

September/October 2006

VOLUME 22

NUMBER 5

Facilities Manager

THE OFFICIAL PUBLICATION OF APPA

President

Chris
Ahoy

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Facilities Manager

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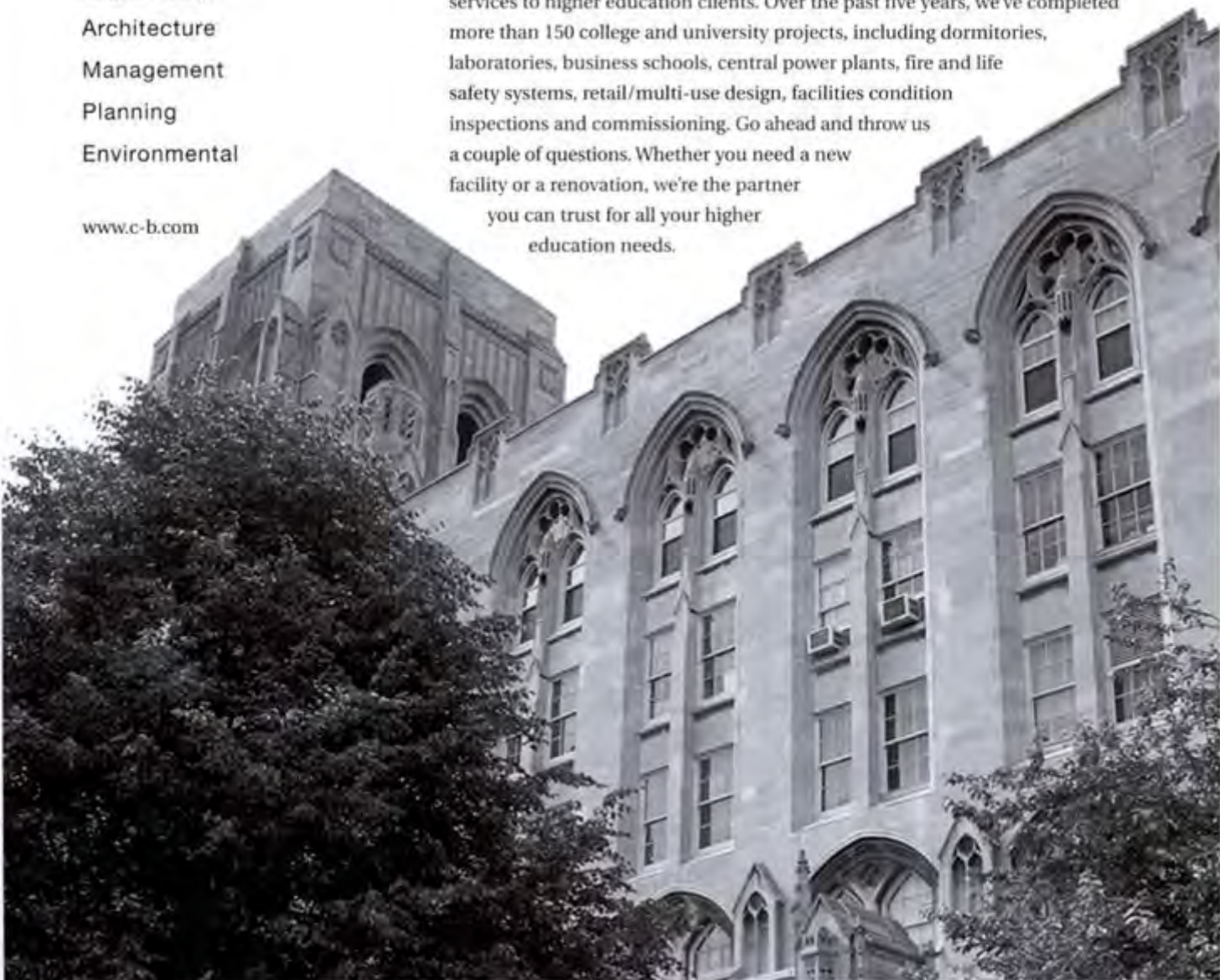
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From the Editor

by Steve Glazner

APPA's annual Facilities Core Data Survey is well underway at this time, and we invite all educational institutions to complete the survey for the 2005-06 fiscal year. You do not have to be a member institution of APPA to participate.

Developed by APPA's Information & Research Committee, the Facilities Core Data Survey contains 12 modules that collect data on strategic financial measures, costs per square foot for several facilities functions, building age and space use, personnel costs and staffing levels, and much more.

The Facilities Core Data Survey is conducted on an annual basis, and the resulting Web-based reports, published as *Facilities Performance Indicators*, include both costs-per-square-foot comparisons as well as Balanced Scorecard strategic measures.

The format of the Facilities Core Data Survey allows you to complete as many or as few of the modules as you wish, depending upon your interest or institutional need or strategy. This important data raises awareness of current facilities conditions and encourages careful and judicious planning for future capital needs and spending. With solid data from the Facilities Core Data Survey, you will be better equipped to tell your story to campus decision makers and to budget and plan more effectively.

The 12 modules are:

- I: General Data
- II: Operating Costs
- III: Strategic Financial Measures
- IV: Financial Performance Self-Evaluation
- V: Internal Processes
- VI: Internal Processes Performance Self-Evaluation
- VII: Innovation and Learning
- VIII: Innovation and Learning Perfor-

mance Self-Evaluation

IX: Customer Satisfaction

X: Customer Satisfaction Performance Self-Evaluation

XI: Personnel Data and Costs

XII: Comments for Survey Improvement

Upon completion of several modules you will have access to a number of instant reports based upon your responses. When all the data has been analyzed, all participating institutions will receive a customized report showing comparisons of their data to other participants.

The *Facilities Performance Indicators* report for the 2005-06 survey will be published as a Web-only document and database, and survey participants receive a discount. In addition, schools that participate are able to view a "private" version of the database that identifies the participating schools and their responses. We urge you to participate in the 2005-06 data collection effort, and to urge your system or aspirational peer institutions to participate as well.

APPA is very pleased to recognize Archibus, Inc.

[www.archibus.com] as a partner in providing an extensive set of dashboard indicators as part of our *Facilities Performance Indicators* report. When you order the current *FPI* report, for 2004-05, you will find a series of dashboard gauges that enhance the already rich results of the survey. To order, visit

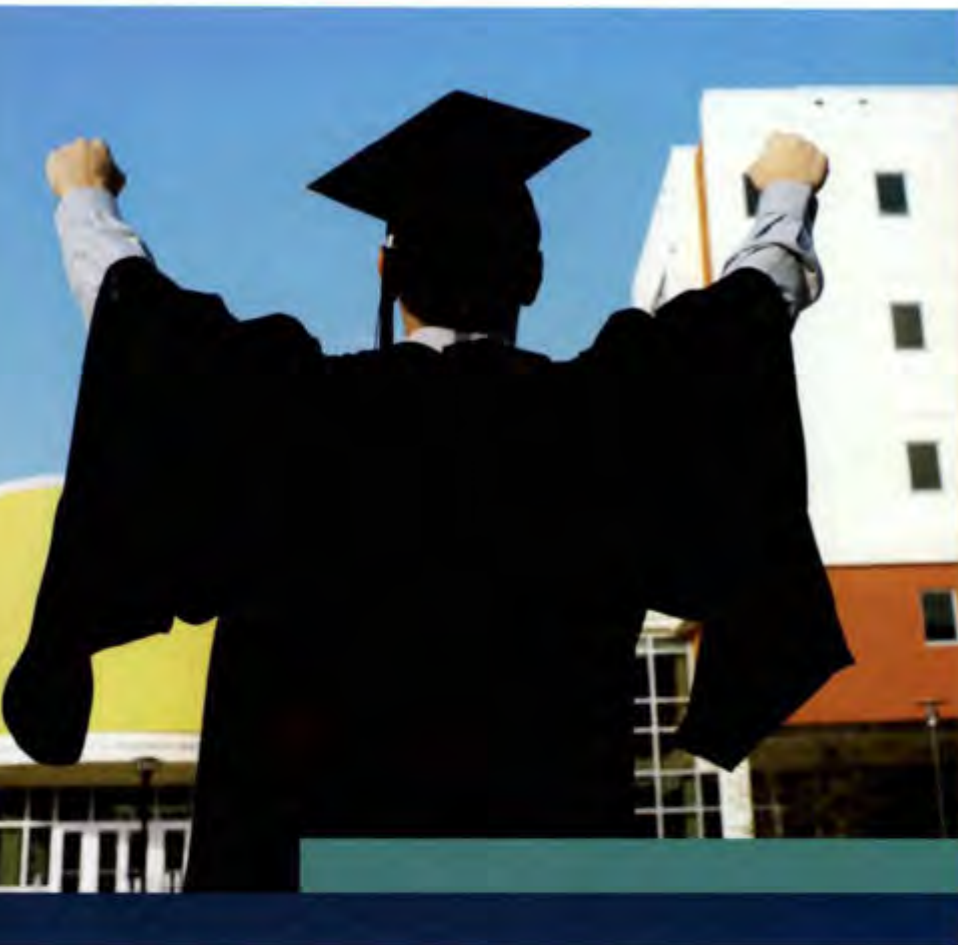
www.appa.org/research/fcds/index.cfm.

To participate in the 2005-06

Facilities Core Data Survey, visit

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Thank you for contributing to the educational facilities body of knowledge. 🏛️



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by Julie Ecker

Two CFaR Studies Released

In a press conference held during the Campus of the Future conference in Honolulu, Hawai'i in July 2006, APPA announced the release of two major sponsored research projects. The Center for Facilities Research (CFaR) presented the findings from the projects to standing-room-only crowds and broad interest across all sectors of educational professionals in attendance at the conference. The two studies, *The Impact of Facilities on Recruitment and Retention of Students and Buildings—The Gifts that Keep on Taking* were both conducted by CFaR. Information on the studies and their principal investigators can be found on the APPA website at www.appa.org/news/index.cfm, or can be obtained by contacting Jill Amstutz at 703-684-1446 ext. 238, or Steve Glazner at ext. 236.

APPA and ASHRAE Agreement

This summer, during the Campus of the Future conference in Honolulu, Hawai'i, APPA and the American Society of Heating, Refrigerating, and Air-Conditioning (ASHRAE) signed an agreement to support a Memorandum of Understanding to advance and promote the mutual interests of engineering and facility professionals. Some goals of the agreement include identifying opportunities for shared services, promotion, and sales of member products and services; creating and identifying new products and services, and encouraging collaborative and cooperative activities to promote continuing professional development. This partnership agreement provides the framework for action and guidelines for interaction between ASHRAE and APPA.

Jazz It Up!

Make plans to attend the ACUHO-I Jazz It Up! Workshop Quintet, **October 8-10, 2006** in Jacksonville, Florida. This workshop will be a great meeting of the minds as housing and facilities professionals will be able to share and exchange an abundance of ideas to enhance their own programs. If you have ever wanted to attend one of the other great ACUHO-I Committee Workshops and couldn't fit it in, now is your chance to double your development and attend all of them at once. A wide variety of program topics will be offered from all five areas, including facilities. Make sure to take advantage of sessions that interest you outside of your typical workshop. Visit the Jazz It Up! website at www.acuho-i-jazzit-up.org for more information.

Elevator and Escalator Safety

The Elevator Escalator Safety Foundation (EESF) will conduct its National Elevator Escalator Safety Awareness Week November 12-18, 2006. EESF needs your help to celebrate "Safety Week" by promoting public safety awareness for the industry's equipment across the U.S. and Canada. Companies and organizations can spread the word about public safety as well as celebrate the contributions made by the industry to the quality of life. Contact EESF at 800-949-6442 to receive a free Planning Guide to help you organize and implement your own "Safety Week" celebration. The guide includes safety handouts, payroll stuffers, public displays, media tools, and local and state government proclamations. For more information, visit www.eesf.org.

Stewardship & Accountability

APPA recently published a new book, *Stewardship & Accountability in Campus Planning, Design & Construction*, edited by Donald J. Guckert. The 12 chapters in this book are from facilities PDC experts who offer the tools you can use to build your reputation as educational facilities professionals. Topics covered include the high cost of building a better university, design decisions and the campus image, facilities masterplans, building codes, making a business case for sustainability, paying for the architect's mistakes, green building design, design decision-making for total cost of ownership, and much more. To purchase this new publication, visit the APPA Bookstore at www.appa.org/applications/publications/index.cfm.

Structural Steel Projects Win Awards

Eleven structural steel building projects have earned national recognition in the 2006 Innovative Design in Engineering and Architecture with Structural Steel awards program (IDEAS2), including two higher education institutions. Conducted annually by the American Institute of Steel Construction (AISC), the IDEAS2 awards recognize outstanding achievements in engineering and architecture on structural steel projects around the country. **Williams College '62 Center for Theatre and Dance** in Williamstown, Massachusetts is the National Winner in the Projects \$15-75 million category. **San Bernardino Valley College**, Master Plan & New Buildings in San Bernardino, California was awarded a Presidential Award for Engineering Excellence. Congratulations to both of these award winners. 🏆

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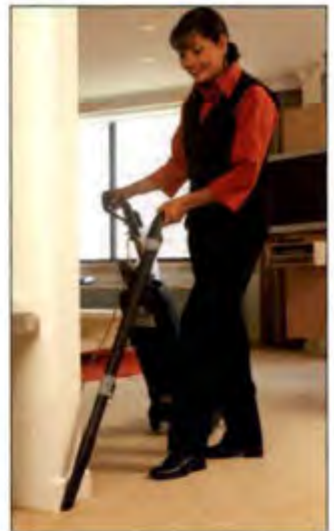
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Executive Summary

Learning How to Learn... and to Change

by E. Lander Medlin

We are all being impacted by such drivers of change as competition, accessibility, affordability, accountability, technology, and demographics. However, the critical question remains: "Will we shape the future of education and our workplace or will we be shaped by the future?" What you continue to learn and apply in your daily work, how your team plans for this new future, what you choose to care about and practice daily, and how seriously you take your stewardship responsibilities for the future will make all the difference in the shape of your institution or organization and its ability to respond to its future challenges and opportunities.

As I sat and listened to the plenary session at the Campus of the Future conference in Hawai'i this past July, I was struck by two statements/questions posed by the speaker, Pulitzer Prize author Thomas Friedman, the *New York Times* journalist and author of the book *The World Is Flat: A Brief History of the 21st Century*.

- "The global economic playing field is being leveled and you Americans are not ready." (A quote through Friedman by the CEO of the Indian company, Emphasis, Inc.)
- "When the world is flat, whatever can be done will be done. Therefore, will it be done by you or to you?"

Higher education is not immune to the fact that everything is changing (or has changed) radically. In fact, higher education is in a pivotal position to impact our future as an economic power. Indeed former gov-



ernor of North Carolina, James B. Hunt, and Patrick Callan of the Center for Public Policy in Higher Education, have stated that higher education is the fuel for the world's economic engine. So our fundamental challenge is to get more people better educated. Or, as Thomas Friedman so aptly put it, "We don't need more education; we must have the 'right' education." This becomes extremely important since jobs will go to the most efficient and effective, smartest and cheapest producers. Unless your job is specialized in its nature or anchored and localized in its delivery, most remaining jobs will be outsourced, automated, or digitized. Therefore, to be marketable in this new global marketplace, you must possess skills, abilities, and talents that have become critical to the global workplace which creates the kind of value that makes you "untouchable." So why is this important information for those of us in higher education and facilities in particular to pay attention?

What we need to focus on in education in general, to prepare our

students for this future competitive global marketplace, is the same thing (skills, talents, and abilities) we need to focus on in the facilities environment to effectively recruit and retain the best and the brightest individuals as employees. Frankly, the stakes are just as high in this regard since the Baby Boomer generation is leaving the workplace in vast numbers and a lesser quantity of Generation X and Millennial generation are entering that workplace.

Thomas Friedman highlighted several highly important skills, talents, and abilities we must focus on if we are to prepare our students and our workforce for the "new" middle-class jobs. Individuals must become:

- **Great collaborators**, especially internationally, as the knowledge, service, and manufacturing entities build larger supply chain networks
- **Great leveragers**, especially of technology, where one person can do the job of 20 people
- **Great explainers**, where the understanding of the world's complexities can be reduced and ultimately produces explanations that expand beyond one individual to another individual, to one individual to 1,000 individuals
- **Great localizers**, where people are more effectively able to use these new global platforms to create successful local businesses
- **Green-savvy**, since technology and clean power will be one of a few great growth industries
- **Passionate personalizers**, by the ability to bring passion to that which is seemingly "plain vanilla" and making it even more special through invoking their passion
- **Great adapters**, where the focus on constant adaptation ensures you are one step ahead of the pack

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

Thomas Friedman shared a wonderful illustration of both the complexity and uncertainty of the future and the change(s) upon us. He said, "Training for an Olympic job market is like entering the Olympics not knowing in what sport you are going to compete." It requires us to focus on engaging in continuous learning, stimulating our passion and personal touch, and inspiring innovative thinking and approaches to our problems and issues.

I can safely say the turning point in a person's life is when he or she learns how to learn. It is at that point the world opens up to you. You now possess your "entrance card." Before this occurs, you are just a "worker bee" with no real ability or confidence to contribute in critically important and meaningful ways to the organization.

Photo by Chris Christensen



Thomas Friedman

So the questions to explore as you look at your workplace today are:

- What environment are you creating to ensure your staff is engaged in continuous learning activities and actively applying that new knowledge?
- What environment are you fostering to ensure you are igniting your employees' passion, not extinguishing it?
- What environment are you inspiring that encourages innovation and creativity?

And finally, what can APPA do to aid in your and your staff's professional growth and development in order to achieve the organizational excellence your institution deserves? 🏆

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Membership Matters

Membership Really Does Matter

by Brooks H. Baker III

While my son Hop was in school at Auburn, he would often come home and help me around the farm getting hay cut and baled and tending to our herd of cattle. Hop graduated this past summer with a degree in horticulture. He hopes that he can continue some sort of career in agriculture.

One particular evening after working all day in the fields, we came in for our evening meal that my wife Virginia had prepared. Some of you may wonder why I call it the evening meal, but I said it that way to avoid confusion. Those of us in the deep south still use the term "supper" as the evening meal and "dinner" for the noon meal. That is when the dinner bell rings, and we can't figure out why other areas of the country remain confused and call the evening meal dinner.

It was unseasonably cool that night, so we decided to eat our meal on the front porch. We all joined Clyde, Hop's dog, on the front porch in the porch swing and in the rocking chairs to enjoy our meal. While sitting there, I remembered that I had a problem with a piece of equipment during the day and needed some advice. I rudely dialed the telephone while everyone else was eating and called my friend Max, who has a farm nearby, to ask him a question about the problem we were having with our round hay baler. Max and I talked for a while and I got the information that we needed and quickly went back to



enjoy the meal that Clyde was coveting.

By now some of you are probably wondering, "Why is Brooks wasting my time with stories about his farm when he is supposed to be writing about 'membership matters'?" I'm sharing this story because that particular experience while eating our supper that night reminded me of one of the most important values that we can receive from APPA—the ability to collaborate with others when needing advice or counsel. Max was able to help me with information that I needed to do my job better on the farm, and many of you have been able to help me gain the information and insights needed to do my job better at UAB.

Whenever I have a question about a technology that is being touted (remember the guy who wants to sell you the magnets for the cooling tower?), I can pick up the phone and call you and ask about your experience with that technology. The answers will be from people whom I can trust and who have similar work experiences to mine. For that reason I value their advice and count on it to be reliable. Sometimes it is just nice to have a friend in business who we can call to bemoan the fact that budget

cuts are once again coming our way and who can provide guidance regarding modifications to our service and delivery in order to accommodate those cuts.

There are a lot of people who have cattle farms and hay baling operations similar to mine, but I chose to call Max. Why? Well, I see Max periodically at church or around the community and we run into each other at the cattleman's meetings, and we have built a relationship over the years.

In order to be able to take advantage of APPA membership to its fullest extent, we need to build relationships by attending the tremendous educational programs that APPA offers, such as the Institute, the Academy, regional meetings, and chapter meetings. Not only do we gain valuable information from attending these meetings, but we build relationships which will enable us to pick up the phone and call someone who may have seen the same problem that we are currently having and provide that sage advice that we need.

While you are reading this article, think of others in your organization at work that could benefit from the collaboration with others outside your institution. Those who are working in educational facilities operations or planning, design, and construction can all benefit from the network of peers who have the same experiences every day during the course of their work. If you could benefit from membership at APPA, think about how they could also benefit from an APPA membership. The price to become an APPA member is not costly when considering the benefits that abound. 🏠

Brooks Baker is the associate vice president for facilities at the University of Alabama, Birmingham, and a past President of APPA. He can be reached at bbaker@fab.uab.edu.

Facts for a Better Future

by Maggie Kinnaman, Gary L. Reynolds, P.E., and Michael J. Sofield

The Information and Research Committee has a unique responsibility within the APPA organization. Jack Colby, APPA's Immediate Past President, articulated the role this way, "The APPA *Facilities Management* manual represents the existing body of knowledge related to our profession. The Institute for Facilities Management and the Leadership Academy teach the body of knowledge. The APPA Annual Conference reinforces the body of knowledge, and the Information and Research Committee and the Center for Facilities Research (CFaR) expand the body of knowledge."

In today's dynamic world, the ability to continually expand our knowledge as facilities professionals is critical in ensuring that our profession remains a valued partner in the education enterprise. Thus, CFaR was created to "advance the body of knowledge of facilities management through research, discovery, and innovation." From this broad mission statement there are six definable outcomes:

Maggie Kinnaman is the director for business administration, division of facilities management, for University of Maryland, Baltimore; she can be reached at mkinnaman@af.umaryland.edu. Gary Reynolds is the director of facilities services at Colorado College, Colorado Springs, Colorado; he can be reached at greynolds@coloradocollege.edu. Mike Sofield is the director, facilities planning and operations, at the Smithsonian Institution's National Museum of American History, Washington, D.C.; he can be reached at sofiemi@si.edu.



CFaR | Center for Facilities Research

- Identifying needed research areas.
- Expanding and strengthening the facilities body of knowledge.
- Engaging more constituents/stakeholders in research.
- Ensuring stability and continuity of the research initiative.
- Consolidating existing and future facilities-related research.
- Improving access to facilities research information.

The sixth outcome is the reason for this article. While individual

research projects will provide their own reports, such a critical role deserves additional outlets for important information. Therefore we invite you to peruse a new standing column within *Facilities Manager* called "Knowledge Builders." These columns will provide you with the latest research results, reviews of data collection from the Facilities Core Data Survey and the *Facilities Performance Indicators* report, and alert you to publications and other research addressing critical issues that you are faced with every day.

It is our intent to provide you with the latest information that will ensure that you can do your job competently and within the larger context of your institution and the education environment. Watch for articles on such topics as: the dashboard and *Facilities Performance Indicators*, the Asset Investment Strategy, the Needs Index, and CRDM funding, to name a few.

Have we piqued your interest yet? We certainly hope so because in the last two years, over ten major research projects have been completed under the CFaR umbrella, all with useful information. So look for "Knowledge Builders" in upcoming issues of the magazine and let us know what you would like to see in future articles. 🖱️



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General Session Speakers



Thomas L. Friedman



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The President's Award

The President's Award is given to APPA members (both individuals and groups) who have demonstrated exceptional achievements in facilities management and who have made outstanding contributions to the association. Jack Colby presents the award to four deserving members.



Brooks Baker



Bill Bell



Rod Rose



Terry Ruprecht

CFaR Research Awards



Lander Medlin and Mike Sofield present CFaR Researcher Awards to Don Guckert and Chris Ahoy. Not pictured is Rob Quirk.

Brigham Young University students, led by Jeff Campbell, received the CFaR Student Researcher Award.



Rex Dillow Award



Roger Rowe

Roger Rowe received the Rex Dillow Award for Outstanding Article in Facilities Manager



Meritorious Service Award

Each year the Meritorious Service Award is presented to the individual member(s) who have made significant, life-long contributions to the profession of educational facilities management. This year's recipients are:



Harvey Chace
University of New Mexico



Cheryl Gomez
University of Virginia



Mike Sofield
Smithsonian Institution

Pacesetter Award

The Pacesetter Award is designed to further encourage participation in APPA among those who have already made significant contributions in their regions or chapters. Below are the 2006 Pacesetter winners.



*Presented by Alan Bigger, r. From l-r, Mark Hunter, Nancy Hurt, John Morris, Art Sykes
Absent: Fred Long, Scott Turley, Keith Woodward.*



APPA Fellow

APPA's highest individual achievement award, the APPA Fellow designation brings with it both recognition of specific accomplishments to date and expectations for continuing involvement in APPA's leadership through research and mentoring. Three new APPA Fellows were honored by Jack Colby.



Chris Ahoy
Iowa State University



Don Guckert
University of Iowa



Gary Reynolds
The Colorado College

2006-07 Outgoing Regional Reps



Dave Brixen, Chris Christofferson, and Ron Dupuis,
with Jack Colby. Not present: Bill Elvey, Art Jones,
and Clay Shetler.

2006-07 APPA Board of Directors





Award for Excellence

APPA's highest institutional honor is the Award for Excellence in Facilities Management. This award recognizes those educational institutions whose facilities management organizations have demonstrated excellence in overall operations and effectiveness. There were three AFE recipients in 2006.



Smithsonian Institution



University of Alabama
at Birmingham



University of Michigan

Effective & Innovative Practices Award

The Effective & Innovative Practices Award recognizes programs and processes that enhance service delivery, lower costs, increase productivity, improve customer service, generate revenue, or otherwise benefit the educational institution. Presenting the cash awards with Alan Bigger and Jack Colby is Al Allen of Sodexo Campus Services. The 2006 awards go to:



Bryn Mawr College



California State University-
San Bernardino



Georgia Institute of Technology



University of British Columbia

Not present:
Brown University

Eagle Award

The Eagle Award is given to those individuals who, on behalf of their company, have found additional ways to partner with APPA on projects and programs. This award is given only when merited and is awarded this year to David Cain of Carter & Burgess, Inc.



Individual Rising Star Award

The Individual Rising Star Award is given to Business Partner staff members who are "up and comers" in APPA's eyes.



Pat Garibay, Trane



Brad Peterson, Archibus, Inc.
Not present: Michelle Frediani,
Carter & Burgess, Inc.

APPA 2006 Business Partners

APPA's Business Partners provide products and services to the facilities management marketplace or have an interest in reaching facilities managers in the educational environment. We appreciate the support of our Business Partners and present the 2006 award recipients below.

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Nalco Company



Trane



Turner Construction Company

Not pictured: R.S. Means, SDI, Incorporated, and Western Telecommunication Consulting



2006 BRONZE AWARD RECIPIENTS



Adams FM2



GLHN Architects & Engineers, Inc.



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Not pictured: The Sextant Group

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President
Christopher K. Ahoy

EMBODIES INTERNATIONALISM, DIVERSITY, AND QUALITY

by Ruth E. Thaler-Carter

Campus photos courtesy of Iowa State University

In an era of increasing global interconnectivity and cultural diversity, who better to lead APPA this year than a member who is international and diverse by his very birth and nature? That would be Christopher K. Ahoy, associate vice president for facilities planning and management at Iowa State University in Ames. Ahoy brings a deep-seated commitment to communicating, quality, and networking to his role as the association's new president.

"The world is getting smaller, and the APPA vision of being global is appropriate," says Ahoy. "We have to embrace the world, and borrow and learn from each other. We have to look at and serve the local, regional, and international levels of our membership and those who wish to join us, and ensure they see us as the 'Association of Choice.'"

A Multicultural Background

Born in West Bengal, India, about 100 miles from Mount Everest, Ahoy is fourth-generation Chinese. Nepalese is his mother tongue and he speaks four East Indian dialects. The oldest of ten children, he is a great-grandson of a

renowned greenhouse builder who migrated from southern China, via Hong Kong and Singapore, to India during the rule of the British Raj; grandson of a municipal engineer and contractor of record for the first American coeducational high school for the Seventh Day Adventists in Darjeeling, India; and son of a civil engineer.

He grew up in an ethnically diverse community in his small Himalayan hometown of Kalimpong and began school at the tender age of three. "The Irish and German nuns taught me discipline; good, time-honored habits; and ambition," he says. "My education with Nepalese, Bhutia, Lapecha, Sikkimese, Tibetan, Indian, and Anglo-Indian schoolmates gave me an appreciation of diversity and universal religious upbringing"—an ideal springboard for the new APPA President.

Ahoy went from a Catholic convent school to a Lutheran high school in Kalimpong, then to a school in Kurseong for British Army Officer's children in India—a "Harry Potter-like system," he recalls—and then to St. Xavier's College in Calcutta as a physics major. After passing an intensely competitive entrance exam (25,000 to 35,000 prospective students competed for 300 openings that year), he went on to India's first premier engineering college, the Indian Institute of Technology in Kharagpur, Bengal, India.

Ruth Thaler-Carter is a frequent contributor to Facilities Manager. She is based in Rochester, New York and can be reached at ruth@writerruth.com.



Above: 2006-07 APPA President Chris Ahoy receives the ceremonial gavel from outgoing president Jack Colby.
Below: President Ahoy and President-Elect Alan Bigger share a laugh at the APPA banquet in Hawai'i.

Ahoy's early years were not without difficulty, with challenges on levels that most APPA members have never experienced. Although they may have shared similar financial situations, obtaining most of the funds for their education through grants and scholarships, and colleagues of various backgrounds have battled discrimination, few have seen their loved ones endure conditions faced by the Ahoy family. Many family members were incarcerated for seven years during the India/China border war. Ahoy was only able to continue classes "with restricted access to the outside world and with an assigned Indian government security guard, 24 hours a day." Despite these travails and only a meager stipend, he completed an architectural/engineering degree with honors. Although officially stateless, he received financial-aid offers from institutions in both Canada and the United States, and chose to accept a University of California Regents' Fellowship.

Thanks to a British-subject passport from the British High Commission in Calcutta, India, and a grueling journey to the U.S.—"gifts from Providence," as he calls them still—Ahoy ended up at UC-Berkeley. He received his master's degree in architecture nine months later, completing a thesis on systems analysis applications in architecture. His mentor, Joseph Esherrick, FAIA, brought Ahoy into his firm. "We got along very well, solving architectural problems from a mathematical and



"The world is getting smaller, and the APPA vision of being global is appropriate. We have to embrace the world, and borrow and learn from each other."

systems point of view," Ahoy says. "It was a unique opportunity to form high principles and integrity by mirroring the firm's four principals: Esherick, Homsey, Dodge, and Davis—a privilege."

At Gensler and Associates, Ahoy absorbed "a long-lasting lesson" that he applies to his work today, both on campus and in APPA—that "the customer truly has the biggest voice, since the customer 'foots the bill,' and any endeavor ultimate-



Iowa State University, Ames, Iowa, is among three central campuses on a national architects' centennial list of great sites.

ly depends on customer satisfaction." Ahoy is committed to listening to the voice of the customer, whether that is an APPA member or a campus community member. He focuses on bringing "process improvement methodologies to match existing culture... for the organization to embrace 21st-century business practices."

Moving into Facilities Management

Architecture and engineering do play important roles in building and maintaining campus facilities, of course, but how did someone with such academic training and background end up not just in facilities management, but as leader of the profession's premier association? The practical necessities of life were the initial catalyst.

"I'm a very good architect and systems person," says Ahoy. "I looked around, and most of my colleagues were in information technology. I had a wife to support, and I was trying to bring my family to the U.S. from India. I saw an opening at UC-Berkeley. Elmo Morgan, then vice president for physical facilities for the UC system and interim UC-Berkeley assistant vice president for facilities, hired me as an assistant campus architect to be in charge of a maverick group in facilities management, handling projects from \$5,000 to \$25,000." That is where Ahoy's career path merged with APPA.

Gaetano Russo, assistant vice chancellor for facilities, opened up many new opportunities for Ahoy at the Berkeley campus, including serving as university architect and assistant director for facilities.

Eventually, though, "I wanted more responsibility and I wanted to see more of the world," he says. He was able to do both. In 1980, Ahoy accepted a position as system-wide director of facilities planning and construction for the University of Alaska System of Higher Education, working for Sherman Carter, executive vice president for business and finance, who became a good friend and valued colleague. "We managed three universities, 11 community colleges, and 22 experimental stations and extension centers throughout the state of Alaska. I traveled all over Alaska, using all modes of transportation—even mushing on dogsleds."

That experience was another link in Ahoy's diversity chain. "I had experiences similar to those of the Aleutian Eskimos,"



Nearing completion is ISU's Student Success Center, which will highlight academic and athletic achievements and services.

Ahoy focuses on bringing "process improvement methodologies to match existing culture... for the organization to embrace 21st-century business practices."

he says. "They looked like me, and some had also had been interned during World War II, because they looked Japanese."

Ahoy spent six-and-a-half years in a successful career in Alaska. Then the university offered him early retirement with health benefits. He accepted, and returned to the San Francisco Bay area. Once back in "the lower 48," Ahoy launched his own business, doing beta software testing for MIT and com-



Built in 1936, the Christian Peterson Fountain consists of a vertical waterspout and a simple reflecting pool.

puterized space accounting for UC-San Francisco. "I had a homegrown computer lab in my basement for seven years." When his wife was badly hurt in a car accident, a more traditional work life was necessary. "I knew I was best suited for working in an educational setting," says Ahoy. He accepted a position with the University of Nebraska system, serving in a dual role as assistant vice president for business and finance and as director of facilities, planning, and management.

While in Nebraska, Ahoy became fascinated with the Malcolm Baldrige quality approach, Balanced Scorecard for metrics, and the Lean and Six Sigma philosophies of process improvement. However, he found the large bureaucracy "unbudging" in accepting such new techniques for achieving excellence. Seeking a more flexible and open environment, Ahoy joined Iowa State University in 1997 as associate vice

president for facilities planning and management. After hearing that Iowa State University President Martin Jischke had taken people to Texas Instruments to learn the Baldrige principles, he was happy that he had accepted the position.

APPA and Regional Activities

An APPA member for more than 24 years, Ahoy has been deeply involved in the association at the local, regional, and international levels, and brings to his presidency a lifelong interest in both the international perspective and involvement



Ahoy is proud of Martin Residence Hall, one of two suites buildings on campus.

in other professional associations. He was chair of the MAPPA education committee from its inception and MAPPA's representative to the APPA education committee from 1999–2003. He continued serving as chair of the education committee after becoming MAPPA's president-elect in 2003. He also has served as the State of Iowa membership representative for two years and as secretary of MAPPA for two years.

Ahoy was MAPPA president in 2004, and APPA President-Elect in 2005-06. Ahoy received APPA's Pacesetter Award in 2002 and the 2003 APPA Award for Excellence in Facilities Management for his institution, was a 2004 recipient of the

Beardshear Hall, built in 1900, houses ISU's central administration, including the offices of the president and provost, and the student help center.



APPA Meritorious Service Award, and was honored as an APPA Fellow in 2006. His organization received the State of Iowa's Baldrige-based, top-level Iowa Recognition Performance Excellence (IRPE) award in 2005.

Colleagues have benefited from Ahoy's insights into the value of membership and its role in professionalism over the years through his contributions to the professional and association literature, including a regular column for *CampusFacilities.com News*. His project for APPA's Center for Facilities Research, "Negotiating Win-Win A/E Professional Services Agreements," was summarized in the July/August issue of *Facilities Manager*.

A participant in association programs, as well as a leader, Ahoy is a graduate of the APPA Institute of Facilities Management and APPA's Leadership Academy. He has belonged to

or served the Big 10 and Friends, Big 12, CAPPA, and Texas APPA through speaking, writing, and teaching, continually promoting focused interest in facilities planning and management.

Ahoy's professional development service outside APPA includes serving as a judge for the American Council of Engineering Companies (ACEC) for the past three years and as chief judge for 2005-06. He is a certified senior examiner for Iowa Recognition for Performance Excellence (IRPE), which uses the Malcolm Baldrige National Quality Award criteria, and he has been a certified trainer in the Iowa Manufacturing and Extension Program in Value Stream Mapping and Management since 2003. This year, he was appointed by the director of the National Institute of Standards and Technology (NIST) to the Board of Examiners for the Baldrige award, created by public law in 1987 as the highest level of national recognition for performance excellence that a U.S. organization may receive.

Ahoy also is involved with his local Chamber of Commerce and Rotary and he brought the University of Nebraska recog-

"APPA has given me the world. I've been to about 76 sites, locally, nationally, and internationally, on behalf of ISU and APPA."

nition from ACEC for its quality-based initiatives. He has received other awards too numerous to list.

Common Challenges

For Ahoy, being at Iowa State University has been fulfilling and challenging, and his APPA involvement has been a positive factor in his efforts. In fact, the two responsibilities tend to fuel each other. "In taking the facilities organization here toward becoming a world-class organization, I've had to overcome the 'prophet is not heard in his own land' situation, but APPA has given me the world," he says. "I've been to about 76 sites, locally, nationally, and internationally, on behalf of ISU and APPA, which also is giving visibility to ISU as well as credibility for my ideas and my passion for creating world-class operations."

Ahoy sees himself as good for APPA because "I'm a process person, and we're looking to see how we can align within the association, which is a formal process. One of these strategies is to brand APPA as the association of choice for our profession and to have everyone in APPA support our vision of becoming global partners in learning."

Continued on page 40



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Ahoy would like to see APPA improve by bringing the local chapters and regions more in alignment with international APPA. "We have to recognize that no one entity is as smart as all of us together," he says. He also would like to create a greater focus on the national scene by collaborating in the areas of education, research, and recognition, with more visibility and credibility throughout the association. To APPA's classic three Cs of desired outcomes, which he considers the building blocks of successful management (Credibility, Competency, and Collaboration), Ahoy has added Communication and Consistency. "We must be consistent and persistent," he says.

As APPA President, Ahoy intends to bring his dedication and passion for quality initiatives to the association's overall mission and efforts. Much as he challenges his colleagues at the university to change the way they look at process, he aims to strengthen the association through principle-centered direction, organizational structure, and imbuing people with purpose and passion. He says whimsically, "If you change the way you look at things, the things you look at change."

The most recent step toward Ahoy's vision for APPA—ever more inclusive, global, and diverse—is the addition of the new APPA Singapore international section, now in the process



ISU's power plant has operated since 1906 and contains seven boilers, four turbine generators, and five centrifugal chillers.

of being formed, with the National University of Singapore leading the Asia region.

Family remains central to Ahoy's every activity. In fact, he likes to say that "I still send report cards to my mother"—and it isn't really a joke.

"One reason I'm looking forward to serving as APPA's President is that I feel I can meld a variety of different backgrounds and interests into a success for the profession and the association," says Ahoy. "I believe we can become world-class. When you see such a goal, you own it." This truly international president is bound to help put APPA on the professional and international map in exciting new ways. 🏢



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2006 Effective & Innovative Practices Award Winners Show

APPA's Effective & Innovative Practices Award

continues to solicit and highlight an ever-growing list of wonderful programs and processes that enhance service delivery, lower costs, increase productivity, improve customer service, generate revenue, or otherwise benefit the educational institution. The five 2006 award-winning entries focused on staff safety, stormwater management, energy services performance, customer service achievement, and in-vessel composting.

Up to five E&I submissions are eligible each year for a cash award of \$4,000, which is generously sponsored by Sodexho Campus Services. Entries can describe either a new program or significant restructuring of an existing program or process for success. The Professional Affairs Committee selects the winning entries based on a point system. There were 24 entries this year from 20 institutions. The five successful schools received special recognition, and a check, at the joint APPA/ NACUBO/SCUP conference, the Campus of the Future: A Meeting of the Minds, in Honolulu, Hawai'i in July.

The deadline for the 2007 Effective & Innovative Practices Award is February 15, 2007. For more information or to retrieve the award application, please visit www.appa.org/recognition/effectiveandinnovativepractices.cfm.

Imagination and Practical Solutions





BROWN UNIVERSITY:

Safety Fair

By Carl O. Weaver

Carl Weaver is the former director of physical plant at Brown University, Providence, Rhode Island. This is his first article for Facilities Manager.

Brown University embraces safety training as an integral portion of its overall training program. Each year employees within the Facilities Management Department are required to complete several programs on various aspects of safety. Over the years these programs have become somewhat complacent and frankly a bit boring. In an effort to revive the overall safety awareness we embarked on the planning for a "safety fair." To ensure success we enlisted the help of our Environmental Health & Safety Department as well as our insurer and several vendors that supply our safety equipment.

We have now held the safety fair for two years and we have already begun plans for the 2007 safety fair. Of the 250 individuals that need to receive training we have had a 92 percent attendance rate each year. People who were either on vacation or on sick leave and will receive separate training. In an effort to determine the overall effectiveness of the fair we devised a test of 32 questions that addressed topics that were covered at each station. The test results were quite good as 93 percent of the attendees received a score of 85 percent or better. For those people that got more than five wrong answers, additional training in those areas was mandatory. We would estimate that we have saved many work hours by consolidating the training, not to mention that the safety knowledge attained at the fair was done in an interesting and fun environment. It is our belief that the knowledge gained at the fair will be retained longer than utilizing the traditional classroom lecture method.

Institutional Benefits

Brown has benefited in several ways by having an annual safety fair.

Congenial Environment. The safety fair was held in a different type of environment than the usual classroom type setting and it is our belief that "fair" type of environment fosters a more comprehensive learning setting than the classroom. The fair setting allows for various types of interaction. Participants were not only able to interact with the presenters but also with each other. As the people walked from table to table they were given a short presentation about a particular topic at each table and were able to question the presenters about the topic. Also, as they moved from table to table they also were able to discuss what they learned with each other which further enforced the learning experience. While the fair covers a great deal of training we also need to have some classroom sessions to meet OSHA requirements. This year we covered a one-hour session on Blood Borne Pathogens for 30 custodians and also a four-hour session on Fall Protection.

Condensed Time. We determined that the best time of year to run the safety fair was during Winter Break. This is a period where there is minimal university activity and therefore our physical plant personnel have time to devote to training without much interruption to their routine duties. We ran the fair over a two-day period of time. One day starting at 10:00 a.m. and ending at 3:00 p.m. and the second day starting at noon and ending at 5:00 p.m. This schedule allowed for each shift (AM, Day, and Evening) to have at least two hours of paid time to attend the fair. A mobile truck was parked outside of the area where the fair was being held, and we were able to perform the annual Hearing Conservation Program on the 60 individuals that required the testing. In addition, we arranged to have medical personnel administer respirator training, fit testing, and medical evaluation for 55 of the staff that utilize respirators.

Record Keeping. The condensed time period allowed for all of the records to be completed in a two-day period. Our old method consisted of a classroom setting of 15 to 50 people per session until all 250 staff was trained on each of ten topics. Typically the training would take the better part of a year to complete. At the fair each person was registered as they arrived at the site, which began the training log. When the test was graded, the log was completed and a copy of the test was filed with the log. If the individual was a candidate for a respiratory medical or hearing test, that information was made part of their record at that time. The shortened time-frame for training also allows for a quick analysis of the results, so that we can see where additional training may be necessary.

Expanded Expertise. The design of the fair was to have ten tables with a particular topic addressed at each table. Each table featured an expert in that field. Below is a table that illustrates the various topics as well as the presenting entity. Utilizing our past methodology, the presentations were

done on an in-house basis and therefore did not have the diversity of a multi-talented group.

Innovation and Creativity

The idea of having a safety fair did not originate with Brown University, but we did add some features that we have not found in other events. First of all, most fairs are generally a demonstration of a vendor's product and as people approach the table they are given a demo of the products and a sales pitch. What we did differently was to have each vendor describe their product in the context of safety training and to provide information to enable participants to answer the test questions as part of their presentation. The fair attendance is mandatory for all Physical Plant personnel. Each attendee had a printed test of 32 questions. Each table discussed the topic and, as the person listened to the talk, determined the answer to several multiple-choice questions. So as the people passed from table to table they 1) viewed a product; 2) viewed the product demonstrated in the realm of safety; and 3) received

specific verbal information that would help in the test completion.

The interaction between the attendee and the presenter was invaluable, as was the interaction among the attendees. Once each attendee turned in their completed test it was scored and, if a passing grade of 85 percent was achieved, their name was entered into a raffle. If the attendee's score was below 85 percent, they were sent back to the areas in which they experienced difficulty. They then returned to the scoring table and had their test recorded and they were then entered into the raffle. The raffle prizes (numbered about 25) consisted of tools, personal protective gear, artwork, and other items. In addition to the raffle, we also provided sandwiches, dessert, and drinks. It was interesting to overhear the discussions at the food tables. Rather than the usual conversations their discussion centered about safety.

Portability and Sustainability

Since all institutions need to provide safety training, this type of event could certainly be utilized by anyone. The topics

presented at each table could be the same or changed to meet the institutions unique requirements. One of the changes for our second safety fair included two separate rooms where a more in-depth discussion on specific topics was conducted.

In one room we presented training on Blood Borne Pathogens. The second room had a four-hour Fall Protection program for staff that regularly work at heights over six feet. Next year we will change these programs to Confined Space Rescue Training and Arc Flash NFPA 70E Training.

Since most of the training is required on an annual basis, this type of event lends itself to relatively easy annual planning. While the vendors that we used deal with Brown University, it would be easy enough to have your own group of vendors provide similar presentations. It is beneficial for the vendors as it gives them the opportunity to market their products and to also receive feedback from the customer about the product.

Management Commitment and Employee Involvement

The safety fair concept was developed and implemented by a diverse group of managers and supervisors

BROWN SAFETY FAIR TABLE SETUP

Table	OSHA Top 10	Training	Training Company
1		Working in extreme temperatures	Brown EMS
2	2	Asbestos Awareness Biohazard Awareness Lead Awareness	Brown EMS
3	6 and 9	Electrical Safety	Square D Electric Co.
4		Safe Lifting Snow Shoveling Slip & Fall Ergonomics	Beacon Mutual Insurance Co. Rubbermaid (Signage)
5		Emergency Action Plan and Fire Extinguisher Training	Brown EH & S
6	5	Eye Protection Safety Shoes Respiratory Protection Hand Protection Hearing Protection	AEARD Iron Age North Safety Wells Lamont Bacou-Dalloz
7	3	Fall protection Ladder safety	Miller Warner
8	7 and 10	Power Tool Safety Hand Tool Safety	DeWalt Tools Stanley Proto Tools
9	4	Lock Out, Tag Out Right to Know/Hazard Comm	Brady Corporation Beacon Mutual
10		Accident Reporting	Brown Insurance Office

The knowledge gained at the fair will be retained longer than utilizing the traditional classroom lecture method.

from Facilities as well as Environmental Health & Safety, Fire Marshal, Emergency Medical personnel, and our Insurance Office. Having this size of a group not only got buy-in from all involved, but it was also large enough to get input and ideas. At the beginning, the concept of a safety fair was not given much faith that it would work. However, as discussions ensued and ideas were developed, the naysayers soon came on board. At the conclusion of the event the entire management team felt that we had collectively hit a "home run." About two weeks after the event the team reassembled and went through the "lessons learned" while they were still fresh. These thoughts were recorded and will assist in the planning for next year.

As for the employees, the feedback was incredible. Even the staunchest critics were impressed with the format, context, and atmosphere of the event. All are looking forward to next year's event. We have selected three representatives from the collective bargaining unit to assist with the planning for 2007.

Documentation, Analysis, Customer Input, and Benchmarking

Of the 250 individuals required to attend the safety fair, 228 registered and completed the test. The remaining 22 people were either out on vacation or on sick leave. Our initial target was to have 90 percent attend; the actual attendance was 91 percent.

The safety fair test results were quite interesting and to some degree proved the theory that hands-on, interactive learning produces better results than the lecture methodology. We asked 32 questions; the test results indicated that 52 attendees, or 23 percent, had a perfect score. In addition, on a cumulative basis, 68 percent or 154 attendees answered 30 or more questions correctly, and 93 percent or 210 answered 27 or more questions correctly. Our goal of having the majority of the attendees receive a score of 70 percent or better was easily exceeded.

We have not calculated the number of workhours saved, but the estimation is that the number is in the hundreds. This is based upon the past methodology that we would typically have one topic per session and that anywhere between 15 and 50 people would attend. To cover the topics presented at the fair we would have had to have over 70 sessions. One in-house presenter would provide the instruction, with over 70 sessions the possibility of having vendors present would not be practical and thus would lose the advantage of having "outside" viewpoints. 🏠



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BRYN MAWR COLLEGE: An Innovative and Collaborative Approach to Stormwater Management

By Glenn R. Smith

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Colleges and universities are increasingly impacted by local regulations that govern procedures for the management of stormwater. Capital construction projects must comply with stormwater collection and discharge rules, often requiring expensive and marginally effective underground basins/tanks. Bryn Mawr College recently took a far more innovative approach to this issue, electing to look at stormwater as a resource to be managed in a way that benefits not only the institution, but also the surrounding neighborhood and downstream communities. Rather than dealing with stormwater on a project-by-project basis, the college collaborated with local and state regulatory agencies to construct a pond, completed in 2002, to manage stormwater regionally.

The benefits to the college include a local township exemption from independent stormwater systems on future projects, the addition of an aesthetically pleasing water feature on campus, the potential to use water from the pond to irrigate playing fields, and the opportunity for faculty to utilize the pond as a natural laboratory. The surrounding community has benefited from better controls over the rate of discharge into natural streams, a higher quality of water being discharged, and the ability to collect and treat stormwater from a drainage basin extending well beyond the college's boundaries.

Institutional Benefits

The macro-level approach to managing stormwater as a resource has revolutionized the way Bryn Mawr College prepares and approves capital improvement projects. Prior to the installation of the pond, regulatory requirements made it necessary to install stormwater management rate and volume

controls for any new or rehabilitation project. Due to space constraints, the college installed underground stone or piped storage facilities that both infiltrated water into the ground and controlled the outfall. These systems are costly to install and their long-term function is debatable.

Our concerns all converged during the design of a new Facilities Services Building in 2000. Space constraints and utility requirements for this project required the civil engineer and college to think "out-of-the-box" and consider alternative approaches to traditional underground stormwater storage facilities. At the same time, an aging gabion retaining wall, installed through a marginal wooded area to protect a downstream athletic field, was beginning to fail. In addition, the facilities staff began to question the sustainability of installing underground stormwater facilities and consider the feasibility of using stormwater as a resource. The fact that the college maintains two tournament level athletic fields that consume over one million gallons of irrigated water a year started to enter into the equation. At first glance, these issues were unrelated and considered separate projects. Then, the realization came that a macro approach to stormwater management would address and potentially solve all of these issues.

The college's civil engineer developed a solution that replaced the failing gabion retaining wall with an earthen embankment. The system would create a pond to clean the water and better control runoff from approximately 50 acres, the majority of which extends beyond the boundaries of the college. Working with local regulatory agencies (primarily Lower Merion Township), the college was able to enter into a binding agreement whereby this pond would serve as compensation for any required stormwater management on future projects within its 50-acre main campus. This agreement would thus allow the college to proceed with capital improvements and retrofits without installing localized storm water management systems for each project.

This agreement with Lower Merion Township provided sufficient payback incentive to where the cost of installing the pond was no longer an overriding concern, but that was only one of many institutional benefits realized by the college. This macro approach to storm water management drew the attention of Pennsylvania's Department of Environmental Protection and resulted in a Growing Greener grant of \$150,000 being awarded to the college, further offsetting the cost of construction. The grant money aside, the positive public relations from receiving the award was a huge boost to the college's reputation for environmental and ecologic sensitivity.

Meanwhile, following the completion of the pond in 2002, it has been an unexpected delight to observe the involvement of the faculty and students. The pond has literally become an outdoor living classroom. Several faculty members utilize the pond for their classes and students study the topography, planning, geology, and biology of this new natural resource. In addition to the immediate college community, the pond is used as a demonstration project for other engineers, institu-

tions and land owners throughout the region. Tour groups have included: Bryn Mawr College Earth Day, Villanova University Engineering Students, Villanova Urban Storm Water Partnership, Pennsylvania Department of Environmental Protection, Pennsylvania Regional Conservation Districts, and American Society of Civil Engineers World Water & Environmental Resource Congress 2003.

Finally, from an aesthetic aspect, the pond has created unparalleled views on campus. An historic dormitory, Rhoads Hall, sits atop a slope on the east side of the pond. Looking from the west side, the dormitory's reflection can be seen in the pond. What was once referred to as "Rhoads Beach," for the sunbathing that takes place in the spring and summer, now has a true water feature!

Innovative and Creative Qualities and Characteristics

While the concept of a wet-pond is not a new or particularly innovative solution to stormwater management, we believe that our particular approach was innovative and creative in many ways. Many of the elements that we describe in the next section, elements that can easily be adopted by other institutions, were innovative departures from traditional approaches. The strategic planning process, the integration of financial planning, and the collaboration with academics, public relations and the community were all new perspectives for us. We started to think of stormwater as a beneficial resource to be effectively managed, rather than a waste byproduct to be removed. In supporting our request for a Growing Greener grant, Michael Weilbacher, executive director of the Lower Merion Conservancy, pointed out that "the proposed project is the first of its kind in Lower Merion and will serve as a demonstration project for other educational institutions and local governments." But to a large extent, the greatest degree of innovation can be found in the design of the basin itself. Robert Traver, an associate professor of civil and environmental engineering at Villanova University, stated:

From the design aspect, Bryn Mawr College is incorporating some unique features that make this project stand out. First, it is creating a stormwater pond... that will reduce pollutants... Second, it stores and uses runoff for irrigation. The concept of capturing the stormwater, and then returning it to the water cycle, is both innovative and practical. Not only are they reducing the runoff (thereby protecting stream banks), they are also reducing usage!

When approaching stormwater management, the traditional methods either convey the stormwater as fast as possible off site or install underground basins to meter the rates of runoff. But underground basins are extremely expensive and their long-term function is questionable. This concern led to a macro-level stormwater management solution that would address the inherent shortcomings of traditional stormwater management approaches. The next innovative step was to

look beyond our campus boundaries. As a relatively small campus, we had to consider what nature was providing us in terms of existing drainage systems. In our case, the most practical location for a pond actually collected a high percentage of stormwater runoff from off campus. This reality led to collaboration with local township officials and environmental agencies. It eventually resulted in the Growing Greener grant from Pennsylvania and an exemption from the township on the need for isolated stormwater control systems on future projects—all as a direct result of shifting our paradigm and thinking about stormwater management on a more macro scale.

Once into the actual design phase, we elected to replace a failing gabion wall with an earthen embankment which retains the water, thus creating a pond. Flows from low volume, high frequency storms enter an off-line fore-bay, allowing larger particulate matter to settle out prior to the water entering the main pond. This smaller area can be cleaned without needing to drain the entire pond. Larger volume, low frequency storms bypass this fore-bay to avoid resuspending any solids and delivering them into the main pond. In the pond itself, there is a perimeter "bench," no more than 18 inches deep, to support wetland plants. These plants were selected to consume pollutants out of the water. This bench also provides a level of safety, as anyone will need to walk 15 feet into the pond prior to encountering deeper water. After the water enters the main pond, it slowly makes its way to a multi-faceted outlet structure. The primary discharge draws water from several feet below the normal water surface to allow cool(er) water to exit the pond. Below the primary outlet is an inlet pipe and system to allow for the withdrawal of water for irrigation. The pumps are not yet installed, but the system is ready. The final component of the outlet structure is a valved discharge two feet from the bottom of the pond. This allows the college to regulate the level of the pond for impending storms or completely drain the pond for maintenance.

By controlling and treating off-site water, installing a fore-bay and 15,000 square feet of wetlands, integrating valve control outlets, and considering irrigation potential—while simultaneously creating a beautiful new feature to our landscape—the stormwater management basin became far more than a simple "wet pond." It was truly a testament to creative, innovative thinking and design!

Portability and Sustainability (how this practice can be used by others)

At first glance, one might think that this project and the local regulating agency exemption from stormwater controls on future projects depict circumstances unique to Bryn Mawr College. But upon closer inspection, we believe that there is significant transferable value to other institutions in terms of the project, our process, and the strategic approach of treating storm water as a resource rather than a nuisance byproduct.

There is clearly portable value at the project-specific level. The construction of a functional stormwater management pond is not something that most of us, as facilities professionals, have a lot of experience with, and there are many aspects of its design and operation that can be shared—some of which are described above. Arguably more important, however, were several integrated planning components of our efforts that offer provocative “lessons learned” on a macro scale for consideration by others. These include:

The Strategic Planning Process

The conception of this project was the result of global thinking. The act of articulating the issues and objectives before rushing to “the solution” allowed us to imagine alternatives that could solve multiple needs. We stopped and asked ourselves, “Just what is it we are looking to accomplish with our campus stormwater management initiatives?” This allowed us to see beyond our immediate specific project-by-project needs and envision a broader approach. Treating stormwater as a resource to be developed and managed on the scale of an entire drainage basin is something all institutions should consider.

The Integration of Financial Planning

Part of the success of our initiative was the integration and communication of the financial implications and opportunities. Acknowledging and including financial considerations from the beginning contributed to the broad campus support for the project. The life-cycle analysis proved payback and cost/operational savings in less than three years. Also, the successful effort to obtain grant funds to assist in funding the project only further justified the value of the financial investment. In an era of reduced sources of external funding, we have discovered that the availability of outside support for environmental improvements is on the rise. Receiving support from off campus also provides added validation for the project. It also changed the way Facilities Services is viewed by senior administrators and trustees. We are not just a department that spends money, appearing only on the expenditure side of the ledger, but one that is willing to seek out resources for applicable projects. We have become a source of revenue.

Collaboration with Academics, Public Relations, and the Community

In spite of the many benefits, too many operational/administrative initiatives on campuses fail to capitalize in these important areas. Similar to the integration of financial planning, we sought engagement from faculty, staff, students, our campus public affairs office and the local community from the beginning. These connections broadened the support and value of the



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project far beyond our wildest hopes. Other institutions should explore opportunities for improving collaborative relationships among these all too often disparate groups and a macro approach to stormwater management affords such an opportunity.

The "Pond" Itself

Last, but not least, the specific retention pond paradigm can be applied directly to other campuses. It can be implemented as a best management practice for stormwater rate control, water quality improvement and a potential source for irrigation. As we designed the retention pond, we used hypothetical models to predict some of the measurable benefits. By actual monitoring since completion, we have met or exceeded all of these benefits. We would enthusiastically endorse the use of this approach to storm water management to any campus with similar needs and circumstances.

Management and Employee Commitment and Involvement

Our Facilities Services mission statement reads, "To maintain, preserve, enhance, and promote the campus character of Bryn Mawr College." While the notion of **maintaining** and **preserving** deal with the physical plant that already exists, the concept of **enhancing** requires that we stay flexible, embrace change, be innovative, and think out of the box to improve the way our physical spaces and features support our academic mission and the quality of life of our students. The need to provide a means of stormwater management for our new Facilities Services complex forced us to start thinking in creative and innovative ways. At the same time, the words of our president, Nancy Vickers ("What this campus needs is a nice water feature"), gave us an inspirational clue to a solution. The first time we heard her say that, most of us in the Facilities Services Department cringed, but now we began to formulate a plan that would manage stormwater as a resource and, at the same time, enhance the aesthetic beauty of the campus, while providing educational opportunities for our students.

From those simple beginnings, the vision of a stormwater management pond rapidly gained support and commitment throughout the campus community. The gentle slope on the west side of our dormitory, Rhoads Hall, terminated at a small, swampy grove of old and decaying trees. The thought of replacing those trees with a pond won immediate favor with the students—a love affair that continues today, four years after the pond was constructed. Our student Greens group has also embraced the environmental aspects of the pond, specifically its ability to remove solids and other pollutants from the drainage basin ecosystem and regulate flow volumes downstream during flood conditions.

The senior administration, generally cautious about any major change to the campus landscape, agreed that this was an exciting opportunity to enhance the landscape while addressing long-term stormwater management concerns across

campus. Their support, and that of the college's governing trustees, was firmly established once Lower Merion Township agreed that the pond would satisfy future stormwater management requirements on the main campus for any and all future projects. Alumnae have also become vocal advocates for this new addition to the campus landscape, and it has become a highlight of the campus tour given by Facilities Services each year during Reunion Weekend.

But what about the faculty? In truth, they have become the staunchest supporters of this initiative. In the words of Victor Donnay, one of our math professors:

As the pond was being built, faculty from a range of departments (Geology, Chemistry, Anthropology, Mathematics) formed a study group to examine ways that we could make use of the pond in our work with students. I had a student do some research with me on mathematical modeling. Her project was to create a computer simulation of the pond system that would take into account rainfall, flow in and flow out of the pond, and predict the changing water levels in the pond during storms. Working with the pond faculty group has greatly stimulated my interest in environmental issues and I now include a large component of environmental modeling in my differential equations course.

Finally, the team within Facilities Services tasked with maintaining the pond and operating the valve station have developed a healthy sense of ownership. They monitor weather forecasts to prepare for and respond to any potential flooding conditions. They developed a creative way to camouflage the concrete valve station with natural plantings, much to the pleasure of President Vickers. They have effectively addressed concerns over mosquitoes and geese, and they have embraced the need to learn how to maintain this new landscape feature as it matures over time. We have already cleaned out the fore-bay one time—a mucky, but fun time for all, and we take great pride in our latest equipment addition—a small rowboat.

Results, Analysis, Customer Feedback

It has been approximately four years since we completed construction of the pond and put it in operation. Has it lived up to its billing? Would we do it again? Would we recommend this approach to others? Without hesitation, we would answer "Absolutely!" to all three questions. In fact the pond has across-the-board exceeded our most optimistic expectations.

The pond has become an "overnight" favorite landscape feature of the campus. Students, faculty, staff, senior administration, trustees, and alumnae, seemingly without exception, agree that it has added immeasurably to Bryn Mawr's beautiful campus. (See picture page 51.)

But its performance as a stormwater management instrument has been the most impressive. On three occasions during the past four years we have effectively drained down the pond in anticipation of major predicted storms, and each

time we have been able to collect greater volumes of stormwater runoff and gradually release it over time into the downstream creek. Furthermore, we originally calculated that the following pollutants would be removed from the stormwater runoff (in lbs/year): suspended solids (14,700), total phosphorous (25), total nitrogen (105), oxygen demand (2955), trace metals (23). Actual measurements indicate we are meeting or exceeding these projections. Dominic Rocco with the Watershed Management Section of the Pennsylvania DEP says:

Bryn Mawr College was really innovative and ahead of the times when they built their stormwater wetland basin... They embraced the idea of looking at stormwater as a resource. The college worked collaboratively with state, county and local authorities and organizations... the final product had many additional functions and values—such as habitat improvement, water reuse and water quality treatment.



On the subject of collaboration, Robert Duncan, Lower Merion Township manager, had this to say:

Their innovative design of a stormwater management pond and the collaboration they fostered with the state and county, as well as Lower Merion Township, set a positive example for other institutions... to emulate. The fact that their pond draws much of its stormwater runoff from off campus points to the true partnering nature of this initiative.

Improved public relations throughout the community and state is hard to measure, but we are convinced that the respect and trust earned on this project led to a \$385,000 Growing Greener Grant only one year later for an unrelated stream bank realignment project. On the educational front, the pond continues to receive strong support from the faculty. Blythe Hoyle, a laboratory lecturer in our Geology Department, describes how she and her students are learning from this stormwater ecosystem:

The pond is an invaluable outdoor laboratory in which students in geochemistry and environmental science gain hands-on experience with real water management issues, including water quality, nutrient cycling, and carbon storage. In addition, we study the creek into which the pond water is released. Having access to the entire hydrologic system, from the inflow

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"Lake Vickers" in 2003 reflecting Rhoads Hall

culvert bringing water into the pond, to the pond's outflow into a local creek is a rare resource that allows our students to learn how larger systems function.

The one as yet unrealized benefit of the pond is the potential to use the water to irrigate our two athletic playing fields. We are actively seeking funds for the irrigation pumping station, and hope to have it functioning in the near future.

But perhaps most importantly, the pond has pulled various factions of the Bryn Mawr community together, unlike anything those of us in Facilities Services have ever before experienced. It is a shining example of senior administrators, facilities professionals, students, faculty, trustees, township officials, and state environmentalists all working together collaboratively toward the common benefit of all. It is a "win-win" many times over! 🏰



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The Comprehensive Energy Services Master Enabling Agreement

By Tony Simpson

Tony Simpson is director of facilities services at California State University, San Bernardino; he can be reached at tsimpson@csusb.edu. This is his first article for Facilities Manager.

It is the goal of the California State University to improve campus-building performance and achieve the lowest environmental impact feasible, by continuing to practice responsible stewardship using available resources. While the 23 campuses of the CSU system have aggressively pursued energy conservation and sustainability programs, their ability to implement these projects was constrained by state procurement requirements, project funds, and access to the intellectual capital of firms experienced in energy optimization and retrofitting existing plant and facility systems.

The Chancellor's Office Plant, Energy and Utilities group, working with the Contract Services and Procurement, General Counsel, and the Finance and Treasury departments, developed a program to enable CSU campuses to aggressively seek and implement conservation opportunities. *The Comprehensive Energy Services Master Enabling Agreement (CESMEA)*, program provides campuses with a cost effective, efficient delivery system to promote the development of utility and infrastructure improvement projects to lower operating costs, reduce deferred maintenance backlog and complement CSU's sustainability initiatives.

The CESMEA is designed to streamline project assessment, development, construction and implementation of utility and infrastructure improvements, while enabling timely responses



to executive initiatives, grant and incentive programs. The agreements were signed in 2005 and already 21 campuses are participating in the program.

CESMEA Institutional Benefits

The California State University (hereafter called the CSU) is the largest system of higher education in the nation. The CSU comprises 23 campuses located in diverse geographic regions throughout California representing a wide range of campus sizes and program requirements. The CSU has campuses as far north as Humboldt State University in Arcata, California and as far south as San Diego State University in San Diego, California. A 24-member Board of Trustees governs the system. The Office of the Chancellor, commonly known as the Chancellor's Office, is the corporate headquarters for the system.

During fiscal year 2004-05 CSU campuses expended approximately \$100 million on water, gas, electric and sewer. Over the last 30 years the CSU has reduced energy use intensity by 49 percent. During the past 15 years several campuses have aggressively pursued energy conservation and have already incorporated a number of energy conservation measures. Given the size and complexity of building systems, there remain many additional opportunities to enhance building systems efficiency and reduce overall utility costs. Opportunities for energy projects exist at campuses in lighting systems, HVAC systems, building controls, automation, central plants, and energy infrastructure including combined heat & power (CHP) systems. Additionally, the application of renewable energy projects on campuses, an objective of CSU's sustainability initiative, provide further opportunity for energy savings.

The Comprehensive Energy Services Master Enabling Agreement (CESMEA) program provides campuses with a cost-effective, efficient delivery system to promote the development of utility and infrastructure improvement projects to lower operating costs, reduce deferred maintenance backlog and compliment CSU's sustainability initiatives. If the energy

savings achieved are only 10 percent of the total energy expense, CSU will be saving \$8 million. If the savings increase to 15 percent, the savings are closer to \$12 million. Reinvesting \$8 million in savings can fuel more than \$60 million in improvements to provide better facilities for students, faculty, and staff. It can also meet institutional goals for greenhouse gas reduction and compliance with state and federal guidelines.



An Innovative Program and Practice

This agreement proves that the California State University Chancellor's Office is committed to energy efficiency and sustainability and they are supplying the resources and money to their campuses to help us meet these commitments. In a very tangible way, we are showing our students, staff, faculty, and fellow Californians that we intend to lead the way to a greener California. If each of the campuses had to design and implement this program on their own, it would be redundant, inefficient and often overwhelming. The innovation of the Master Enabling Agreement is that it helps our campuses by providing us:

- Seven qualified companies to work with
- A simple process to choose the best firm for that campus from the seven
- Training and support on the necessary contracts and paperwork
- Access to financing

In March 2004, the California State University, Office of the Chancellor, Contract Services and Procurement issued a request for qualifications (RFQ) to identify through competitive means a list of qualified firms to provide cost-effective and reliable energy related services to the various CSU campuses throughout California. This RFQ was the qualifying process to satisfy competitive means pursuant to the CSU Energy Conservation Contract Authority, Section 10709 of the Public Contract Code. This competitive process established a list of the best-qualified firms that have the size, resources,

financial ability, expertise, and necessary experience to provide the services required for this program.

The process is simple and works as follows:

- A campus selects no more than three, and no less than two, firms from the approved list to do a preliminary review of potential energy efficient projects on campus and write a report of the findings—a *Preliminary Assessment (PA)*. All fees for the PAs were negotiated as part of the original RFP.
- The results of the PA from the selected firms are reviewed by a third party Independent Peer Reviewer to verify feasibility and energy savings projections. After the peer review, the campus selects one firm to move forward to the next phase.
- The selected firm is contracted to perform a more detailed and specific review and audit of the proposed energy efficient projects and prepares a detailed written *Investment Grade Assessment* report of the findings and cost proposal.
- The Investment Grade Assessment is reviewed by the campus and a third-party Independent Peer Reviewer to verify energy savings, costs, feasibility, and that the project meets the required criteria to obtain financing.
- Following a successful peer review of the Investment Grade Audit, the campus will decide whether to move forward and will then negotiate the price and enter into a *Design/Build Agreement* to construct the project.
- When financing is required, the construction of the energy efficient project is the *Project Delivery (PD)* phase. The suggested minimum dollar amount for an energy efficiency improvement project, under this program, is \$1.5 million total project cost.
- The final phase is the Performance Period which measures project performance in accordance with the International Protocol for Measurement & Verification standards. *Schedule and Performance Risk Value* is a dollar amount valued at 6 to 8 percent of the project construction cost and is withheld and paid in arrears during project closeout if the project performs as designed—thus limiting the campuses risk for a successful project.
- The process has been designed to leverage the existing university

equipment lease financing terms, which are preferable to most ESCO financing terms.

This Program Can Work for Other State University Systems

Nationwide, there are as many or more state university systems as there are states. These colleges and universities provide access to higher education to students who might otherwise be unable to afford a quality education. Without an educated populace, our country cannot compete in a global economy. Yet, rising tuitions, shrinking state contributions

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and shifting populations are challenging all of our state systems: so saving money and operating more efficiently is becoming more important than ever before. Similarly, U.S. colleges and universities are taking a more global approach to environmental and economic issues and the need to find renewable, sustainable energy sources while reducing our dependence on foreign oil.

At the same time, many states, like California, have mandates for improved energy usage. In our state it is the Governor's Executive Order S-20-04 which calls for the state to commit to aggressive action to reduce state building electricity usage by retrofitting, building, and operating the most energy and resource efficient buildings by taking all cost-effective measures described in the Green Building Action Plan for facilities owned, funded, or leased by the state and to encourage cities, counties, and schools to do the same. And that state agencies, departments, and other entities under the direct executive authority of the governor cooperate in taking measures to reduce grid-based energy purchases for state-owned buildings by **20 percent by 2015**, through cost-effective efficiency measures and distributed generation technologies; these measures should include but not be limited to:

- Designing, constructing and operating all new and renovated state-owned facilities paid for with state funds as "LEED Silver" or higher certified buildings; and
- Identifying the most appropriate financing and project delivery mechanisms to achieve these goals.

The bad news is that without creative, innovative delivery solutions like the CESMEA, our university system and others will be hard pressed to meet aggressive energy purchase reduction guidelines. The good news is that we believe that with adequate support from the governing body of a university system, a willingness to think about procuring services differently and a team of dedicated employees willing to shepherd and champion the process, this CESMEA can exist in other states.

The lessons learned we will share with other colleges and universities are these:

- This is a team effort—no central office, single campus, or single department is as important as the whole team.
- Make it easy to participate and deal with funding and borrowing issues up front.
- Satisfy all procurement regulations, state guidelines with standard terms and conditions and leave the project specific information to the discretion of the campus.

- Provide technical review support—this is not always available at a local level.
- There are organizations like APPA and the National Association of Energy Services Companies that will help you structure your program and provide information.
- The companies we qualified act as our partners and are treated like partners.
- Sometimes you have to be willing to give up some control (which many worry about with a design/build process) to get to success. Make sure you have a way to measure success and you will shed risk and decrease your worry.
- Communicate the plan, educate the participants and never stop asking questions. Every program can be better.
- It may take longer than you would like, but the rewards will be great.
- Thank the people who make it happen.

Employee Commitment Drives the CESMEA Success

The Comprehensive Energy Services Master Enabling Agreement is a great example of what can happen in a state university system when central office programs are instituted to meet local campus needs. It is truly an enabling tool to help us reduce operating expenses and improve our campus facilities.

A tool like the CESMEA does not get put together without the effort of a large team of dedicated managers and employees. The Chancellor's Office Plant, Energy and Utilities group, under the direction of Elvyra San Juan, tasked Len Pettis, the Chief of Plant, Energy and Utilities to work with the Contract Services and Procurement, General Counsel and the Finance and Treasury departments to develop a plan to help campuses become more energy efficient. Len worked tirelessly with Haaziq Muhammad, public works contract specialist in the Contract Services and Procurement department, and Marlene Jones of General Counsel to design the RFQ to find the partners to help the campuses.

As part of that process, they had to assure that they not only found the right partners and established the benchmarks for success; they also had to make sure they were following CSU general conditions guidelines for contracting services. The original RFQ also established General Terms and Conditions for program, including design/build contracting requirements, insurance levels, and small business preferences.

In other words, the general terms of the programs were established at the chancellor's office level, while the campus specific conditions, including provisions tailored to meet local campus needs, e.g., utilities to be included in base bid, issuing keys, traffic and parking control, were assigned to the individual campuses to customize. To be sure the local campuses were part of the process; Len established a selection committee to provide advice and comments on the process and the RFQ.



As previously stated, one of the barriers to campus participation has been access to capital to finance or pay for the initial investment in energy efficiency equipment and upgrades. In the RFQ, it was established that the Financing and Treasury department shall provide all financing arrangements for projects. Walter Marquez of the Financing and Treasury group at the Chancellor's Office is supporting the process and through a separate public competition has negotiated lease terms and conditions with seven financing companies.

However, no program is successful without the educational component to get people up to speed on how to use a tool like the CESMEA. Training sessions have been held for campus plant managers, procurement officers, and financial staff that have included the seven Energy Services Company partners. After Haaziq Muhammad's retirement, Irene Patriotis has picked up the contracting support role for the project. Together, she and dozens of others at the CSU Chancellor's Office assure that we at the campuses have adequate access to and support of the CESMEA.

The Comprehensive Energy Services Master Enabling Agreement is a Success!

This program is fairly new, yet is already showing significant participation from the CSU campuses. From our perspective as one of those campuses in the system, we feel most confident in the process because the terms of the Comprehensive Energy Services Master Enabling Agreement provide us a level of security that the projects must perform.

Specifically, the *Schedule and Performance Risk Value* is a dollar amount valued at 6 to 8 percent of the project construction cost. The measurement for schedule and performance threshold is 80 to 100 percent. If the performance is less than 80 percent of what is proposed in the Design/Builder's PD Proposal, the Design/Builder has the option to correct failures at its own expense.

The Schedule and Performance Risk Value is withheld and paid in arrears during the project closeout upon satisfactory completion and acceptance of the following:

- Completion of the entire project scope:

- ❖ Design and Preconstruction Services.
- ❖ Energy Conservation and Capital Improvements.
- Commissioning.
- Successful performance test of systems and equipment to establish that the systems and equipment meets or improve on the performance standards set up in the Special Conditions and/or Design/Builder's PD Proposal.
- Application for utility incentives, if any.

At CSU San Bernardino, we are finalizing an IGA with DMJM Harris Energy & Power that includes new high efficiency electric chillers, a thermal energy storage tank, roof mounted solar panels, controls system modifications and upgrades including VFDs and CO₂ monitoring, high efficiency lighting, personal computer network energy management system, water conservation program and a new well for irrigation.

Systemwide, the following campuses are already participating in the process:

- Bakersfield—audit proceeding to IGA
- Chico—developing scope for PA
- Channel Island—developing scope for PA
- Dominquez Hills—developing scope for PA
- East Bay—IGA
- Fresno—IGA
- Fullerton—developing scope for PA
- Humboldt—completed a cogeneration plant
- Long Beach—developing scope for PA
- Los Angeles—developing scope for PA
- Maritime Academy—developing scope for PA
- Northridge—developing scope for PA
- Pomona—developing scope for PA
- San Bernardino—IGA
- Sacramento—IGA
- San Francisco—developing scope for PA
- San Jose—developing scope for PA
- San Luis Obispo—developing scope for PA
- San Marcos—developing scope for PA
- Sonoma—developing scope for PA
- Stanislaus—developing scope for PA

IGA = Investment Grade Assessment
PA = Preliminary Assessment

If these campuses find the same energy efficiency projects and renewable energy opportunities that we have found at San Bernardino, the largest state university system in the United States will be the greenest too. After all, *every dollar saved on energy is one more dollar invested in California's college students.* 🏛️



GEORGIA INSTITUTE
OF TECHNOLOGY:

Building Services Customer Achievement Program Award

By Tommy Little

Tommy Little is manager of building services at the Georgia Institute of Technology, Atlanta, Georgia; he can be reached at tommy.little@facilities.gatech.edu. This is his first article for Facilities Manager.

This program was established in the Building Service Department/Facilities Division at the Georgia Institute of Technology in June 1997. The goals and objectives of the Building Services Customer Achievement Program Award was to design a system that would improve customer service, foster teamwork, create an employee incentive program, improve communications, and correct deficiencies before they become problems. This program was first implemented as a pilot program and funded for one year by our senior vice president for finance and administration, Robert K. Thompson. The results have been so positive that we are now in our eighth year and have been profiled in a national campus facility maintenance magazine.

Institutional Benefits

Georgia Tech, like most public colleges and universities, has had to tighten its belt and look for innovative ways to improve operations across the board. Our Building Services Customer Achievement Program Award has aided in this endeavor. Having the responsibility of managing six million square feet of cleaning space, this program has provided instant feedback from our customers as to the quality of work performed in their area by the Building Services Department. The program has given the Georgia Tech community a sound mechanism to correct deficiencies before they become problems. The program has also fostered a better working

relationship between Facilities and the academic and administrative units throughout the Georgia Tech community.

Characteristics or Qualities that Make This Program Different:

In order to ensure the success of this customer service program, much effort was placed on employee involvement. Our goal was to design a program that would benefit all parties and show each how they would benefit. The parties that made up this program were management, the customer, and the employee.

Every four months the Building Services Department sends a customer evaluation form out to the campus community requesting their assessment of the custodial services provided in their building. The evaluations are marked with a due date to return to the building services manager's office. Once the due date has expired all evaluations are divided into nine custodial zones and graded in nine different categories. Once all the guidelines have been met, the winning zone members receive a plaque to be displayed in our building and are treated to a catered meal.

The customer and management benefits from this program by receiving a cleaner building and improved communication between their department and Facilities. Each zone is in competition to win this award. Therefore, the employee actively seeks out improvements that can be made in their building and solicit suggestions from the customer. The program also fosters teamwork because it requires all 30 employees in each of the nine zones to work together to produce a winner.

On the day of the award the building services manager meets with the entire department and invites the senior leadership of the Facilities Division to participate in the award presentation.

How This Practice Can be Used by Others

This practice can be easily duplicated at other universities or custodial operations. The keys to making this program successful are:

1. Gain the trust and respect of your employees, customer base, and leadership
2. Establish your target market
3. Show the employee population how they will benefit from this program
4. Involve the senior leadership at your institution
5. Make sure that your Corrective Action Procedure work and ensure consistency

Management Commitment and Employee Involvement

Employee involvement is critical to the success of any business organization. It is the employees that will make or break your organization. This program was designed with the employee in mind. The employee is the key architect, building relationships with our customer base. Without strong motivated employees this program would fail.

Management must ensure that the commitment is there from top to bottom. Toward that end, management has been success in securing funds to support this program for the past seven years. Management has provided the leadership to keep

the program on track. Management has ensured the success of the program by involving the customer and the employee. The employees are empowered to take appropriate steps to address cleaning and service issues. 🏠

Graph 1

All Zones (Zones 1-9)

Customer Service Evaluations (October 2004)

Number of evaluations: 53

	Excellent 100%	Good 85%	Average 70%	Fair 50%	Poor 0%	Number of Responses	Average based on # of responses
Courteousness of staff	30	13				52	96%
Appearance of staff	28	24				52	93%
Classroom cleanliness	18	20				38	92%
Bathroom cleanliness	21	24	6	1	1	52	87%
Hallway cleanliness	28	22	2			52	90%
Stairway cleanliness	21	19	8	3		51	87%
Floor cleanliness	24	22	3	2		50	89%
Fixture cleanliness	23	22	4	1		50	90%
Office cleanliness	24	22	4	2		52	89%

Overall Average: 91%

Waytha's Evaluation Graph

Supervisor: Waytha Gordon (Zones 5)

Customer Service Evaluations (October 2004)

Number of evaluations: 7

	Excellent 100%	Good 85%	Average 70%	Fair 50%	Poor 0%	Number of Responses	Average based on # of responses
Courteousness of staff	7					7	100%
Appearance of staff	5	2				7	96%
Classroom cleanliness	4	3				7	94%
Bathroom cleanliness	2	5				7	89%
Hallway cleanliness	5	2				7	96%
Stairway cleanliness	3	3	1			7	89%
Floor cleanliness	3	3	1			7	89%
Fixture cleanliness	3	4				7	93%
Office cleanliness	4	2	1			7	91%

Overall Average: 93%





UNIVERSITY OF BRITISH COLUMBIA:

UBC's In-Vessel Composting Facility and Organics Collection Program

by Rachel So

Rachel So is communications coordinator, waste management, for the University of British Columbia, Vancouver; she can be reached at rachel@recycle.ubc.ca. This is her first article for Facilities Manager.

The University of British Columbia is a committed leader in campus sustainability, and has employed an innovative method of diverting valuable organic waste material away from landfill disposal. UBC Plant Operations' In-Vessel Composting Facility is the first of its kind at a Canadian university; it promotes a closed loop system by processing food and landscape waste on-site into a rich compost material for use in campus gardens. At peak capacity, the facility can process five tonnes of food waste daily, and can yield compost in just two weeks. This system exceeds the capabilities of traditional composting, as it can process pre- and post-consumer food wastes including meat, grain and dairy as well as paper towels, cups and plates.

Following the inaugural year of the program, the campus community has benefited from: diversion of 97.5 tons of campus food waste from the landfill, increased education and research opportunities for faculty and students, and advancement opportunities for staff. Composting has also resulted in a 57 percent reduction in bark mulch required for campus gardens. As the program expands, UBC will continue to reduce landfill disposal, decrease off-campus truck traffic, and decrease expenditures on waste disposal and soil amendments and fertilizers for campus gardens.

Innovative Characteristics of the Program

As the first Canadian university to adopt and implement a *Sustainable Development Policy* to oversee the impact of our actions as a campus community, the University of British Co-

lumbia remains committed to sound environmental practices. Diverting organic material from the landfill is a significant environmental issue that UBC Plant Operations and its UBC Waste Management group seek to address. Landfills do not possess an infinite spatial capacity to handle waste, contribute to the emission of landfill gases, and perturb the carbon and nitrogen cycles by preventing the decomposition of organic matter. In September 2004, UBC Plant Operations was proud to introduce its In-Vessel Composting Facility and the accompanying Organics Collection Program. Together, the two programs have greatly enabled the Waste Management to tackle the issue of waste reduction at an expanding university.

Currently, UBC is the first and only Canadian university with an on-site system that processes organic wastes into valuable compost for garden beds on campus. The In-vessel Composting Facility enables the university to process up to five tonnes of food waste daily, and generates the compost from the organic material following a retention time of only two weeks. The in-vessel system exceeds the capabilities of the traditional means of large-scale composting: pre- and post-consumer food waste, meat, grain and dairy products as well as paper towels, cups and plates can all be composted. The enclosed system maintains the optimal temperature, moisture, oxygen and initial carbon to nitrogen ratio levels for accelerated microbial decomposition, such that the finished compost is free of any chemical additive. Moreover, the enclosed composting system eliminates vector and odour problems that often accompany the decomposition of putrescible material in large-scale open composting processes. The in-vessel process ensures that environmental and health risks are eliminated: leachates are recycled and odourous exhaust air is passed through a bio-filtration system.

In the past year, the In-Vessel Composting Facility and Organics Collection Program have already helped the campus community compost 97.5 tonnes of food wastes! It is anticipated that as the program continues to grow, the material that is diverted by our recycling and composting programs will substantially outweigh the amount of material that requires disposal at the landfill.

Institutional Benefits, Results

The Organics Collection Program collects materials from campus locations that generate large volumes of food waste, such as residences, food outlets, private housing as well as department lunchrooms. This program is a great step towards reaffirming the university's policy of reducing our environmental impact by taking responsibility for waste disposal practices. Currently, the university's population consists of over 55,500 students, faculty and staff. The university is committed to campus sustainability and addressing the long-term waste management requirements for a growing university town, which will include over 10,000 new on-campus residents by 2021. It is expected that in actively promoting sustainability and responsible waste management

The in-vessel system exceeds the capabilities of the traditional means of large-scale composting and ensures that environmental and health risks are eliminated.

practices, composting will be regarded as a social norm in the campus community.

The composting program has benefited many members of the campus community. Departments on campus producing a great deal of organic material that can be diverted from the landfill, such as paper disposables and kitchen scraps, have achieved their environmental goals by participating in the program. Other units within UBC Plant Operations, such as the landscape crew, have benefited directly from the use of the final compost that is produced. Academic departments have used the opportunity to involve the In-vessel Composting Facility in their coursework. Faculties, such as Land and Food Systems, have gained an invaluable undergraduate and graduate learning opportunity. In continuing with actively promoting the campus compost program, it is anticipated that campus community involvement, awareness, support and research opportunities will continue to expand.

In the past year, UBC has composted over 385 tonnes of organic material from both the campus and the local community. In terms of food wastes generated on campus, the In-Vessel Composting Facility has processed over 2800 bins, each with the capacity of 35 gallons of food waste in volume. This volume accounts for the diversion of 97.5 tonnes of organic material from the landfill! Campus yard wastes are also diverted from the landfill. In the past year, 200 tonnes of yard waste were composted. Yard waste is used as a carbon source for the In-Vessel Composting process. In terms of the organic waste from the local community, UBC Waste Management has also developed a partnership with a non-profit organization, Quest Outreach Society. Quest Outreach Society is a non-profit


organization that secures food sources for those in need. The university has enabled this group to compost 91 tonnes of food waste since the start of the partnership in July 2005.

Composting on campus translates into an immediate institutional cost savings, as the local landfill disposal fee is \$65 per ton of waste. In addition, further cost savings are also gained from the time and cost of labour that is required for trucking the wastes off-campus. The productive secondary use of our organic waste has allowed for the landscape crew to shift its strategy in maintaining campus landscapes. By hav-

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As a result of increased enthusiasm for the program, UBC Waste Management has observed an eight-fold increase the number of organic collection sites in just 13 months!

ing fresh compost at hand, the landscape crew has decreased the volume of topsoil used in gardens by almost four-fold!

By processing food wastes on campus, UBC Waste Management is also effectively contributing to the university's target for emissions reduction. Truck traffic to and from campus is reduced by processing the majority of food wastes on-site, as opposed disposal at an off-campus location. The final compost yield also helps reduce the amount of off-campus bark mulch that must be purchased and brought onto campus as topsoil for garden beds. The use of UBC produced compost for campus landscaping has resulted in a 57 percent decrease in bark mulch delivery traffic. As UBC Waste Management extends its services on campus, it is anticipated that the entire amount of topsoil on campus landscapes may potentially be produced directly on site. Subsequently, reducing emissions from in-coming truck traffic.

Portability and Sustainability

The concept of a large-scale enclosed composting system can be easily applied for any large community that is keen to make an investment in responsible waste disposal. In-Vessel

composting may also be suitable for communities that may be facing diminishing landfill space as well as unrealistically high waste disposal or landscaping costs. While the technology is applicable to any community at large, the applicability for institutions would be limited to the fact that there is a large amount of organic material that requires disposal.

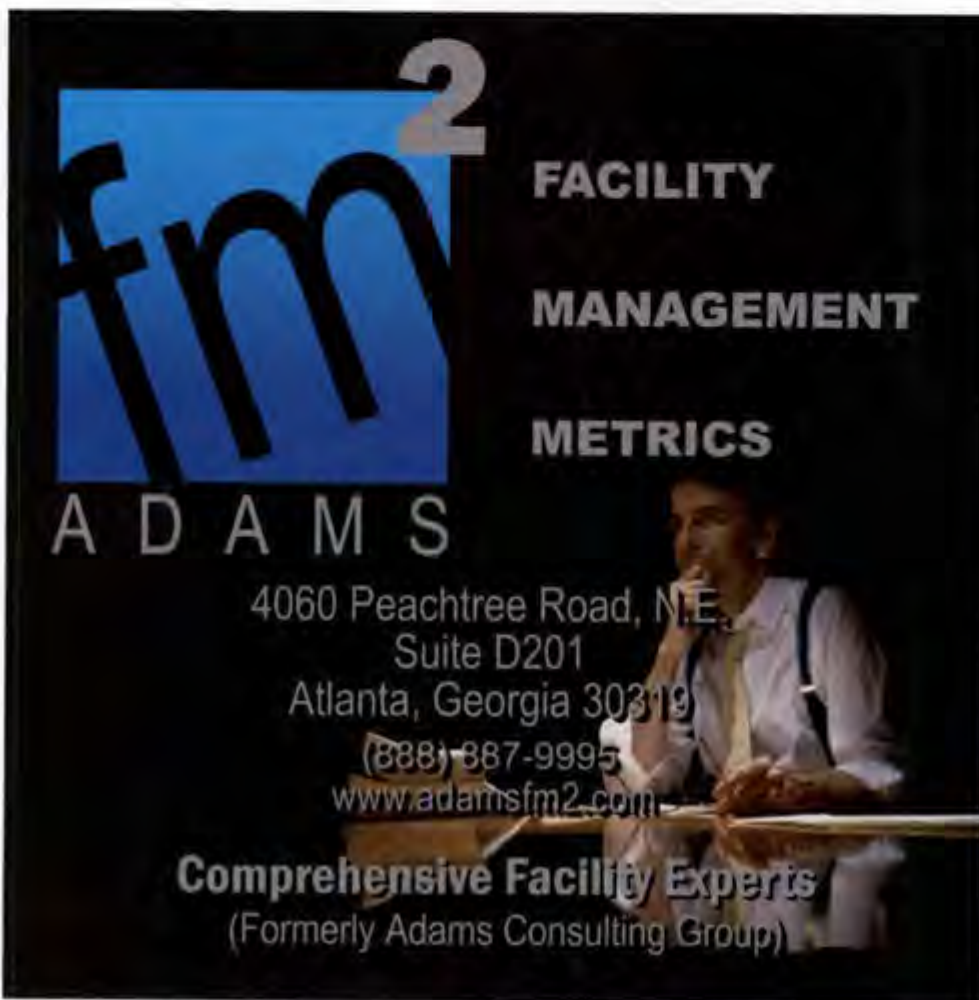
UBC's In-Vessel Composting Facility operates as an integral part of UBC Plant Operations. In generating awareness of an In-Vessel Composting Facility early on in the planning process, the project was well received by the campus community upon its completion as a response to the issue of campus waste reduction. Other organizations, such as Quest Outreach Society, have also benefited from the use of the In-Vessel Composting Facility. UBC Waste Management has developed a partnership with Quest Outreach to ensure that this technology can be made available to groups that may not have similar financial support for a large-scale compost program.

Organizations, such as the Granville Island Markets, Red River College and Simon Fraser University, have met with UBC to discuss the feasibility of implementing a similar program in their respective communities. The concept of

community-wide composting is gaining more attention in many communities, and UBC Waste Management continues to embrace the opportunity to work with organizations in developing an effective large-scale composting program.

Management Commitment and Employee Involvement, Results

There is a great deal of support from both management and employees involved with the In-Vessel Composting Facility. Management has gone to great length to secure personnel that are committed to ensuring an efficient and successful compost operation by creating new training and advancement opportunities. Management has also demonstrated its commitment to the in-vessel composting venture by providing operating personnel with all the infrastructure and equipment that they require for the efficient and effective operation of the facility. Employees have responded positively by taking real ownership over the composting program and routinely communicating



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their ideas for operational improvement and development of new promotional programs. Regular meetings are held between all operational stakeholders, in order to communicate concerns as well as new ideas.

The commitment and participation of the campus community in furthering the composting program has been resounding. Campus departments such as the Sustainability Office, UBC Food Services, the Alma Mater Society, UBC Housing, as well as student groups such as the Student Environment Centre and Graduate Student Society, have been actively involved with UBC Waste Management in the development and promotion of composting on campus. Working closely with such departments has generated teamwork amongst staff, faculty and students, and has resulted in increased financial support as well as assistance with program implementation. Such efforts have resulted in increased academic-based coursework relating to the In-Vessel Composting system, volunteer-run promotions and displays as well as research opportunities. In addition to program development, many individual staff members have taken active roles in promoting composting amongst their colleagues. Many enthusiasts have ensured that their departments remain active with the Organics Collection Program by developing materials specifically oriented to their colleagues. Compost enthusiasts have also helped initiate building-wide composting programs as well as the expansion of compost programs into private housing on campus. As a result of increased enthusiasm for the program, UBC Waste Management has observed an eight-fold increase the number of organic collection sites in just 13 months! It is anticipated that this number will steadily increase as new housing developments and food outlets become involved with the Organics Collection Program.

Customer Feedback and Resulting Benchmarks

Participants of the Organics Collection Program are quick to provide feedback to the department. The client and service-provider relationship that compost coordinators have with UBC Waste Management ensures that the department is held accountable for its programs by upholding and enhancing customer satisfaction. Participants have been very enthusiastic in being involved in creating a more sustainable campus, and recognize that their feedback is invaluable in assisting the university to adjust the program to better suit their needs. UBC Waste Management's Com-

munications Coordinator performs customer surveys following every school term, in order to ensure that the Organics Collection Program is effective and that each department's needs are considered individually. From the annual Plant Operation client survey, UBC Waste Management ranked at the top with a customer satisfaction rating of 94 percent in the past year. 🏆

Collecting Data for FY 2005-06



The deadline for participating in the Facilities Core Data Survey is **Monday, November 20, 2006**. All survey respondents receive instant bonus reports, a customized summary of your responses, and discounted pricing on the Web-based **Facilities Performance Indicators** reports.

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¹Software developed in consultation with Jack Dudley, P.E., Editor and Co-Author of the First Edition of the *Custodial Staffing Guidelines* and Co-Author of the Second Edition. Mention of APPA does not imply endorsement of the product.

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THE FACILITIES CONDITION INDEX

AS A MEASURE OF THE CONDITIONS OF PUBLIC UNIVERSITIES AS PERCEIVED BY THE END USERS



by Robert Quirk

The Facilities Condition Index (FCI) is a term that has been used to describe the relative condition of campus (and other public and private) facilities in relation to the current replacement value (CRV) of that building. The purpose of this study was to determine if the relative satisfaction of the end users has a correlation with the building's FCI.

A 23-question survey instrument was utilized to gather information regarding satisfaction of the building occupants. Surveys were returned by 159 faculty, staff, and administrators from seven major buildings on the campus of California State University, Long Beach, out of 547 distributed, resulting in a 29 percent response rate. Seven buildings were selected to represent a wide range of conditions as measured by the FCI and those

with similar size (square foot). An evaluation of the questions, utilizing an alpha test, demonstrated a moderate relation to each other at .8114. Only three of the survey questions showed a correlation between the FCI score and the questions using Pearson's r (correlation coefficient) with a statistically significant relationship of $p < .05$.

The Facilities Condition Index has been professed as a systematic, if not scientific, method to evaluate the current condition of facilities. According to Briselden and Cain (2001) it is a comparative indicator of the relative condition of facilities. It is commonly referred to as the existing deferred maintenance (DM) backlog of a building divided by the current replacement value (CRV) of that building ($DM/CRV=FCI$).

The FCI was developed through the efforts of the U.S. Navy, private companies such as Applied Management Engineering, and several professional, nonprofit organizations such as APPA and the National Association of College and University Business Officers, attempting to develop a numeric correlation of the FCI with the actual building condition. The intent was that the FCI would be a universally accepted, numerical assessment of the condition of facilities and a tool to

Rob Quirk is director of facilities management at California State University, Long Beach; he can be reached at rjquirk@csulb.edu. This article is a summary of research conducted by the author for his master's degree in public policy and administration at CSU-Long Beach as well as under the auspices of APPA's Center for Facilities Research. This is his first article for Facilities Manager.

determine fiscally related decisions regarding funding, major maintenance, and repair options.

The CRV is an assessment by the owner or owner's representative of what it would cost to replace the building in question. These assessments can come in many forms such as cost-per-square-foot estimates; professionally detailed replacement plans, specifications, and budgets; and building officials' best guess. The DM value is also obtained in a variety of ways at the discretion of the owner or owner's representative. This would include life-cycle cost projections, detailed facilities condition analysis, in-house evaluation, or educated guesses. The lack of control over input of this data constitutes a serious concern over the validity of the data that make up the FCI. The control of the input data is ultimately up to the individual owner or building official and thus, subject to personal biases.

Method

This study was based upon the results of a survey (Appendix 1) from faculty and staff from seven major buildings at California State University, Long Beach. The campus FCI was used as the independent variable. The FCI was developed from a facilities condition assessment (FCA) conducted by ISES Corporation in 1998 and continually updated by university staff. The university has alternate methods of determining building and campus FCI, one being a life-cycle assessment of major building components through a program and software developed by The Pacific Partners Group. The ISES FCI was

chosen as the comparative measurement as it is generally accepted as a more thorough assessment of the actual buildings condition rather than a budget model found in the Pacific Partners format.

After approval from the campus Institutional Research Board (IRB), a direct mail survey was sent to 547 building occupants from seven major buildings on campus. A return rate of 29 percent ($n = 159$) was realized. The satisfaction data was assembled and compared to the buildings FCI.

TABLE 2.

FACILITIES MANAGER'S RATINGS OF BUILDINGS

BUILDING	FCI SCORE	RANK
5	.08	1
85	.09	2
56	.26	3
22	.26	4
39	.32	5
46	.38	6
37	.40	7

TABLE 3.

OVERALL USER SATISFACTION WITH ASPECTS OF CAMPUS BUILDINGS

QUESTION	SUBJECT	SCORE	RANK
20	Campus grounds around the building	4.103	1
6	Interior doors	3.944	2
21	Sidewalks around the building	3.938	3
18	Fire alarm	3.891	4
19	Telephone system	3.852	5
4	Building exterior	3.829	6
5	Entrance doors	3.823	7
9	Electrical system	3.746	8
14	Classroom chalkboard	3.667	9
11	Lighting	3.648	10
22	Overall look and function of the building	3.643	11
17	Elevator	3.572	12
15	Built-in cabinets	3.346	13
12	Classroom audio-visual equipment	3.289	14
7	Interior paint	3.238	15
8	Restroom fixtures	3.232	16
13	Window blinds	3.164	17
16	Laboratories	2.975	18
10	HVAC system	2.523	19

RESULTS

TABLE 1.

CHARACTERISTICS OF RESPONDENTS

	NUMBER	PERCENT
TOTAL RESPONDING	159	100%
POSITION		
Staff	59	37.1
Faculty	95	59.7
Administrator	5	3.2
YEARS ON CAMPUS		
1-4	45	28.3
5-10	55	34.6
11+	59	37.1

Continued on page 65

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TABLE 4.

DIFFERENCES IN USER SATISFACTION BY BUILDING AND ASPECT

Q#	BUILDING						
	#5	#22	#37	#39	#46	#56	#85
4	3.875	3.82	3.28	3.45	3.96	3.95	4.17
5*	3.375	4.08	3.0	3.875	3.52	4.05	4.25
6*	4.125	3.86	3.7	3.54	3.96	4.13	4.17
7	2.812	3.47	3.1	2.71	3.37	3.50	3.33
8*	3.812	3.65	3.0	2.78	2.67	3.26	3.83
9*	3.625	4.22	4.0	3.22	3.89	3.61	4.0
10*	2.500	1.86	1.42	2.375	2.40	3.18	2.92
11*	3.125	4.08	3.28	2.83	3.59	4.16	3.82
12	3.670	3.61	3.75	2.95	2.92	3.32	3.6
13*	3.670	2.90	2.14	2.45	2.92	3.82	4.0
14*	3.875	3.50	3.50	2.91	3.95	4.0	3.875
15	3.300	3.17	3.14	2.89	3.29	3.71	3.67
16	3.000	3.00	3.25	2.44	3.0	3.25	-
17	4.000	3.4	-	3.38	3.875	3.51	3.08
18*	3.270	4.1	4.5	3.78	3.79	4.03	4.0
19*	4.130	4.13	4.0	3.27	3.96	3.76	4.0
20	3.875	4.18	4.28	4.04	4.07	4.18	4.08
21	3.625	3.69	4.14	4.08	4.07	3.97	1.0
22*	3.560	3.95	3.28	2.83	3.62	3.97	4.09

*Differences in ratings of buildings on this question are statistically significant, $p < .05$
 Shaded box shows building with highest rating on each question

Differences between faculty and staff on each question (all buildings combined) were statistically significant for questions 7, 8, 11, 15, and 22 (results not shown). Differences between faculty and staff on each question by building were statistically significant only in a few cases.

Final Analysis

Does the user satisfaction questionnaire closely approximate the FCI building score?

1) An evaluation (using the alpha test) of the questions on the questionnaire directly related to building satisfaction shows that the questions are moderately related to one

another. If questions 4 through 22 are combined into a building satisfaction scale, the alpha score = .8114. However, question 10 does not fit in well with the other questions.

- 2) Subsets of questions were combined to form scales more specifically related only to classroom items (questions 12, 14, and 16); building interiors (questions 5, 6, 7, 8, 9, 10, 11, 13, 15, 17, 18, and 19); building exteriors (questions 4, 20, and 21); building functioning (questions 8, 9, 10, 11, 17, 18, and 19).

However, the alpha scores for these items were lower than for the entire set of items, in the .5 to .7 range, which is considered rather low.

3) A test for the existence of a relationship with between the FCI score and individual items on the questionnaire using Pearson's r (correlation coefficient) showed a statistically significant relationship with questions 5, 17, and 22 only (with $p < .05$).

4) Finally, taking question 22 alone, as an overall indicator of user satisfaction with a building, there is a statistically significant relationship between the building's score on question 22 and the building's FCI score. A t -test for two samples with unequal variance was statistically significant at better than $p < .05$.

Facility Condition Index Study Conclusion

This study is an attempt to add credence to the Facility Condition Index (FCI) methodology by statistically connecting the building user's perception and opinions, to the numerical calculation of the FCI. As evidence by a question in this study ("Overall, the building being rated looks and functions as designed"), in relation to the building FCI, there is a statistically relevant relationship to the satisfaction of the occupants to that building's FCI. This is a small step in scientifically establishing the connection

between faculty and staff's ability to function effectively and what facilities managers claim to be the funding needs.

This relationship is important to establish in order to demonstrate to non-facilities individuals that the FCI measurement isn't a ploy or meaningless calculation to obtain more funding by facilities managers, but has a direct relation on the delivery of the educational product and the satisfaction of the users of those facilities. With that in mind, facilities managers may have a better chance of utilizing the FCI calculation to a wider audience (from legislators to budget committees) when requesting funding and/or establishing priorities for limited resources.

Finally, the Facilities Condition Index would gain further credibility by more stringent and universal standards for the development of this index.

TABLE 5.

FACULTY/STAFF DIFFERENCES IN BUILDING SATISFACTION

	STAFF	FACULTY	SIGNIFICANCE LEVEL
BUILDING 5			
Q10	4.000	2.285	$p < .0843$
Q13	2.500	3.846	$p < .0438$
BUILDING 37			
Q4	4.000	2.75	$p < .0784$
Q14	2.500	4.000	$p < .0936$
BUILDING 39			
Q4	4.250	3.333	$p < .0608$
Q8	3.750	2.578	$p < .0664$
Q15	4.500	2.705	$p < .0324$
Q19	4.333	3.105	$p < .0414$
BUILDING 46			
Q7	4.000	3.105	$p < .0843$
Q8	3.667	2.368	$p < .0316$
Q9	4.500	3.736	$p < .0285$
BUILDING 85			
Q12	3.000	3.857	$p < .0713$

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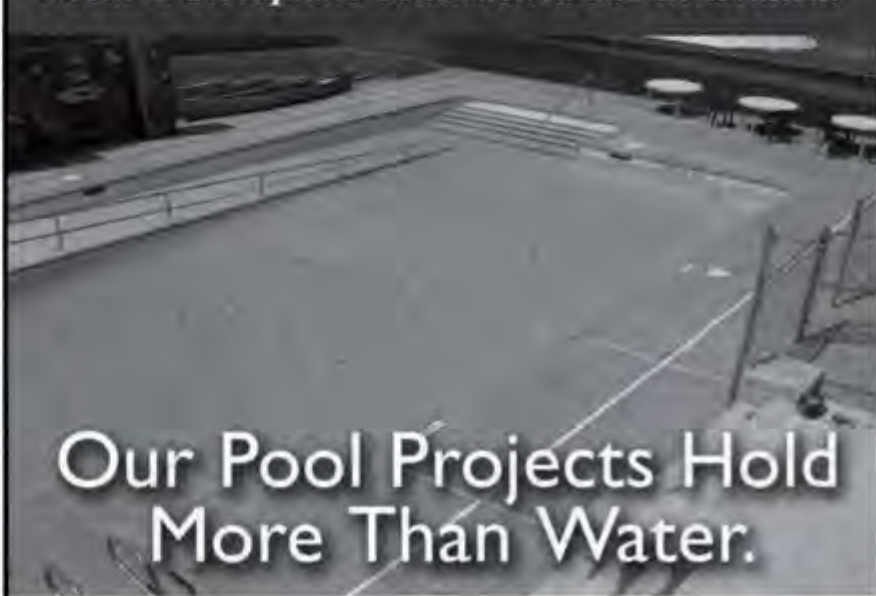
Appendix I: Survey

This short survey (see pages 68-69) is for the purpose of assessing your satisfaction with the function and appearance of a specific CSULB facility. The responses received will be tabulated and compared with the relative condition of that facility as described by the Facilities Condition Index (FCI). The FCI is a ratio of the identified deficiencies or deferred maintenance (DM) of a building (excluding equipment such as microscopes or machinery) and the Current Replacement Value (CRV) of that building. Simply stated as the $FCI = DM / CRV$. This survey is part of my masters program in Public Policy and Administration and not in relation to my role as Director of Facilities Management. If you elect to participate, it is important that you answer the questions in a manner that best represents your opinion/satisfaction of the **specific building** that you are reporting on.

Your answers will be kept confidential and will only be reported as part of a larger report. Individual's information will be kept confidential at all times and once aggregated, will be destroyed. The purpose of this research project is to determine if a correlation exists between the FCI and the end users satisfaction with the facilities. Your participation in any or all of these questions is strictly voluntary.

Thank you for participating in this important study. Copies of this study may be published in a future issue of the trade journal, *Facilities Manager*. I will share the results of this study with any interested party upon request. 🏠

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Please circle your best answer or fill in the blank:

ILLUSTRATION FOR ARTICLE ONLY;
DO NOT RESPOND

- 1) I am: a) Faculty b) Staff c) Other
- 2) I have been at CSULB for ____ years.
- 3) **State the name of the building you are rating:** _____
- 4) The building exterior appear to be well maintained:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 5) The building entrance doors and hardware function properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 6) The building interior doors and hardware function properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 7) The building's interior is adequately painted:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 8) The building's restroom fixtures (sinks, toilets, partitions) function properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 9) The building electrical system is reliable:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 10) The building Heating, Ventilation, and Air Conditioning function properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 11) The building lighting functions properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 12) The classroom audio-visual systems function properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 13) The window blinds function properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 14) The chalkboards and whiteboards function properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 15) The built-in cabinets are in good repair:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 16) The building laboratories function properly (fume hoods, utility valves, etc.):
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 17) The building elevators function properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 18) The building fire alarm system functions properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 19) The building phone system functions properly:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 20) The campus grounds are adequately maintained:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable
- 21) The campus sidewalks are adequately maintained:
Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable

22) The campus roads are adequately maintained:

Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable

23) Overall, the building being rated looks and functions as designed:

Strongly Agree Agree Neutral Disagree Strongly Disagree Not Applicable

Thank you again for taking the time to fill out this survey. Your response will be kept confidential except as aggregated with the building summary.

SUMMARY							
Bldg #	Name	FCI	Avg Sat	Dist	Returned	Return %	
5	FCS	0.08	3.54	48	16	33.33%	
85	CBA	0.09	3.90	112	19	16.96%	
56	ET	0.26	3.76	64	38	59.38%	
22	ED-1	0.26	3.62	102	23	22.55%	
39	FA-4	0.32	3.16	60	25	41.67%	
46	SS/PA	0.38	3.52	96	28	29.17%	
37	PH-1	0.4	3.15	65	10	15.38%	
All				547	159	29.06%	
AVG		0.26	3.52	78	23	31.21%	

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Maximizing Condition Assessment Efforts

by Brad Peterson and James Sebesta, P.E.



The future of effective condition assessments and building total owning and life-cycle cost programming will begin with the use of tools to efficiently map and document building systems, elements, and maintenance requirements during the building design and construction phase. Most institutions need to address existing facilities for deferred maintenance, capital budgeting, operating cost, energy use and optimization, and upgrading their facilities. However, institutions are faced with increasing needs to prioritize renewal and replacement dollars today. Communication and selling

these financial needs to the institution's business officers requires that needs assessments, condition analyses, and presentation of material be done in a consistent, defendable, and repeatable manner that establishes the credibility and accuracy of the requests.

To do this, the institution must develop and execute its condition and needs assessments in a methodical and efficient manner. A basic process consists of nine individual steps:

1. Development of a survey mission statement
2. Establishment of the assessment criteria
3. Establishment of assessment standards and reference points
4. Development of standard assessment templates
5. Actual facility survey and assessment
6. Analysis of the data
7. Financial planning, programming and feedback mechanisms
8. Maintenance and renewal program development
9. Execution of the plan

Survey Mission Objective

Establish a clear project mission statement that defines the general

objectives and expectations for the assessment survey. Too many assessment projects have to go too deep in one area while being too light in others. This level of a project mission statement helps align expectations from the beginning of the project and minimizes any concern for scope adjustments downstream. It also aligns the needs and expectations of the business officer with the facilities officer before the task is undertaken, making communication of the results and cooperative goal setting in the future easier to attain.

Establish Assessment Criteria

This has been an area of considerable debate over the years where various industry associations have established baselines for capturing relevant survey data. One of the most costly areas for the basis of the survey is the actual field-deployed survey teams, where labor costs are most prevalent. With this investment, surveys now incorporate more data than several years ago, including photos, CAD drawing updates, enhanced field descriptions, nameplate data for Computerized Maintenance Management System (CMMS) and Computer Aided Facilities Management (CAFM) systems, in-field cost estimating, compliance to regulations, location information, related conditions, and potential solutions.

Establishing assessment criteria is paramount to a successful assessment survey, and sets the basis of your measurement criteria moving forward. More organizations are requesting the survey information be provided to the client in a format that can be managed, not in a fixed-report format that is static and remains on a bookshelf.

The criteria allows for an organization to establish its own "specification"

Brad Peterson is manager, strategic accounts & alliances for ARCHIBUS, Inc., Boston, Massachusetts; he can be reached at brad_peterson@archibus.com. Jim Sebesta is president and CEO of Sebesta Blomberg & Associates, Inc., Roseville, Minnesota; he can be reached at sebesta.jj@sebesta.com. This is their first article for Facilities Manager.

of sorts, defining the expectations, knowledge, and experience to the Facility Condition Assessment (FCA) survey team for field-level data collection. The assessment criteria also allows for the selection of additional information that either has not been gathered in the past, or was not measured effectively. Areas of concern that require an increase in the gathering of detailed asset information are generally high-value assets such as mechanical HVAC and electrical systems, and risk assessments.

By defining the survey requirements for the various elements that compose a thorough assessment, the survey can be developed on specific "system" requirements, or more of a comprehensive assessment which may be more building oriented. Building-oriented assessments tend to require a more broad based facilities knowledgeable survey team which has expertise in many areas, rather than only mechanical or electrical systems professionals.

With the expanded use of benchmarking of information in the higher education industry, much of the criteria for data gathering can be pulled from the structure of the various reports. Reporting elements such as the Facility Condition Index (FCI) all support specific data elements that the survey can capture.

Surveys can also involve everything from code compliance, safety/risk audits, environmental surveys, sustainability, arc-flash compliance, site assessment, equipment/system surveys, actual preventive maintenance work efforts, and materials required or general/specific building surveys—all of which require specific criteria to provide you with the most effective return on the survey investment.

Establish Assessment Standards

The assessment standards must be established from the beginning due to the importance of the evaluation, the depth of the system components of

Establishing assessment criteria is paramount to a successful assessment survey.

the gathered data, and the expected reporting process and accuracy of the final document.

What good is an assessment if the baseline requirements for assessing the data through effective reports cannot be accomplished efficiently? The standards must coincide with the assessment criteria so that the survey component of the process is well-defined and the data gathered is completed in the correct manner.

Many of today's assessment firms do provide survey teams that can develop the criteria and establish the standards in which you report on

the data. Standards would include naming conventions, barcoding, maintenance hours and scheduling, facilities and components replacement values, assigned codes, one-line diagrams, and costing database to name a few—all of which will allow you the opportunity to query and pull reports and valuation criteria from the reports once the survey has been completed.

The data standards will allow for flexibility in assessing the data for future reporting, along with the ability to assign effective costs to the survey data. Many of today's industry-standard unit cost models (RS Means, etc.) apply standards for specific data elements and unit of measure, allowing for conformity in aligning cost structures to data elements. The Construction Specifications Institute (CSI) provides either a Uniformat or Master Format for defining the various detailed elements of building



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Spending planning time up front, prior to the survey, to define your expectations from a reporting standpoint will assist in the proper definition of standards going into the survey and will result in a more efficient execution of the survey.

It is much more cost effective to have a survey team collecting once than having them at the same facility and/or component to identify facility and system data, contract requirements, design upgrade considerations, condition and life expectancy, replacement cost, and population of computerized maintenance programs. The information gathered will last you many years and provide enormous opportunities for future use, if gathered correctly and completely.

Apply Survey Templates

Development and use of a survey template derived from the survey cri-

teria and institutional standards will allow for an expedited survey. These forms may be in either an electronic form or a paper form depending on the program and process established for the survey team. The goal of the template is to maintain consistency in data gathered, condition and maintenance needs and costs being established, and future reporting tools for assessment of the effectiveness of the program. Overall, such tools and processes result in greater efficiency and effectiveness of your survey teams.

When being developed, templates need to be clear and concise, with minimal areas for extensive field notations. The format of the template can be established in an electronic form that resides on a PDA, tablet, or laptop, or on a hardcopy form on a clipboard.

Assess Sites, Buildings, Assets or Systems

As mentioned earlier, there are numerous types of surveys that can be performed to support a facility organization. The type of survey and depth of information being developed is a direct result of the mission and objective established for the assessment. While areas of specialty have risen out of demand for various types of surveys, the predominate types of surveys performed for facilities involve either property sites, broad building models, combined assets of either the site or building, or the actual specific systems and subsystems within the buildings and property sites.

A comprehensive system analysis can be addressed either through use of internal resources, the use of an independent survey team or consultant, or through the primary non-proprietary FCA software firm engaging with a specialist to subcontract with. There are many areas where the survey value can be diluted through inexperience on general field conditions, or the lack of domain knowledge on a system analysis.

Analyze Assessment & Survey Data

Based on the survey results and the reports that are provided, one must ascertain what the assessment data means and how to rationally evaluate the results. Many of these reports can be overwhelming to the unaided customer. Reams of paper, numbers of binders, and lack of clear direction, recommendations, or summaries create frustration and confusion when trying to boil the significant amount of data down into something useful.

This is where the benefit of a reporting standard comes into play and the criteria for how the data is or was to be captured. An effective plan helps tremendously at this stage.

Analysis of the results falls to the survey team. Areas of priority are established and the results can be compiled and then interpreted for

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decision-based analysis. For executive level briefings, it is recommended that the comprehensive detail that comes out of the traditional survey be minimized and a composite amount of summary data submitted for review. The basics of 1) what is it, 2) where is it, 3) what is the cost, 4) expected timeframe, 5) how do we report future results and progress, and 6) what are the next steps to use the data to the fullest, allowing for adequate decision making.

Institutions also benefit from a living database of survey information—one where the institution can continually review and apply various scenarios to the survey data rather than simply reading a section in a binder...again.

Financial Planning and Assessments

By applying sound financial planning to the survey results, one can

develop effective financial planning tools for forecasting the assessment results and future financial needs of the institution for renewal, repair, and replacement activities.

Basic financial cost details such as current basic unit costs which allow for factoring in cost of funds with annualized expenses that account for inflation in labor rates and materials provide an organization with a dynamic financial model to make and measure decisions.

Financial departments need this information in summary level only, without the levels of detail for the unit cost measurements. However, detailed documentation will be needed for execution as well as providing credibility to the initial report.

Plan Maintenance Procedures

For your typical facility surveys that include buildings and assets, planned maintenance is a mandatory

process for the longevity of the asset. Applying industry standard processes for maintenance can improve the performance of that asset financially and operationally.

Effective budgeting for maintenance, which has many different methodologies, is mandatory these days to ensure the safety and use of buildings. Some organizations apply a basic rule-of-thumb annualized maintenance of 2 to 4 percent of your operating budget to funnel back into deferred maintenance. Based on a relative sampling of buildings that may be 40 to 50 years old and have been poorly maintained until the last ten years, that figure may double, or even triple, in order to catch up on delayed maintenance.

The basic element of budgeting and planning is critical for the successful maintenance of a facility. The FCA survey is great to perform, but it

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can be wasteful if there is not commitment to follow through and the findings are not acted upon. It is critical to have leadership in all affected departments involved with the process early and all the way through to better understand the value and long-term advantages to their institution.

Fortunately, facility maintenance has numerous industry standard references available, which cater to many different industries. Education has many internal and external benchmark references worth reviewing, and RS Means also provides substantial information for planned maintenance activities and cost comparisons.

Step-by-step maintenance procedures are available for all types of established building elements and equipment, providing for a standardization of care to be deployed.

Investment into these plans provides each maintenance organization the tools to be successful for managing resources and the surveyed asset.

Summary

With the growing demand of efficient and effective maintenance, institutions are delivering an educational environment that can meet and exceed the student's expectations. Being the eyes of the institution, both students and faculty will benefit as the facility maintenance organizations continue to raise the bar for service and quality. Through effective maintenance analysis and planning, institutions will realize a return-on-investment (ROI) from a well planned and executed FCA survey process. 🏰

References

Building Condition Assessment "Standards"

- ASCE Standards—ANSI 11-90
- Americans with Disabilities Accessibility Act Guidelines (ADAAG)
- Americans with Disabilities Act (ADA Current 1990)
- International Facilities Management Association (IFMA)
- National Roofing Contractors Association (NRCA)
- National Fire Protection Association (NFPA)
- National Electric Code (NEC)
- National Electric Safety Code (NESC)
- Standard Guide for Baseline Property Condition Assessment Process (ASTM E-1480 and E-2018)
- Uniform Mechanical Code (UMC)
- Uniform Plumbing Code (UPC)
- Uniform Building Code (UBC)

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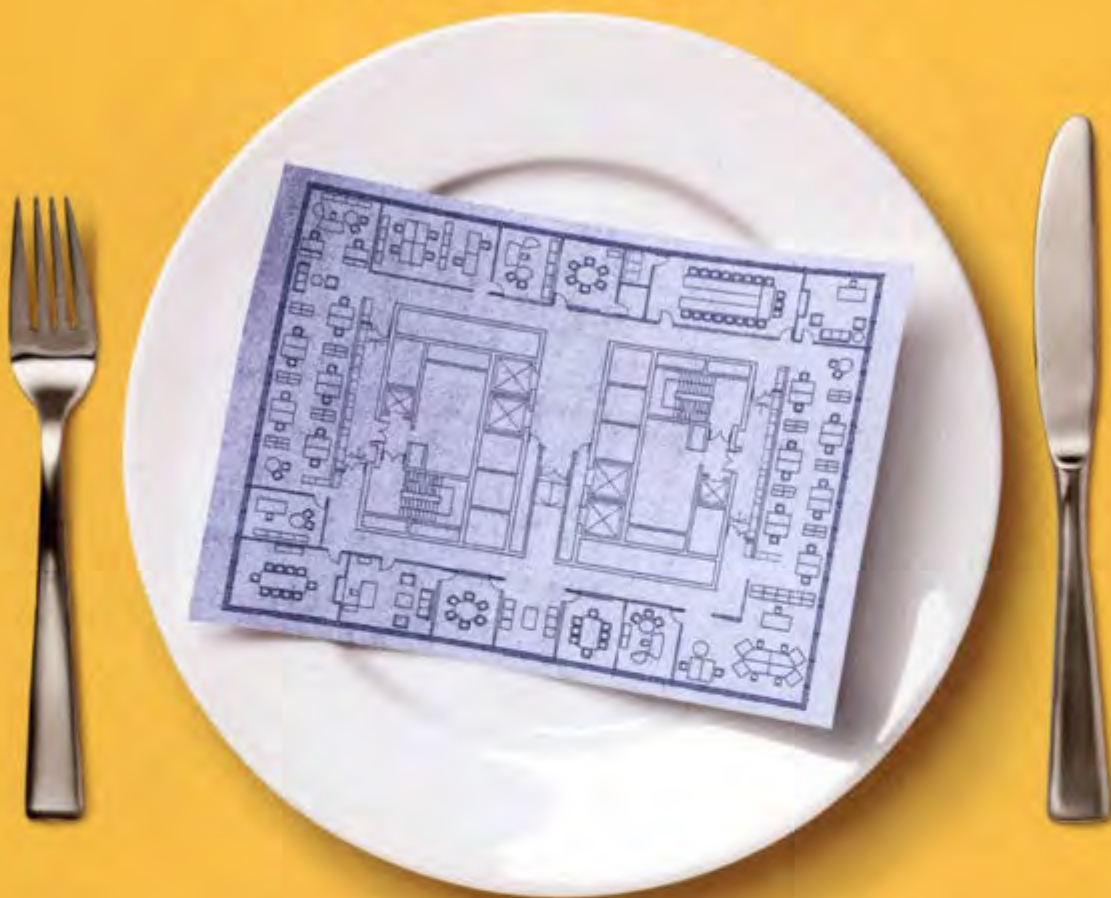
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The Bookshelf

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

Two books, briefly presented here, provide facility officers essential information for operations and growth. Enjoy.

The Wisdom Network, An 8-Step Process for Identifying, Sharing, and Leveraging Individual Expertise, Steve Benton and Melissa Giovagnoli, AMACOM, 2006, \$27.95, hardcover, 216 pages.

While our campuses are full of experts in their field, including many facilities management leaders, there is no one that knows everything. So how do great, creative things occur? *The Wisdom Network* explains how great things are developed through knowledgeable people and how to create wisdom in an organization.

Wisdom is the last step in the knowledge continuum following data, information, ideas, and knowledge. Many experts have knowledge generated from information and ideas but true wisdom comes from a greater understanding and synthesis of wisdom.

We're all searching for some bit of wisdom to make our facilities more efficient and customer service more effective. The solution varies from campus to campus. While we can share ideas we have to convert the

ideas to knowledge and then still have not achieved wisdom. The *Wisdom Network* provides a way to take advantage of experts and others who have information within an organization and turn it into knowledge and wisdom. While the wise ones among us understand that nothing great comes easily, we recognize leverage of good people can create great things. This book will help get there faster.

Facility Management, second edition, Edmond Rondeau, Robert Kevin Brown, and Paul D. Lapidus, Wiley, 2006, \$90, hardcover, 573 pages.

This book, now in its second edition, is more of a textbook than the usual reference for professional facility managers. The focus is on commercial facilities and ones where the landlord provides significant operational services. The typical issues of planning, design, construction, operations, maintenance, renewal, and use of outsourcing (both human resources and physical facilities) are discussed in depth.

While higher education facility managers are landlords of their facilities the approach to higher ed differ from some of the concepts present in *Facility Management*. It provides good information about processes and definitions of widely used terms and is therefore a good reference for professionals. 📖

Ted Weidner is assistant vice chancellor of facilities management & planning, University of Nebraska-Lincoln, Lincoln, Nebraska and president of Facility Asset Consulting. He can be reached at tweidner@unlnotes.unl.edu.



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Sierra Monitor Corporation has released the Sierra Monitor 5100-02-IT Combustible Gas Sensor Module. This giant step in catalytic bead combustible gas sensors provides a number of features in one powerful package. IT means information technology—communications available via RS-485 Modbus RTU, 4-20 mA optically isolated output or SMC Sentry bus, thus meeting the installation needs of its user. IT means instrument technology—the 5100-02-IT has the highest accuracy, fastest response and lowest drift in the industry and FM approved for performance, hazardous locations and six month calibration interval, resulting in lower maintenance and long-term performance. For additional information contact Sierra Monitor Corporation at 408-262-6611.



Onset Computer Corporation introduced new Real-Time Alarm Software for use with HOBO data loggers. The new alarm software automatically notifies users via cell phone text messages or e-mail when temperature, humidity and other conditions exceed user-defined limits. The software is able to provide alarm notification for multiple HOBO data loggers, and can be used with inexpensive Ethernet servers. This makes it particularly useful in applications where numerous locations need to be monitored throughout a facility. For more information visit Onset Computer Corporation online at www.onsetcomp.com/hobo.



Mikron Infrared utilizes patented filtering optics to give the new MikroScan 7400 thermal camera the unique ability to “see” through furnace flames for boiler-tube monitoring, or to be used for standard predictive maintenance monitoring of electrical cabinets, motors, bearings, etc. The camera offers three selectable temperature ranges, including a high-temperature (400°C - 1600°C) range needed for infrared imaging inside furnaces where combustion temperatures can exceed 1100°C. It also captures simultaneous visual images with on-board voice annotation. For additional details contact Mikron Infrared at 888-506-3900.

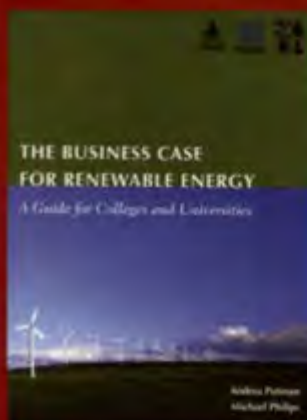


Dectron Internationale's Circul-Aire® division has introduced BioCirc® Total Air Filtration system that combines ultraviolet, mechanical filtration, and gas-phase air purification technologies in a single-source responsibility packaged unit. The Bio-Circ is the commercial IAQ solution for reducing airborne infectious diseases, mold spores, general particulates, odors, and gaseous contaminants in healthcare facilities, schools, laboratories, public spaces, and other occupied applications. The Bio-Circ is available as: 1) 350 to 3,000-cfm self-contained, ductless units for single rooms up to 25,000 sq. ft.; 2) OEM or retrofitable units inside central air handling equipment up to 100,000-cfm; 3) duct-mounted units. For more information contact Dectron Internationale at 800-800-1868.



Genie Industries announces its new S-Series high capacity boom option. Ideal for a wide range of applications, the platform on Genie's new S-60 HC offers a full range of motion up to 750 lbs, for 50 percent more load capacity. It also supports platform loads up to 1,250 lbs, for 25 percent more load capacity. That's 40 ft. 8 in. of outreach, including up to three people and gear. For full details visit Genie Industries online at www.genieind.com.





The Business Case For Renewable Energy

by Andrea Putman & Michael Phillips

Colleges and universities are saving money and even making money with renewable energy, which includes solar, wind, biomass, geothermal, and hydropower. They can either build a renewable energy project on or near campus, or they can buy renewable electricity generated by others through a local utility or other supplier. This book examines

both approaches and explains how and why growing numbers of higher education institutions are powered by renewable energy. It provides guidance on how to consider the various technologies, ownership options, relationships with utilities, and financial strategies.

APPA member price: \$30.00

Nonmembers: \$40.00



Stewardship & Accountability in Campus Planning, Design & Construction

Edited by Donald J. Guckert

These 12 chapters from facilities PDC experts offer the tools you can use to build your reputations as educational facilities professionals. They will help you frame your technical successes as you demonstrate your stewardship of your campus facilities. Topics covered include the high cost of building a better university, design decisions

and the campus image, facilities master plans, building codes, making a business case for sustainability, paying for the architect's mistakes, green building design, design decision-making for total cost of ownership, and much more.

APPA member price: \$39.00

Nonmembers: \$59.00

To purchase these and other APPA publications, visit www.appa.org/applications/publications/index.cfm or call 703-684-1446

APPA's Facilities Performance Indicators report includes the comprehensive findings of the annual Facilities Core Data Survey, which collects costs, staffing, and building and space data from colleges, universities, K-12 schools and districts, and other educational facilities.

Facilities Performance Indicators



The Facilities Performance Indicators report consists of the following features:

- **Operating Costs Report**, which covers basic statistics on daily facilities operations, including administration, construction/architecture, custodial services, energy/utilities, landscaping/groundskeeping, maintenance/trades, and public safety;
- **Building and Space Report**, which explores statistics on building age, usage, etc.;
- **Personnel Data and Costs Report**, which looks at trends in salary levels, staffing of full-time equivalent (FTE) positions, and collective bargaining representation by position and also introduces ratios and measures that can be used for staffing and budgeting purposes;
- **Facilities Performance Indicators Dashboard Reports**, which depict survey data in an easy-to-read gauge format;
- **Strategic Financial Measures** that focus on the Facility Condition Index, the Needs Index, capital renewal and deferred maintenance, and more in a Balanced Scorecard approach;
- **Peer Comparison Tool** that allows you to quickly compare key measures from peer or similar institutions;
- **Survey Database**, which allows you to search the collected data through your own queries; and
- **Data and Reports** from the previous year's survey.



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Purchase the Facilities Performance Indicators report through the APPA website: www.appa.org/research/fcds/

The 2004-05 Facilities Core Data Survey summary report can be downloaded free by visiting: www.appa.org/files/PDFs/FCDSWebReport_0405.pdf

APPA urges you to participate in future editions of the Facilities Core Data Survey!
www.appa.org/research/fcds.cfm

For more information, call the APPA office at 703-684-1446 or email steve@appa.org

APPA PUBLICATIONS

Coming Events

Coming Events

For more information on APPA seminars and programs, visit www.appa.org/education or call 703-684-1446. Also visit our website's interactive calendar of events at www.appa.org/applications/calendar/events.cfm.

APPA Events

Sep 10-14, 2006—Institute for Facilities Management. Indian Wells, CA.

Sep 10-14, 2006—Supervisor's Toolkit: Nuts and Bolts of Facilities Supervision. Indian Wells, CA.

Jan 21-25, 2007—Institute for Facilities Management. Orlando, FL.

April 15-19, 2007—Leadership Academy. San Jose, CA.

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

APPA Regions - 2006

Sep 30-Oct 4—PCAPPA Annual Meeting. San Jose, CA. Contact: Tony Valenzuela, tvalenzuela@jsu.edu.

Sep 30-Oct 4—CAPPA Annual Meeting. San Antonio, TX. Contact: John Greene, jgreene@trinity.edu.

Oct 1-4—MAPPA Annual Meeting. Indianapolis, IN. Contact: Donna Kent, dkent@iupui.edu.

Oct 12-17—SRAPPA Annual Meeting. Durham, NC. Contact: Glenn Reynolds, glenn.reynolds@duke.edu.

Oct 15-18—FRAPPA Annual Meeting. Mystic Seaport, CT. Contact: Terry Pellerin, pellerin@wpi.edu.

Oct 18-22—RMA Annual Meeting. Billings, MT. Contact: Eakle Barfield, ebarfield@msubillings.edu.

Other Events - 2006

Oct 4-6—AASHE 2006: "The Role of Higher Education in Creating a Sustainable World." Tempe, AZ. Contact: Judy Walton, conference@aashe.org.

Oct 8-10—ACUHO-I/APPA Jazz It Up! Workshop Quintet. Jacksonville, FL. Contact: office@acuho-i.org.

Oct 15-18—NACAS 38th Annual Conference. San Diego, CA. Contact: NACAS, info@nacas.org.

Oct 17-19—Labs21 Annual Conference. San Antonio, TX. Contact: Jessica Stern, labs21@erb.com.

Oct 18-20—2006 Design-Build Conference and Expo. Nashville, TN. Contact: Lisa Washington, lwashington@dbia.org.

Oct 26-27—Academic Science Buildings-College & University. San Diego, CA. Contact: Bill Nothofer, bnothofer@tradelineinc.com.

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APPA'S 2007 AWARDS & RECOGNITION PROGRAM

NOMINATIONS OPEN SEPTEMBER 15, 2006

www.appa.org/recognition

Award for Excellence

The APPA Award for Excellence is designed to recognize and advance excellence in the field of educational facilities. Originally established in 1988, the Award for Excellence is APPA's highest institutional honor and provides educational institutions the opportunity for national and international recognition for their outstanding achievements in facilities management. The award is designed to highlight the essential role of facilities operations in the overall institutional mission and vision. Award for Excellence nominations are evaluated using the same criteria applied through the Facilities Management Evaluation Program (FMEP) in the areas of leadership; strategic and operational planning; customer focus; information and analysis; development and management of human resources; process management; and, performance results. Selected institutions are visited by an evaluation team. The Award for Excellence designation is valid for a period of five years.

Effective & Innovative Practices Award

APPA's Effective & Innovative Practices Award recognizes programs and processes that enhance service delivery, lower costs, increase productivity, improve customer service, generate revenue, or otherwise benefit the educational institution. Entries can describe either a new program or significant restructuring of an existing program or process. Up to five ranked submissions will be eligible for a cash award of \$4,000 sponsored by Sodexo USA.

APPA encourages those interested in applying for an award to contact your regional Professional Affairs or Awards and Recognition Committee representative. A list of committee members can be found on-line at: www.appa.org/Leadership/committees/home.cfm.

APPA Fellow

While most awards recognize past achievements, the APPA Fellow designation brings with it both recognition for specific accomplishments to date and expectations for continuing involvement in APPA's leadership program through research and mentoring. The Fellow is APPA's highest individual achievement award. Individuals must have: been an active member of APPA for a minimum of ten years; graduated from APPA's Institute for Facilities Management; completed APPA's Leadership Academy; completed an approved research project under APPA's Center for Facilities Research; prepared an article accepted for publication by APPA; and must submit two references from colleagues in the educational facilities profession that speak about the individual's successes and dedication to the profession.

Meritorious Service Award

Each year, APPA members bestow the Meritorious Service Award upon the individual member or members who have made significant, life-long contributions to the profession of education facilities management. APPA's highest award for individual service, the Meritorious Service Award is given to no more than three individuals a year. Individuals must have been an active member of APPA for a minimum of ten years; attended and participated in meetings and other functions at the international level; and demonstrated continued and distinguished service to the association.

Pacesetter Award

The Pacesetter Award is designed to encourage further participation in APPA among those who have made significant contributions at the regional or chapter level. Up to seven Pacesetter Awards may be given each year.

AWARD DEADLINE: FEBRUARY 15, 2007, MIDNIGHT GREENWICH MEAN TIME

Visit www.appa.org/recognition for all award criteria, application and nomination details.

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