiatives will foster continued good relationship with SRAPPA and APPA and for the greater common good in making APPA as "association of choice."

South Africa

My wife Ruth and I traveled to South Africa as a result of an impassioned speech at our APPA Board meeting by Reenen du Plessis, president of HEFMA and director of facilities management, University of Stellenbosch, South Africa. HEFMA is the Higher Education Facilities Management Association of Southern Africa. This was appropriate for us to undertake since "collaboration" is one of the three APPA building blocks

(competency, collaboration, and credibility). Reenen's presentation to the APPA Board received unanimous support and confirmation for my visit to the HEFMA conference at Roode Vallei Country Lodge, Kimmeldrift, Pretoria, South Africa (October 23-26, 2006) as the APPA representative. Many thanks to HEFMA for their hospitality – "Goeie vriende" (Greetings friends). It was my great honor to be invited as the first-ever APPA president to the 2006 HEFMA conference in South Africa.

HEFMA Committee

At the HEFMA Board meeting I was privileged to be invited to attend the entire session with my two other international colleagues from TEFMA, represented by President-Elect Mike Quinlan, University of Brisbane, New South Wales, Australia, and AUDE, represented by Ron Mallinder of Brighton University in the United Kingdom. We learned much regarding HEFMA proceedings, and we were most honored when asked to give our advice and comments during the meeting.

Creating a World Class Operation

From the comments I received after the conference, my topic, "Creating a World Class Operation," (which included my first attempt at speaking Afrikaans) appears to have struck a chord with many of the attendees. "Goeie more vreemde. Dit is 'n groot plesier om die geleentheid te he om vanoggend met julle te gesels oor 'Die Skep Van 'N Wereldklas Organisasie.' Met Julle toestemming sal ek nou voortgaan in engels." Translated: "Greeting friends, it my great pleasure to have the opportunity to speak to you this morning on the subject of 'Creating a World Class Operation.' Now with your permission, I will continue in English." Although I received a round of applause for my effort, one comment was that I needed more practice. I thought it was pretty good for an hour of practice.

APPA'S 7 KEY STRATEGIES

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

Customer Expectations

I am pleased that listening to the voices of customers and employees to promote customer satisfaction is becoming a way of life with our Southern African colleagues. My discussion on raising the bar of customer expectations from satisfaction, to delight, to success was very well received. My discussion centered on raising the bar of customer expectations from the "is" condition (the current reality), to the "should be" condition (the future state), and then on to the "could be" condition (the ideal state). Meeting specifications—the bottom line of achieving world class—should be the minimum aspiration of any endeavor. I call this the Moment of Truth. Those seeking a competitive edge in the global economy where the "world is flat" must go from the ideal state—that is, the "could be" or the "good" condition—to "great," which is the ultimate condition for any enterprise aspiring to become a world-class organization. To reach this pinnacle of ultimate condition of success, any entity must pass through another condition of "excellence," which I call creating moments of magic for your customer. Reaching greatness or an outstanding condition is a situation that promotes a one-plus-more paradigm of outstanding results. This position conveys that an organization is the best of the best in breed and class.

Overview of APPA and ISU

During my second educational presentation, I covered an overview of APPA and brief information on Iowa State University. The attendees appreciated the various APPA value propositions. I presented APPA's vision as "Global Partners in Learning" with the APPA mission to support educational excellence with quality leadership and professional management through education, research, and recognition. I am expecting that some of the attendees and HEFMA members will join APPA as international members to partake in the many APPA offerings. A few have indicated their intention to attend APPA's Institute for Facilities Management and Leadership Academy. In the short time I had, HEFMA members were nonetheless able to get the gist of what APPA has to offer as the "association of choice."

I enjoyed the rest of the program by the host Tshwane University of Technology (TUT) and HEFMA leadership. All the programs were of very high caliber. I was pleased that other speakers after me connected nicely with my keynote speech focusing on customer delight and the theme of the conference "adding value." As usual I picked up valuable information and knowledge from the presentations.

2006-07 HEFMA President Master Ngoma, and his staff from Tshwane University of Technology, are to be commended for their dedication and commitment to the success of the conference. I hope to see Master at APPA 2007: Back to the Future in Baltimore (July 15-17, 2007).



Recnen du Plessis, president of HEFMA and APPA President Chris Ahoy shake hands to seal the MOU between the two organizations. The MOU will foster collaboration and provide HEFMA with access to resources and facilities professionals within the APPA network.

Memorandum of Understanding (MOU)

President du Plessis and I signed the memorandum of understanding between HEFMA and APPA before the presidential handover ceremonies. The MOU is to foster collaboration between HEFMA and APPA. Doing this will provide HEFMA with access to resources and facilities professionals within the APPA network. In like manner, APPA and its existing members will receive benefit from the increased breath and diversity of perspectives, enhancing its outreach mission, and will make significant progress in the vision to become a global partner in learning. During the next three years, both organizations will mutually explore detailed actions around the basic goals and objectives in the MOU.

Post Conference Activities

We could not leave South Africa after almost 41 plus hours of travel and meetings without sightseeing in Pretoria. Ruth and I visited Kruger National Park where we saw giraffes, zebras, impalas, kudus, warthogs, spring boxes, monkeys, baboons, elephant, rhinoceros, and water buffalo. As all good things must end, before we knew it, it was time to leave. We spent some time vacationing in Zurich before heading home.

As I mentioned in my installation speech, APPA and Iowa State University have given me the opportunity to serve our members, and for outreach, to bring international members to our fold in support of our mission to become "Global Partners in Learning." 🏛️

The Bookshelf

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

I prefer to begin the year on an upbeat subject, but it seems as though the times call for a more serious subject.

Securing Utility and Energy Infrastructures, by Larry Ness, Wiley, 2006, \$80, hardcover, 340 pages.

In 2003, the Northeast and part of the Midwest of the United States experienced a major blackout. California experienced several summers with rolling brownouts. The flooding of New Orleans in 2005 shut down more than just electricity to the city as drinking water became non-potable and other infrastructure components were damaged. Disasters in recent memory have been costly, disruptive to the nation, and in some cases deadly.

Utility infrastructures are large and dispersed while campuses are often concentrated in a single location. So why would this book have anything to do with higher education facility officers? There are many reasons.

First, many campuses are small cities and regardless of their size, provide a wide variety of utilities for the campus community. Some of the larger institutions provide electricity, steam and/or chilled water, water treatment, or fire protection services to the campus and local community. Second, we serve a diverse population from residents to workers. Third,

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... in the information based community of higher education, we are highly dependent on the reliable delivery of electric and communication services ...

most of our campuses are connected to the utility systems that are the primary subject of the book and obviously affected by the reliability of those systems. Lastly, in the information-based community of higher education, we are highly dependent on the reliable delivery of electric and communication services; a disruption to these infrastructures would be detrimental to our campuses.

Most of us were not partying on December 31, 1999; we were on campus to making sure nothing went wrong with campus systems as the year 2000 rolled in. Good planning ensured that virtually no computer-based systems crashed. We have the same issues today; planning for a possible disaster, being aware of the potential threats and weaknesses, identifying ways to prevent a disaster through planning and coordination, and identifying ways to recover from a disaster in the event it cannot be prevented.

Ness presents some compelling and frightening information about the vulnerability of various utility infrastructures. There are many scenarios for terrorist attacks ranging from strategic disruption of distribution networks, nodes, and linkages, to destruction of generation points or poisoning of water systems. There are several, although limited, recommendations for colleges and schools. It would have been nice to see some discussion about business continuity in the face of other threats such as pandemic flu, storms, and the like. These crises are more likely and have just as serious implications for the safety of a college or university that depends on reliable utility services.

Though the book is expensive, if there is a significant infrastructure on your campus that you manage, if you have a large student body, or if you prefer to be prepared rather than surprised, this is a good book. 

Check out the following new publications at the APPA Bookstore

The Business Case For Renewable Energy, by Andrea Putman & Michael Philips

Stewardship & Accountability in Campus Planning, Design & Construction
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Lista International Corporation introduces the Lista Storage Wall® System, a flexible storage system that combines modular drawers, shelves and roll-out trays. The Storage Wall System provides high cubic density storage and can utilize all available ceiling height. Available in two different depths, this unique storage solution is suitable for any application where floor space is at a premium. The drawers and trays each hold up to 440 pounds. Wide span beams, designed for large bulk items, hold up to 1,500 pounds and are available with a variety of deckings, including steel, wire, and plywood. For more information call 800-722-3020.



Campbell Hausfeld, manufacturer of airless and HVLP paint sprayers, has launched a new airless unit available exclusively to Lowe's Home Improvement for their commercial business customers, the 1 HP PS271D. With a high output of .44 gallons per minute at 2,000 PSI, the PS271D easily sprays coatings such as stains and varnishes; oil-based, latex and heavy-duty aluminum paints; enamels and high-performance wall primers. This unit specifically addresses the needs of facilities managers and property managers alike. The sprayer is covered by a five-year limited warranty, and carries a lifetime warranty on the motor as well as the diaphragm. Visit www.chpower.com for more information.



Eaton Corporation presents the Cutler-Hammer® brand Quick-Connect Double-Throw safety switch, providing a safe and efficient way to connect mobile generators or portable equipment rated from 30 to 800 amps to a facility's electrical system. Power reliability has become a critical issue in the wake of devastating natural disasters, long-term blackouts and power interruptions. Most users resort to connection methods that can result in unsafe installations and damaged equipment because they need to connect generators and large portable equipment to electrical systems. The Quick-Connect Double-Throw safety switch provides a low cost, reliable connection point to maintain uptime and conserve perishable inventory. Go to www.eaton.com for additional information.



DEWALT announced the introduction of its heavy-duty 5.5 HP, 10.5-gallon, gas wheeled portable compressor (D55273). This new compressor is a powerhouse of features all developed to provide end users with increased levels of performance, durability and ease of use. The D55273 offers a new pump with increased air delivery and maximum pressure, allowing more users to work from the same compressor. Additionally, a unique cooling system extends pump life and an innovative roll cage/tank/handle design and two non-flat tires gives the unit rugged protection and improved mobility on the jobsite. For additional details visit www.dewalt.com.



Hobart Brothers' introduces its new Tri-Mark TM-101 gas-shielded flux cored wire, designed for A514, A710 and similar HSLA and Q&T steels. Heavy equipment manufacturers now have a new option for welding high strength steel. The TM-101 offers a combination of exceptionally low temperature impact toughness, along with tensile strengths in the 105,000-115,000 psi range. The TM-101 is available in .045- and 1/16-in. diameters and features a smooth and stable arc, low spatter and a flat bead profile. For more information call 800-424-1543.



John Deere announces the electric-powered Gator™ TE utility vehicle. Featuring 4-ply high-performance tires for longer wear on hard surfaces while continuing to provide low ground pressure to help prevent ground compaction. Ideal for turf care managers, the TE Gator features an expanded operator station with comfort features, an anti-rollback function, overspeed, roll-away control for safety, dynamic braking and speed control. Attachments for the TE Gator include a power lift, rear hitch, rear receiver hitch, utility carts and trailers, ball hitch, hitch drawbar, horn, brush and splash guards, bumpers, windscreen, bed liner, cargo box mat, vehicle cover and seat covers. Visit www.johndeere.com for details. 



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April 15-19—Supervisor's Toolkit: Nuts and Bolts of Facilities Supervision. San Jose, CA.

July 15-17—APPA 2007: Back to the Future. Baltimore, MD.

Sep 9-13—Institute for Facilities Management. Phoenix, AZ.

Sep 9-13—Supervisor's Toolkit: Nuts and Bolts of Facilities Supervision. Phoenix, AZ.

Other Events - 2007

March 1-3—General Education and Assessment. Miami, FL. Contact: www.aacu.org.

March 12-13—2007 International Conference on Biocontainment Facilities. San Diego, CA. Contact: www.tradelineinc.com/conferences.

April 2-4—2007 AUDE Conference. Association of University Directors of Estates. Bath, United Kingdom. Contact: j.cyles@bath.ac.uk.

April 16-17—Lean Management Models for Capital Projects & Facilities Management. St. Petersburg, FL. Contact: www.tradelineinc.com/conferences.

April 23-24—Fire Safety, Law Enforcement, and Emergency Medical Services. Columbus, OH. Contact: www.campusfiresafety.com.

May 7-8—Research Buildings 2007. San Diego, CA. Contact: www.tradelineinc.com/conferences.

July 7-11—SCUP-42—Shaping the Academic Landscape: Integrated Solutions. Chicago, IL. Contact: www.scup.org.

July 21-24—NACUBO's Annual Conference. National Association of College & University Business Officers. New Orleans, LA. Contact: www.nacubo.org/x41.xml.

Oct 28-31—NACAS 39th Annual Conference. National Association of College Auxiliary Services. Las Vegas, NV. Contact: www.nacas.org.

Dec 3-4—Academic Medical Centers: Capital Projects & Facility Management. San Diego, CA. Contact: www.tradelineinc.com/conferences.

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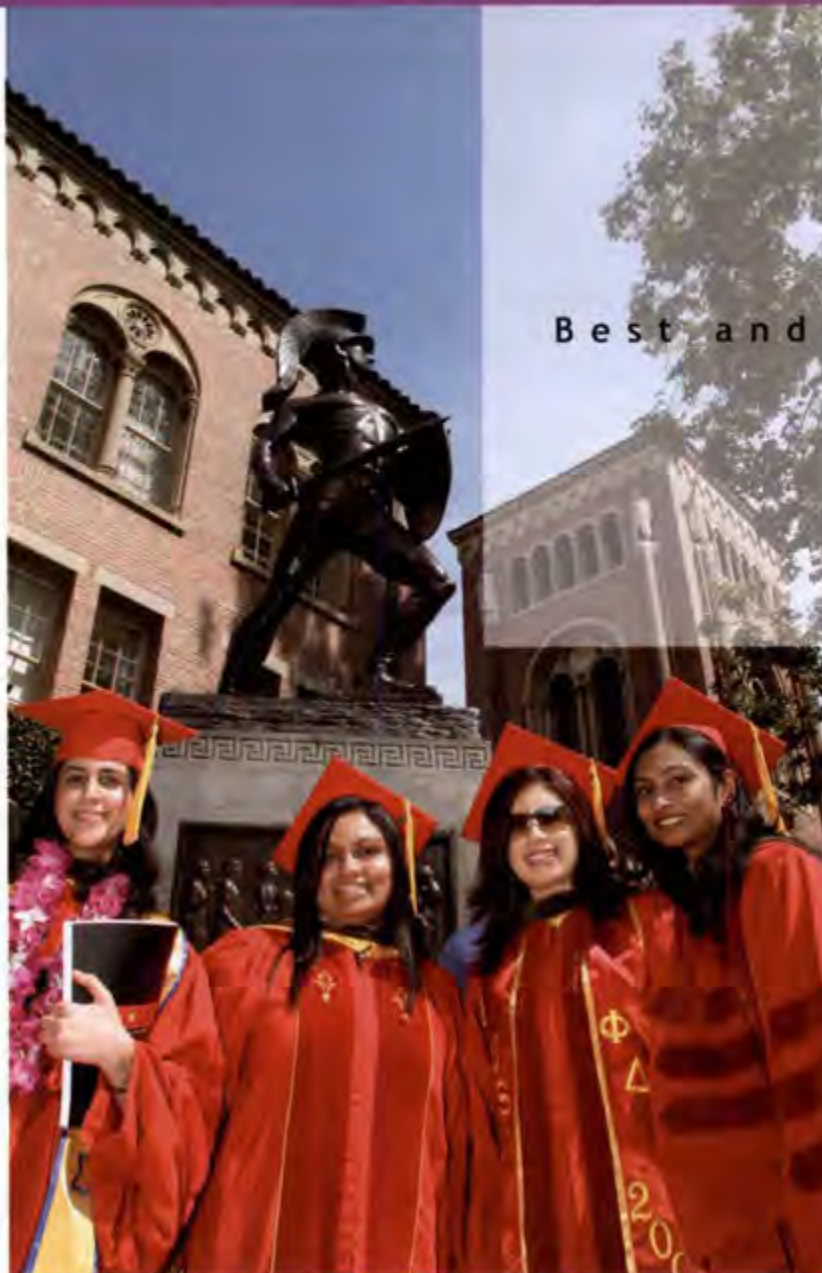
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