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FACILITIES manager

MAR/APR 2008

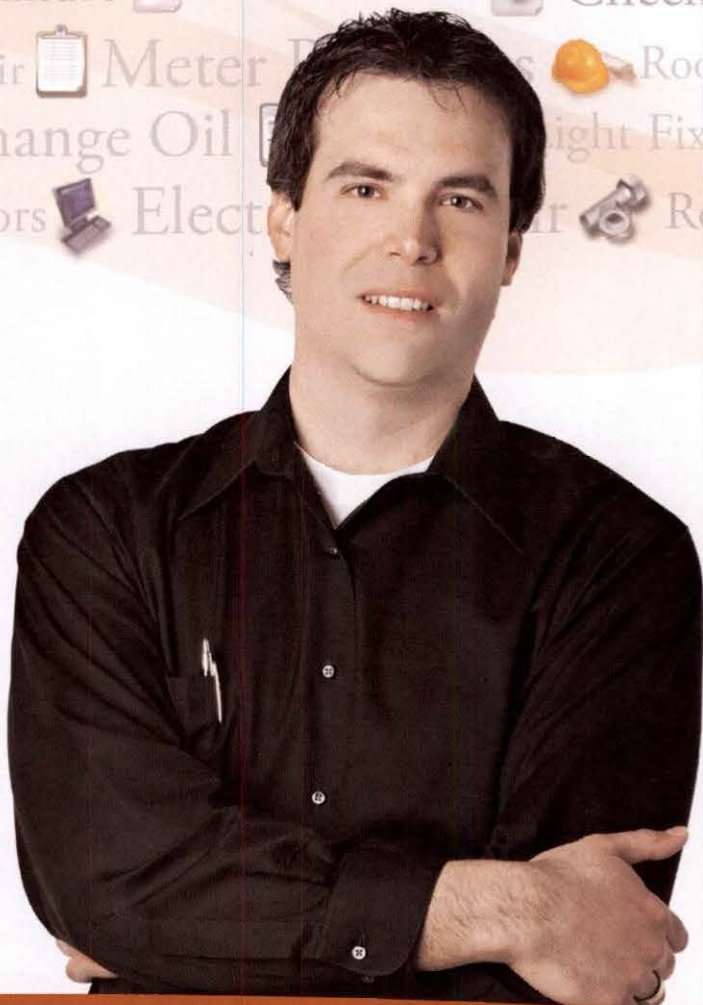
A large, detailed image of a human hand, palm facing up, holding the Earth. The hand is painted with colors representing the Earth's surface: blue for oceans, green for land, and white for clouds. The Earth is positioned in the center of the palm, with fingers spread around it. The background is dark, making the hand and Earth stand out.

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Sustainability & Environmental Stewardship

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Rising To Greatness

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Leaders in educational facilities strive for quality and excellence. Discover new ways to elevate your career and transform your facilities at APPA 2008, the premier international event for educational facilities professionals.

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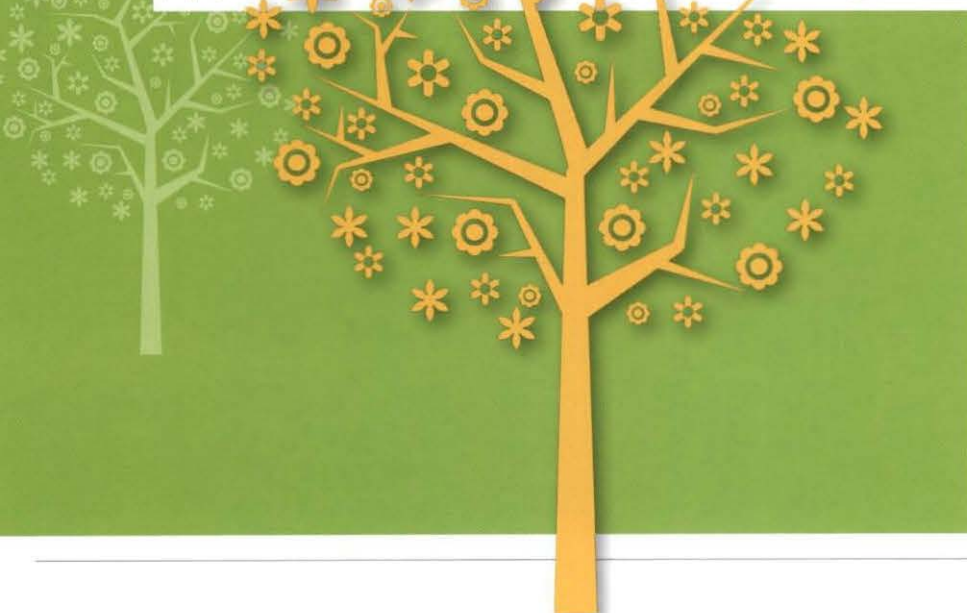
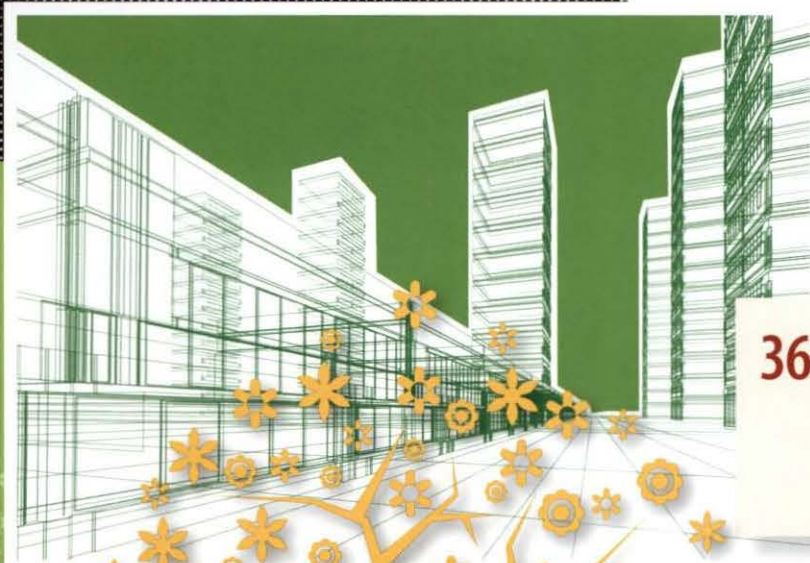
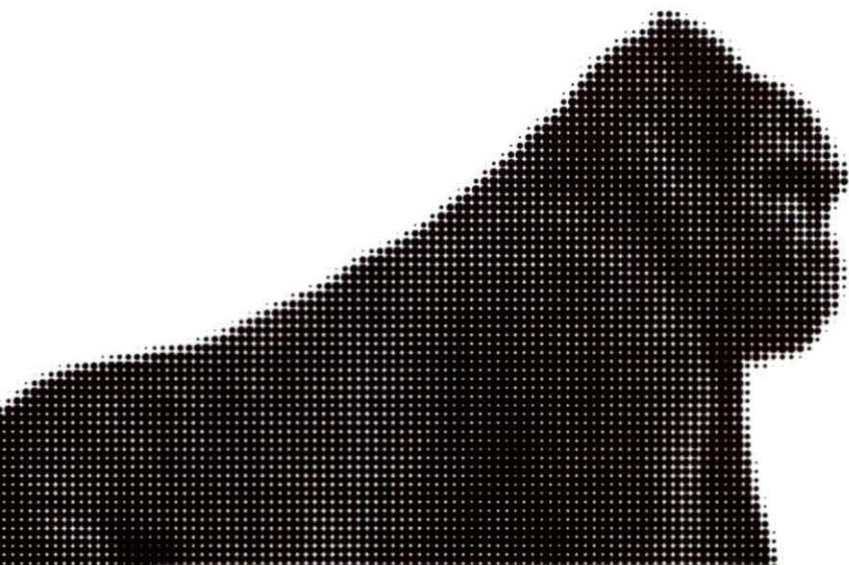
By Alex Wilson

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STARS: A Sustainability Assessment and Rating System for Colleges and Universities

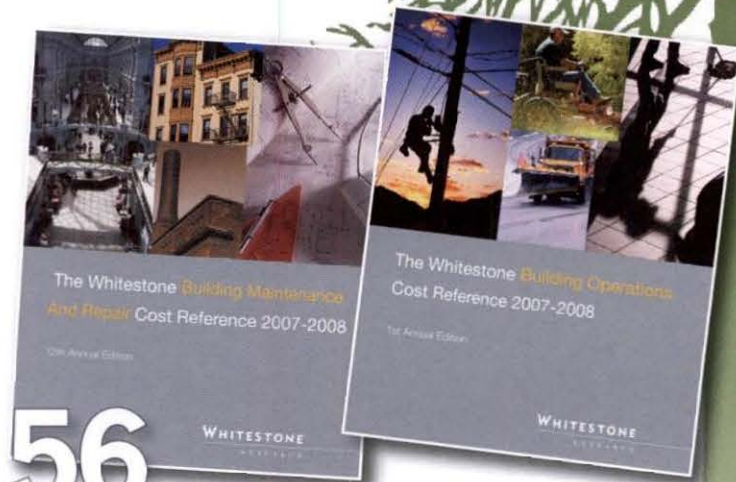
By Judy Walton

Do you want your university to be a sustainability star in higher education? AASHE's new STAR's program offers a voluntary, self-reporting framework for gauging relative progress toward sustainability for colleges and universities.





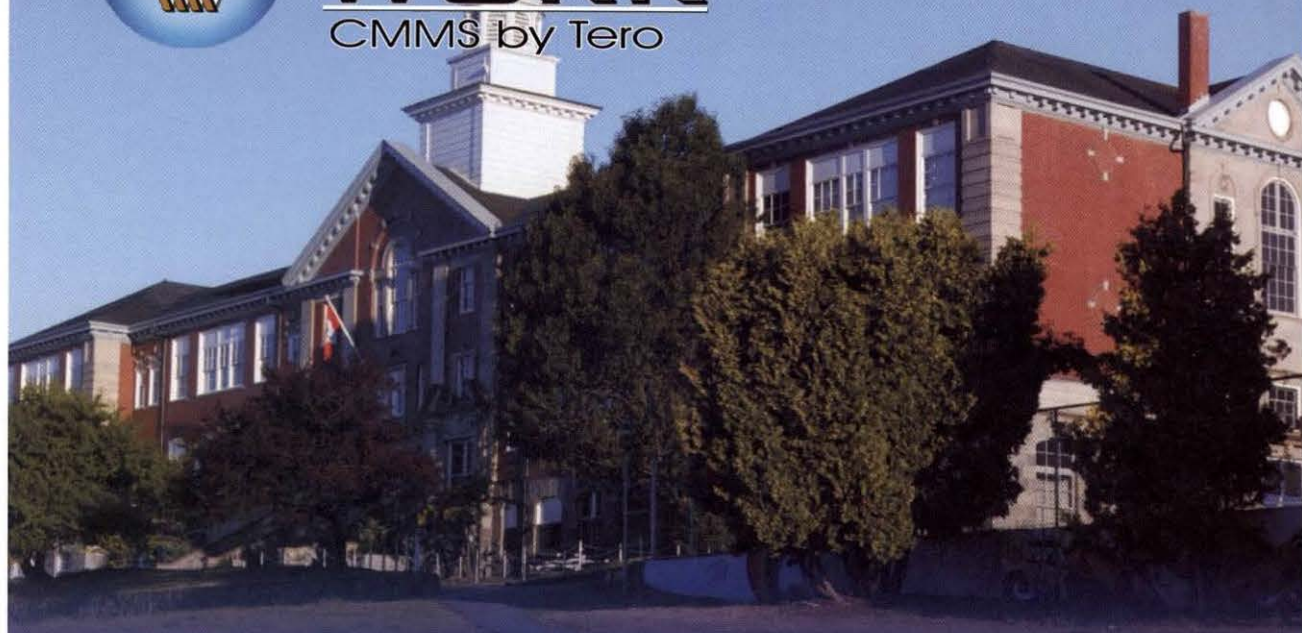
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There are times when you need to put a stake in the ground. The American College & University Presidents Climate Commitment (ACUPCC) is currently one of those potentially polarizing issues that brings some controversy to the world of educational facilities. What position should APPA take? Is there more than one way to view the requirements of the Commitment?

Launched in June 2007, the ACUPCC began with about 65 initial signatories—college and university presidents who took the first steps toward formalizing and publicizing their campus' efforts to reduce greenhouse gas emissions and reverse global warming. Now nearly 500 presidents have become signatories to the document—a key indicator of institutions who are seriously committing to develop or enhance their programs to help achieve “climate neutrality.”


To some educational facilities professionals, the result has been for their president to turn to them and say, “I’ve just signed this Commitment, now what do we do to achieve it?” The designated “implementation liaison” has been everyone from newly hired sustainability coordinators, facilities directors, and energy officers, to the students and student groups. It is important to quickly identify a project leader who has the authority and ability to work well with others on campus and in the community to take the steps necessary to fulfill the Commitment. The full *Presidents Climate Commitment Implementation Guide* can be downloaded at http://www.presidentsclimatecommitment.org/pdf/acupcc_ig_final.pdf.

Some APPA members are concerned that the Commitment will become another unfunded mandate that threatens the facilities departments' meager budgets and human resources. Others have expressed concern about the political or social “agendas” behind the Commitment and the ramifications of signing it. Yet it is the facilities professional who has worked for years to find and implement energy efficiencies on campus and introduce innovative

technologies and practices to advance the value of the facilities.

Educational facilities professionals will also be key participants in discussions about or implementation of greenhouse gas reductions. Our members will be able to contribute cost estimates on programs and material required to achieve their campus goals; perspectives on the consequences of planned actions on service levels to the students, faculty, and staff; and innovative thinking that will help their institution attain the targets of the Presidents Climate Commitment and goals of their campus.

APPA supports the American College & University Presidents Climate Commitment and the efforts of Second Nature, ecoAmerica, and the Association for the Advancement of Sustainability in Higher Education (AASHE) in their coordination and oversight of the program.

APPA's newest publication, *The Green Campus: Meeting the Challenge of Environmental Sustainability*, is a significant and timely contribution to the practice of environmental stewardship and will help you achieve the goals of the ACUPCC. We have excerpted three chapters from that book for this issue of *Facilities Manager* and trust that the variety of issues it tackles will give facilities professionals a meaningful resource for progress in their sustainability efforts. Many thanks to Walter Simpson, editor and coauthor of *The Green Campus*, for his much-valued assistance. 

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About APPA

APPA promotes leadership in educational facilities for professionals seeking to build their careers, transform their institutions, and elevate the value and recognition of facilities in education. APPA provides members the opportunity to explore trends, issues, and best practices in educational facilities through research, publications, professional development, and credentialing. Formerly the Association of Physical Plant Administrators, APPA is the association of choice for 5,200 educational facilities professionals at more than 1,500 learning institutions throughout the United States, Canada, and abroad. For more information, visit us at www.appa.org.

BUILDINGS... *The Gifts that Keep on Taking*

A Framework for Integrated Decision Making

RODNEY ROSE

with David A. Cain, Ph.D., James J. Dempsey, P.E., and Rich Schneider

THE HIGHLY ANTICIPATED *Buildings... The Gifts That Keep on Taking* is now on sale. Primary author Rodney Rose presents the oft-neglected considerations for the hidden costs and long-term management and maintenance of a facility built with donated money. *Buildings...* is a timely, must-have tool for all educational facilities managers and other top university administrators.

Buildings... highlights detailed findings of a four-year project sponsored by APPA's Center for Facilities Research (CFaR) on best practices for facilities planning and management. Primary author Rod Rose identifies:

- Seven key facilities issues
- Strategic questions to consider
- Asset investment perspectives

This essential resource will equip facilities administrators with a framework for evaluating facilities investment alternatives to support their institution's mission and help achieve long-term goals.

“We love to receive donations for building or renovating appealing campus facilities, but we struggle down the road because we don't realize the long-term impact of the gift. With more intricate facilities demands, higher costs, and stricter standards, facilities managers and key administrators need a concrete framework to help us be good stewards of our facilities.”

—Brooks H. Baker, III, Associate VP for Facilities, University of Alabama-Birmingham, former APPA President

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facilities digest

By Kisha D. DeSandies

2006-07 FPI Report & Dashboard Now Ready for Purchase!

The 2006-07 Facilities Performance Indicators Report is available for purchase through the APPA website. The new report is based on an extensive data collection effort last fall for the 2006-07 fiscal year. Anyone who purchases the 2006-07 Web-based FPI report will have access to data from 2005-06, and the new set of Dashboard Indicators.

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- APPA Member Non-Participant - \$225
- Nonmember Participant - \$250
- Nonmember Non-Participant - \$750

Each purchase allows your institution to identify up to five users who can access your report. In addition, you'll have access to nearly 400 dashboard gauges for all

performance indicators. All purchases are secure and must be made using a valid credit card. To purchase the Report, visit www.appa.org/research/fpi/purchase.cfm#ordernow.

Facilities Performance Indicators



View webinars on the FPI and dashboards—including how to access various reports, indicators, and results—at <http://appa.org/research/fpi.cfm>. You will also learn how to best utilize the report for your own budgeting, staffing, and planning purposes.

Tell Us What You Think About Facilities Manager

APPA Members and subscribers to *Facilities Manager* are invited to participate in a Web-based survey about the magazine. The survey will be e-mailed to you in April. This is your time to share your feedback and help the editorial staff provide you with the latest trends, issues, and solutions to build careers and transform institutions. Contact Managing Editor Kisha DeSandies (kisha@appa.org) for more information.



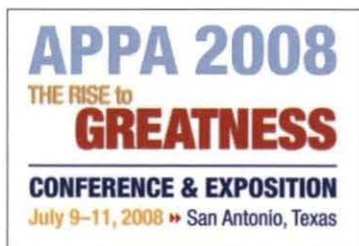
APPA 2008 Offers Focused Perspective on Solution Revolution & Technology

One of the three perspectives at APPA 2008: The Rise to Greatness will focus on the solution revolution and technology. Comprehensive sessions will cover how to address changes in technology and provide key information to help you understand the impact new developments have on educational environments. Experts will also explore student needs and expectations for technology at learning institutions. Sessions include:

PLENARY

Succeed in the Age of Collaboration

A leading authority on business strategy, Don Tapscott will explore shifting paradigms and the role of technology in productivity, business design, effectiveness, and competitiveness.



PANEL DISCUSSIONS

- Intelligent Buildings, Paul Ehrlich, moderator
- Student Demographics & Expectations, Diana Oblinger, moderator

BREAKOUT SESSIONS

- Pirate's Dilemma, Matt Mason, speaker
- Virtual Handshake, Scott Allen, speaker
 - Technology Project Delivery, Tim Cape, speaker
 - Opportunities & Strategies: IT & a LEED Case Study, Scott Walker, speaker
 - CFaR Student Research Project, BYU Students

Register today for APPA 2008—the premier event for educational facilities professionals, July 9-11 in San Antonio, Texas at www.appa.org/training/appa2008.

2008 Candidates for APPA Office

The Nominating Committee is pleased to present their selected slate of officers for the 2008 elections. The ballot is open for primary Institutional and Affiliate representatives to vote. Only one vote is permitted per institution.

President-Elect

- **Polly Pinney**, Executive Director of Facilities Management, Arizona State University

Vice President for Information & Research

- **Randolph Hare**, Associate Director of Physical Plant, Washington & Lee University
- **Richard Storlie**, Director of Administrative Services, Facilities Management, University of Nevada/Las Vegas

Vice President for Professional Development

- **Michelle Estep-Frederick**, Training & Development Manager, American University
- **David Gray**, Associate Vice President, Middle Tennessee State University

New myAPPA Feature – Create Your Own User ID

Having a hard time remembering your APPA User ID number? Now, you may create your own unique and memorable user ID. To change your ID, log in to myAPPA using your system-generated user number. Go to the purple myAccount box. Click on "Change your User ID" and create your own ID that is at least 6 characters long, including one number. It's that easy.

Campus Sustainability Officers Profile Released

The Association for the Advancement of Sustainability in Higher Education has released a survey of campus sustainability officers, detailing what the officers spend time working on, when their positions were created and how they are financed, and how much the officers are paid. The survey, conducted in early 2007, included responses from 62 sustainability officers (out of about 80).

Nearly 75 percent of the respondents were in positions that were created within the last five years, usually at the behest of an administrator or with the push of a campus committee or student organization. The sustainability officers said they spent most of their time coordinating sustainability efforts, working with students, or working on energy-efficiency or recycling issues. They spent the least amount of time on environmental-health programs, green dining, and curricular issues and teaching.

Thirty-two percent said they were housed in the facilities department, while 31 percent were part of a sustainability office; 13 percent were in an environmental health and safety office; and 11 percent were in an academic center. Twenty-five percent of respondents said they reported to a facilities officer; 28 percent reported to a vice president for business and administration or a vice president of finance. Only 6 percent said they reported directly to a president.

Salaries mostly ranged between \$40,000 and \$80,000, though the highest-paid respondent, with 20 years of experience, made \$150,000. The lowest-paid respondent, with about a year of experience, made less than \$20,000. Most respondents had around five to ten years of experience.

View the complete report at www.aashe.org/resources/pdf/sustainability_officer_survey_2008.pdf.

'Velorution' at Ripon College to Give Freshmen Bikes

This fall, Ripon College in Wisconsin will give a new bike, helmet, and bike lock—\$400 worth of equipment—to the first 200 incoming freshman who agree to leave their cars at home. The goal of the Ripon Velorution Project is to minimize vehicular traffic on campus. The program is funded by college donors, trustees, alumni, a local lock company, and bicycle corporation. Ripon has systematically moved campus parking from the interior of the campus to the exterior in an effort to make car travel less convenient. By the beginning of the 2008-09 school year, portions of the two main streets that bisect campus will be removed to create a safer, greener, more pedestrian- and bicycle-friendly mall. Further details on the program are at www.ripon.edu/velorution.



New APPA Publications on Environmental Responsibility

Visit APPA's Bookstore for two new resources on sustainability and environmental standards—hot topics for educational campuses and facilities around the world.

The Green Campus—Meeting the Challenge of Environmental Sustainability:

This anthology of articles from *Facilities Manager* and other publications on sustainability also includes new essays from top campus environmental leaders advocates addressing many opportunities for campus greening.

Environmental Compliance Assistance Guide (2nd ed.): This update is a comprehensive guide to assist facilities and campus safety professionals in meeting current environmental regulation requirements.

Visit www.appa.org/bookstore for details and to purchase these books.

APPA EVENTS – 2008

April 18 EFP Prep Course *Scottsdale, AZ.*

April 18 or 19 EFP Exam *Scottsdale, AZ.*

April 19-23 Leadership Academy *Scottsdale, AZ.*

April 19-23 Supervisor's Toolkit *Scottsdale, AZ.*

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

May 29-30 AAPPA Spring Business Meeting St. Francis Xavier *Antigonish, NS. <http://fm.dal.ca/aappa>*

July 7-11 Supervisor's Toolkit *San Antonio, TX.*

July 9-11 APPA 2008: The Rise to Greatness
San Antonio, TX.

July 12 EFP Prep Course *San Antonio, TX.*

July 12 or 13 EFP Exam *San Antonio, TX.*

Sept 28-Oct 1 ERAPPA Regional Conference
Baltimore, MD. <http://www.erappa.org>

Sept 28-Oct 1 RMA Regional Conference
Park City, UT. <http://www.rmappa.org>

Oct 5-8 MAPPA Regional Conference *Madison, WI. <http://www.m-appa.org>*

Oct 8-10 PCAPPA Regional Conference *Portland, OR. <http://www.pcappa.org>*

Oct 11-15 CAPPA Regional Conference
Oklahoma City, OK. <http://www.cappa.org>

Oct 25-28 SRAPPA Regional Conference
Charleston, SC. <http://www.srappa.org>

Nov 6-7 AAPPA 2008 Fall Education Conference
Halifax, NS. <http://fm.dal.ca/aappa>

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





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facilities digest

APPA Membership Dues Notices Sent

The 2008-09 APPA membership year begins April 1, 2008 and runs through March 31, 2009. Renewal invoices have been sent and prompt payment is greatly appreciated. Your regional membership dues are also included in this invoice. When you return your payment, please include staff changes or corrections. Also, make sure you complete the Help Spread the Word enclosure, so up to five of your staff—who are not currently listed on your APPA membership—can receive electronic APPA information. For questions or additional information e-mail membership@appa.org.

Help Spread the Word

News Events Programs



APPA Professional Development Opportunities

APPA's professional development and educational programs provide you with the knowledge and support to take the lead in your career and your institution. APPA's programs are created and led by facilities professionals to support your effectiveness, success, and achievement, allowing you to earn the credentials, recognition, and knowledge to elevate your standing and your role within your institution.

SUPERVISOR'S TOOLKIT: NUTS AND BOLTS

July 7-11 San Antonio, TX
(registration opens March 15)

September 7-11 Austin, TX
(registration opens June 1)

INSTITUTE FOR FACILITIES MANAGEMENT & FACILITIES FINANCE INSTITUTE

September 7-11 Austin, TX
(registration opens June 1)

Register at www.appa.org/training

New Sponsor to Support APPA's Sustainability Initiative

APPA is pleased to announce that Affiliated Engineering, Inc. (AEI) will sponsor and contribute to a sustainability Practical Guide (in development) and a November User's Conference. AEI is an engineering consulting company with significant resources for higher education regarding energy, resources, and the environment. The guide will help higher education institutions accomplish the goals of the American College & University Presidents

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September 12 Austin, TX

EXAM

July 12 or 13 San Antonio, TX
September 12 or 13 Austin, TX

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EVENTS (CONT'D)

OTHER EVENTS – 2008

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

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

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

July 12-15 NACUBO Annual Meeting Chicago, IL. www.nacubo.org

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

July 19-23 SCUP's Annual International Conference and Idea Marketplace Montréal, QC.
<http://www.scup.org/annualconf/43/index.html>

July 31-Aug 3 7th Annual UC/CSU/CCC Sustainability Conference Cal Poly, San Luis Obispo.
<http://sustainability.calpoly.edu>

Sep 21-24 National Recycling Coalition Conference Pittsburgh, PA. www.nrc-recycle.org/2008callforpapers.aspx

Nov 9-11 AASHE National Conference Raleigh, NC.
www.aashe.org/conf2008

Nov 19-21 Greenbuild 2008 Boston, MA. <http://www.greenbuildexpo.org>

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

Climate Commitment. The goal of this partnership is to support the role educational facilities professionals will play in planning for the future state of sustainability at their institutions. AEI has extensive expertise in sustainable energy, facility planning, and solutions implementation on college and university campuses. See Lander Medlin's Executive Summary (page 10) for more details.



Sustainability and the ACUPCC

By E. Lander Medlin

with Anthony D. Cortese, ScD, special contributor to Facilities Manager

It is clear that the environment in which America's colleges and universities do their work is encountering significant changes and challenges. These are financial and technological, social, and demographic, but of even greater import is the challenge of environmental degradation. Hence, the term sustainability has arisen and become increasingly pervasive in the educational facilities field.

Although the literal definition of sustainability refers to the ability to maintain a positive status or set of conditions over time, in the past two decades the concept of sustainability has emerged as an aspiration for society to embrace. In fact, sustainability cuts across all facets of human life, from environmental to economic, social to political. The work we engage in every day as educational facilities professionals is directly impacted by this movement.

A key area of impact is the move from traditional economic development to a new kind of development—sustainable development—defined as, “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” This definition has become the most commonly accepted meaning of what is now called sustainability. However, sustainability is not just about protecting the environment—it is also about finding ways to meet the basic needs of all current and future generations of humans.

For the first time in human history, the size and scale of the population and its technological and economic prowess have made humanity the pervasive and dominant force in the health and well-being of the earth and all its inhabitants. No

part of the earth is unaffected by humans, and the scale of our impact is growing exponentially. Furthermore, global warming, is leading to an unprecedented destabilization of the earth's climate. Global warming is a stark indication of the fact that humanity is out of sync with its life support system.

...SUSTAINABILITY IS NOT JUST ABOUT PROTECTING THE ENVIRONMENT—IT IS ALSO ABOUT FINDING WAYS TO MEET THE BASIC NEEDS OF ALL CURRENT AND FUTURE GENERATIONS OF HUMANS.

Higher education's reaction has been to make exponential growth in distinct programs related specifically and more exclusively to the environmental dimension of sustainability. Educational facilities professionals have been on the forefront of this work, having incorporated numerous programs, projects, and services into their daily operations. Unfortunately, there are numerous facets and dimensions to the problems we face that will require a multidisciplinary approach, a strategic focus, and bold leadership that pushes the limits of knowledge to go beyond what is possible now. Now we are at a crossroads. We need an unprecedented shift in the way we think and act. And the focus must be systemic and interdependent.

In the last 18 months there has been a significant shift in the thinking and commitment as evidenced by the launch of

the American College & University Presidents Climate Commitment (ACUPCC). The ACUPCC is a high-visibility effort to address global warming by garnering institutional commitments to neutralize greenhouse gas emissions, and accelerate the research and educational efforts of higher education to equip society to re-stabilize the earth's climate. To date there are nearly 500 signatories representing over 3 million students in 48 states, ranging from the largest public university to one of the smallest private colleges, a growing number of state university systems, and many community colleges.

These presidents believe leading society toward a low-carbon, less auto-dependent and circular production economy fits squarely into the educational, research, and public service missions of higher education. Indeed, no other institution in society has the influence, the critical mass, and the diversity of skills needed to successfully reverse global warming. Getting to climate neutrality may be the hardest thing that modern society will ever attempt. We will need new technologies, economic instruments, and a whole host of strategies for which the research capability of higher education is crucial. It will take vision, leadership, research, and higher education will need to become a model for society. The participating presidents are committing their institutions to create a comprehensive institutional action plan to move towards climate neutrality. Given the actions that need to occur to make this goal achievable across institutions, educational facilities professionals will and should play a critical role.

APPA will support this vital role by engaging a community of higher education leaders, experts in the field of sustainability, and facilities professionals in a dialogue about this sustainability imperative and its subsequent issues, actions, and approaches. We are happy to announce that Affiliated

Engineering, Inc. (AEI)—a major resource in sustainable energy and facility planning for colleges and universities—will sponsor these conversations at a conference in November.


The scope of this project is to engage in a discussion and distillation of the major issues surrounding the ACUPCC sustainability initiative and its impact on college and university facilities, and to better inform all educational facilities professionals on alternative ways to address carbon neutrality, climate issues, and greenhouse gases. By engaging a broad range of thought leaders, we will develop a better understanding of the actions needed to achieve climate neutrality as intended in the ACUPCC and identify best practices for incorporating sustainability concepts into the operating culture of the educational facilities organization.

APPA and AEI will synthesize these views and ideas in the form of a practical guide for meeting the goals of the Climate Commitment and achieving a more sustainable institution. We will support this work through webinars highlighting the tools and approaches outlined in this practical guide and will do our work in collaboration with other relevant higher education associations and the business community. We are also considering the opportunity to explore potential research topics for application and portability across all educational facilities. Creating new knowledge and/or synthesizing it into best practices that are useful to educational facilities professionals will ensure a greater understanding of sustainability, its future challenges and opportunities within the education marketplace.

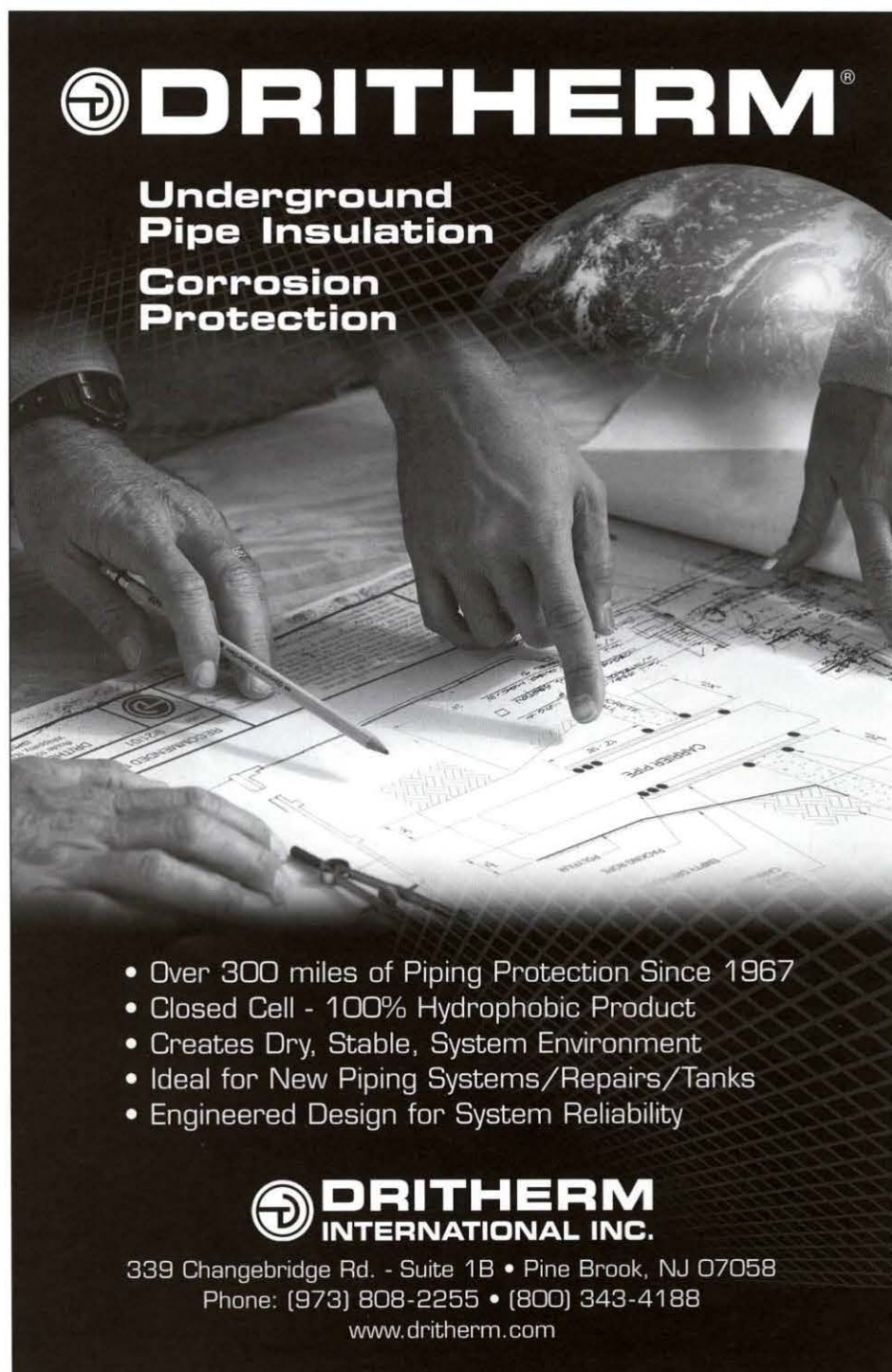
We plan to offer a special track at the September 2008 Institute for Facilities Management, and a Users Conference in November to support the broader effort of sustainability whether one is represented as an ACUPCC signatory school or not. We believe all educational facilities professionals can use this type of content and focused work no matter what their institution's status with the ACUPCC.


The scope of such a project is multi-

faceted, will occur over multiple years, will require extensive support from the business community, and will require a long-term collaborative approach with other higher education associations. Yet, this important work will position our organization with other associations in the higher education community as an invaluable contributor to sustainability development. Moreover, this

ambitious project is critically important at this point in time for APPA to engage on behalf of its members. 


Lander Medlin is APPA's executive vice president. E-mail her at lander@appa.org. Tony Cortese is the president of Second Nature, Boston, MA. E-mail him at acortese@secondnature.org.



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New ADAAG—The New ADA/ABA Accessibility Guidelines

By James L.E. Terry, AIA and Dennis N. Miles, AIA, CBO

By the time this article is on your desk, the U.S. Department of Justice (DOJ) may have already released a Proposed Rule to adopt the new Americans with Disabilities Act (ADA) Accessibility Guidelines (New ADAAG) as the enforceable standards under the ADA. The New ADAAG is already the enforceable standard for the Architectural Barriers Act (ABA) for most facilities built with any federal funds.

Whenever you are doing new construction projects, alterations, or any other work in your existing buildings, the question should come up, "Does this facility, space or element have to comply with the ADA?" Although the answer to that question is almost always "yes," the other question you should be asking is, "Does it also have to comply with the ABA or Rehab Act?" Those are much tougher questions to answer, and that's one of the ways New ADAAG will make life much simpler: it's going to become the single standard for non-residential facilities under all the federal access laws. But first, what's in New ADAAG?

Like the current ADA Standards, New ADAAG gives detailed information about when and where the technical standards apply. It then gives the detailed specifications for making building components and architectural elements accessible to people with disabilities. Updated sections include elements affecting accessibility such as parking, elevators, signage, fire alarms, service counters, and plumbing fixtures. New ADAAG also includes many new sections such as recreational facilities

like swimming pools, golf facilities, play areas, fishing piers, and exercise machines. The new section on access within the Public Rights-of-Way (PROW) isn't out yet, but it's close and it's going to increase accessibility and be far more practical to implement.

So, how does this New ADAAG compare to the accessibility requirements found in the building codes? The Access Board worked closely with the International Code Council's model code writers and the ICC/ANSI A117.1 committee to write New ADAAG and to modify the model codes to harmonize their section numbering, language and requirements as closely as possible. Since those codes are adopted by most local building departments, the result is that the new guidelines for the federal civil rights laws have requirements that are very similar to those found in the building codes. There are still significant differences that require us to check both standards to find the strictest

applicable requirements. The great news is that the new federal guidelines look so much like the A117.1 standard that the differences are much easier to see and the direct conflicts are essentially gone. To get that close, however, hundreds of changes had to be adopted. Those changes will be covered in the next Code Talkers article in this series.

For facilities designed, built, altered, or leased with federal funds and subject to the ABA, New ADAAG is better because it will be consolidating design and construction obligations under two federal standards into one. That's why its official name is the *ADA/ABA Accessibility Guidelines*. If any of the federal agencies adopt New ADAAG as their standard under Section 504 of the Rehab Act for programs receiving funding from those agencies, UFAS will no longer apply to those projects, so all



three of the federal standards that might apply to those facilities will be combined into the one.


New ADAAG was issued by the Access Board as guidelines to DOJ under the ADA and many federal agencies under the ABA (and the Rehab Act if adopted by individual agencies); but that status as simply "guidelines" is changing. The U.S. Department of Transportation (DOT) has already adopted it as their ADA Standard for federally controlled transit facilities and vehicles while GSA and the U.S. Postal Service have also adopted it as their mandatory (enforceable) standards under the ABA. Most importantly for APPA members, it looks like DOJ may adopt it as their enforceable standards under the ADA as early as later this year.

In the case of housing projects and some dormitories, if you're a public entity as defined by the ADA, the Uniform Federal Accessibility Standards (UFAS) will usually apply to all public and common use areas as well as to the first 5 percent of the dwelling units and the Fair Housing Act Accessibility Guidelines to the rest of the units. With housing, you'll typically use UFAS to meet the ADA compliance requirements because the current ADA Standards don't sufficiently address housing issues. Fair Housing recognizes several versions of the ICC/ANSI A117.1 Standards as safe harbors and the 1998 and 2003 versions are very similar to New ADAAG.

Although you'll still have to use the A117.1 Standard for housing projects, your design, construction, and facilities management staff will find their jobs easier because it is so similar to New ADAAG that most of the requirements for public and common use areas will be very familiar. If your residence halls have a short-term use component, for public or private entities, they're considered ADA transient lodging and covered under Section 9 of the current ADA Standards and, possibly also Fair Housing.

For non-residential facilities, there's also a complicated answer. Until DOJ adopts New ADAAG for the ADA, almost every construction and alteration project is obligated to comply with the current ADA Standards that have been in effect since 1991. If the project includes

construction or alterations funding from a federal agency, you may also have an obligation to comply with the ABA which mainly points to New ADAAG. If the construction or alteration project will serve a program or activity that receives federal funding (instead of receiving


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federal construction dollars) it is covered by the Rehab Act Section 504 and you can usually choose the current ADA Standards or UFAS as long as you do it consistently on the same building project.

That Standard will also cover your ADA obligations if you're a public entity. Private entities will have to choose the ADA Standards where allowed by the funding agency. Because of complex inconsistencies between the various laws, regulations, and standards, where you have a choice between the ADA Standards and UFAS, it usually makes more sense to use the ADA Standards in non-residential facilities. This is a simplified analysis so, as always with federal grants and loans, you'll want to ask the agency that is funding your project to tell you (in writing if you can get it) which standards apply.

For work in the public rights-of-way, like curb ramps, sidewalks, and bus stops, the current ADA Standards or UFAS still apply under the ADA & Section 504, even if part of the construction funding is from a federal grant or loan. DOT's adoption of New ADAAG in 2006 applied only to transit facilities controlled by federal agencies and to transportation vehicles. The latest version of the Draft Public Rights-of-Way (PROW) Guidelines from the Access Board is an excellent design resource because it gives much more detailed guidance for real PROW conditions than do the ADA Standards. It could even be argued to provide equivalent facilitation under the ADA. Therefore, especially in circumstances where the current ADA Standard is silent or technically difficult to apply, it could be used instead of the current ADA Standard.

Public entities also have an obligation under the ADA to provide "program access"—nondiscriminatory, integrated access to all programs, activities, benefits, and services—to people with disabilities. Therefore, even if the current ADA Standards are silent about exactly how to provide that access, the obligation still remains. When the current Standards are silent, the entity is expected to develop reasonable and consistent, (preferably

written) policies and solutions to assure access for people with disabilities.

During the design of new facilities, the approach that offers the most accessibility is to design in compliance with the most accessible provisions from each of the Standards. While more time consuming during the design process, this will be a far easier policy to defend and explain if a problem ever comes up in the future. Fortunately, New ADAAG fills in many of the gaps between the other Standards and gives you an excellent source of very useable guidance to meet your obligations. However, until it has been fully adopted by DOJ and the other federal agencies, don't use it by itself. There are places where it provides a lower level of access than the current Standards and following those provisions prematurely could get you into trouble. Aside from those sections, New ADAAG provides a lot of guidance that you will find useful in understanding and meeting the current federal accessibility standards and the needs of people with disabilities on your campus. We'll have more details on that in your next Code Talkers column. ☎

James L.E. Terry and Dennis N. Miles are Accessible Design & ADA Specialists with Evan Terry Associates, Birmingham, AL. E-mail them at jterry@evanterry.com and dmiles@evanterry.com. This is their first article for *Facilities Manager*.

Additional Resources

Visit www.newadaag.com to track the adoption progress of the new guidelines. You can find more ADA articles and links to websites addressing accessibility issues at www.evanterry.com. Other online resources include:

- **The U.S. Department of Justice ADA:**
www.ada.gov
- **The U.S. Access Board:**
www.access-board.gov
- **ADA and ABA Accessibility Guidelines:**
www.access-board.gov/ada-aba/index.htm

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Where are our Senior Facility Officers?

By Frank Brewer

In 2006 APPA completed a review of its activities and educational program offerings. This review highlighted the many things APPA does well and also indicated some high priority opportunities. One such opportunity missing from APPA's programming is the participation of the Senior Facility Officers (SFOs) at our member institutions. SFOs were defined as individuals responsible for the planning, design, construction, and management of institutional buildings, infrastructure, and grounds. And, quite often, these individuals assume other responsibilities such as: auxiliary enterprise, leasing, motor pool, parking, printing, real estate, and transportation.

OFFERING VALUE TO SFOs

In the fall of 2006, the APPA Board tasked an ad hoc work group to identify steps to better engage SFOs in APPA. This work group, composed of me, Brooks Baker, Jack Colby, Bill Daigneau, Kevin Folsom, Rod Rose, Terry Ruprecht, and Kevin McNaughton, along with APPA staff Lander Medlin and Suzanne Healy, recommended that APPA create an annual event focused exclusively on SFO needs. They indicated this new program should:

- Address topics of specific interest to SFOs.
- Encourage high interaction levels among SFOs.

TOPICS SELECTED MUST NOT ONLY BE TIMELY, BUT MUST BE OF INTEREST TO THE EXPERIENCED PEOPLE IN THESE SENIOR MANAGEMENT POSITIONS.

- Have SFOs lead most of this interaction.
- Be limited to a maximum of 125 attendees, by invitation only.
- Last no longer than 1½ days.

The APPA Board supported the work group's recommendations. Under Terry Ruprecht's leadership, planning quickly began for the first SFO Summit, immediately before APPA's 2007 annual conference in Baltimore, Maryland.

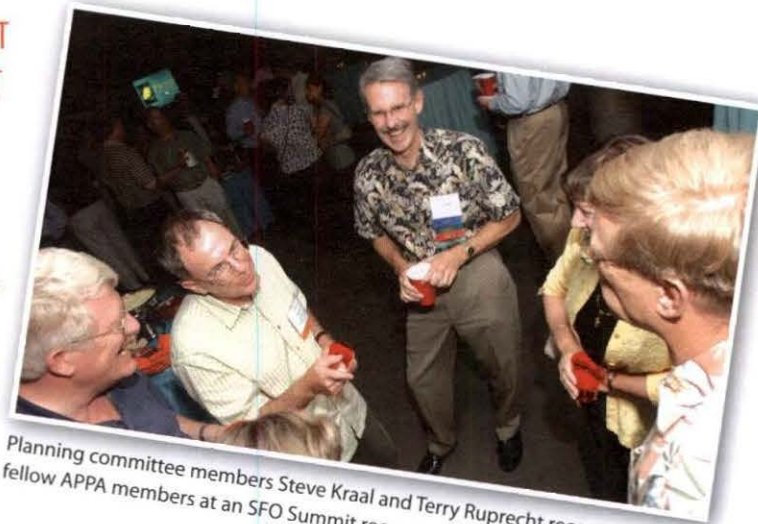
FIRST-EVER SFO SUMMIT 2007

Though time was tight for organizing this initial program, participant evaluations at the end of the event indicated it was largely in line with expectations. About 75 SFOs attended. Topics addressed during the Summit included:

- Aligning Institutional Mission and Expectations with Facilities Management's Mission and Strategy



Jon Varnell, Guilford College, and Marion Bracy, Xavier University, network between sessions at the 2007 SFO Summit.



Planning committee members Steve Kraal and Terry Ruprecht reconnect with fellow APPA members at an SFO Summit reception in Baltimore, MD.

- Alternate Construction Delivery Methods
 - Gas, Electric, Coal, and Renewable Energy Markets (panel discussion)
 - When the Project Goes Bad (a new construction discussion)
 - Influence at the Top
- Additional concurrent sessions included:
- *Buildings...the Gifts that Keep on Taking: An Assessment Investment Strategy*
 - Space as the Driver of Institutional Budget
 - Strategic Real Estate Investment
 - Facilities Performance Indicators: What Are They? What Should They Be?
- There were also roundtable sessions around "hot topics" identified by participants a few weeks before the



A school's colors are carefully chosen, as they help establish its identity and boost school spirit.

Regardless of the official hue of choice, though, more and more schools are getting "green" – not as an official color, but as a means of ensuring that school buildings are built so they are conducive to a positive learning environment.

And, schools that aren't green are suffering significant consequences.

Nearly half of the more than 120,000 U.S. public and private schools have problems related to indoor air quality (IAQ), according to the U.S. Environmental Protection Agency. Numerous studies testify to the negative impact of poor IAQ on school children, especially in elevating health risks, raising absenteeism rates and inhibiting learning. Children are more susceptible to the health impacts of poor indoor air quality because they are more impacted by environmental toxins than adults.

In fact, one in 12 children suffers from asthma, a rate that has more than doubled since 1980.* Many triggers for asthma are commonly found in school buildings, including volatile organic compounds (VOCs), dust, pests and mold resulting from excess moisture due to leaks or high humidity levels.

School officials, architects, specifiers and builders are well aware of the ill effects of poor IAQ, and the direct correlation between IAQ, health and academic achievement. This has led to a renewed emphasis on improving the indoor environment in schools.

New structural materials that positively impact IAQ are in high demand, including mold-resistant drywall. Mold growth on building materials can degrade indoor air. But traditional drywall has paper on both sides, and mold "eats" paper. If you remove the paper from drywall facing, you've greatly reduced the risk of mold growth.

DensArmor Plus® drywall from Georgia-Pacific Gypsum is the industry's first paperless interior drywall featuring a fiberglass mat on the front and back surfaces for the best interior protection from moisture currently available in drywall products. Not only does it provide long-term benefits of being moisture- and mold-resistant, DensArmor Plus also helps projects stay on schedule by allowing drywall to be hung earlier in the construction process. It has superior fire and abuse resistance, as compared to paper-faced

GREENGUARD CERTIFIED GYPSUM PANELS HELP BOOST IAQ IN SCHOOLS

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drywall, and carries a six-month in-place exposure warranty.

Additionally, Georgia-Pacific Gypsum recently has expanded its line of paperless gypsum panels by adding an abuse-resistant board, which is perfect for a school's high traffic areas like classrooms, hallways and dorms.

Both DensArmor Plus and DensArmor Plus® Abuse Guard® are the first and only gypsum drywall products to receive GREENGUARD and GREENGUARD Children & Schools™ Indoor Air Quality Certifications. These prestigious certifications recognize indoor building products that

have low emissions of VOCs.

"Schools constructed with high quality building products can positively impact a child's education," said Leo Bissonnette, general manager for Georgia-Pacific Gypsum. "By designing and building with construction materials – such as the moisture- and mold-resistant DensArmor Plus interior drywall – that also meet indoor air quality standards set by GREENGUARD, builders can deliver high performance schools for our children."

To be GREENGUARD Certified means that DensArmor Plus meets the GREENGUARD Environmental Institute's rigorous emission standards for indoor building materials. This certification subjects materials to emissions testing to identify low emitting products that can be used in school buildings to lower indoor air pollutant exposure.

Equally important, products that meet the GREENGUARD Children and Schools certification criteria automatically qualify for credits by the Collaborative for High Performance Schools (CHPS) program, a national, non-profit organization that strives to facilitate the design of high performance schools by providing guidelines for school districts and design teams to construct learning environments that are healthy, efficient and comfortable.

For more information about DensArmor Plus, DensArmor Plus Abuse Guard, or any paperless product from Georgia-Pacific Gypsum – or for further information about how to build paperless – please visit www.buildpaperless.com. For more information on GREENGUARD, visit www.greenguard.org.

*Source: www.greenguard.org

THE PLANNING COMMITTEE STRONGLY BELIEVES THE SUCCESS OF THE SUMMIT IS DEPENDENT ON GETTING PARTICIPATING SFOs ACTIVELY ENGAGED WITH EACH OTHER DURING THE MEETING.

conference. Finally, Kevin Folsom introduced some technological wizardry to the program, which enabled panelists to ask questions of all participants and receive immediate feedback.

The primary lessons learned from the 2007 Summit were: (1) SFOs like interacting directly with each other, and (2) the format of the event must fully support that interaction. The planning committee also learned that selecting and presenting topics to this audience is not easy. Topics selected must not only be timely, but must be of interest to the experienced


people in these senior management positions. Nevertheless, Steve Kraal, of University of Texas, Austin, provided feedback, repeated by many others: "I really appreciated the opportunity this event provided to interact with other SFOs about ideas and issues that are surfacing on my campus."

PREVIEW OF 2008

Planning for the 2008 SFO Summit in San Antonio is near completion. The 2008 planning committee includes Terry Ruprecht and me as, co-chairs, along with Brooks Baker, Kevin Folsom, Steve

Kraal, Fred Plant, and Curtis Reynolds. Based upon last year's experience, we will make even greater use of technology to facilitate interaction among participants and will provide more time for meeting participants to discuss topics of interest with their counterparts. This year's topic areas include:

- Design & Construction... Risky Business
- Problem Solving in the Operations Area; including Productivity & Accountability, Customer Service, Facility Renewal Funding, and Recruitment & Retention/ Staffing Issues
- Sustainability...It's Not Easy Being Green
- What's Important....and How Do You Keep Your Staff Focused on It?
- Influence at the Top

Our hot topic roundtables will be repeated. The planning committee strongly believes the success of the Summit is dependent on getting participating SFOs actively engaged with each other during the meeting. 

Frank Brewer is associate vice president for facilities management at University of Maryland, College Park and co-chair for APPA's SFO Summit planning committee. E-mail him at fbrewer@fm.umd.edu. This is his first article for *Facilities Manager*.

Senior Facility Officers:

We need your help! Please let us share your suggestions on how we can make July's meeting more productive for you. E-mail Suzanne Healy, director of professional development, at suzanne@appa.org.

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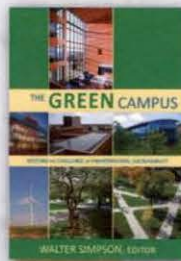
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Walter Simpson, editor

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Educational WRAP-UP

APPA INSTITUTE & TOOLKIT

Newport Beach, CA
February 2008



2008 Professional Development Programs

July 7-11

San Antonio, TX
Supervisor's Toolkit

September 7-11

Austin, TX
Institute for Facilities Management
Supervisor's Toolkit

For more information on APPA's educational programs, visit www.appa.org/education.

The February Institute in Newport Beach, California had a record 550 attendees February 3-7, with another 48 participating in the Supervisor's Toolkit program.

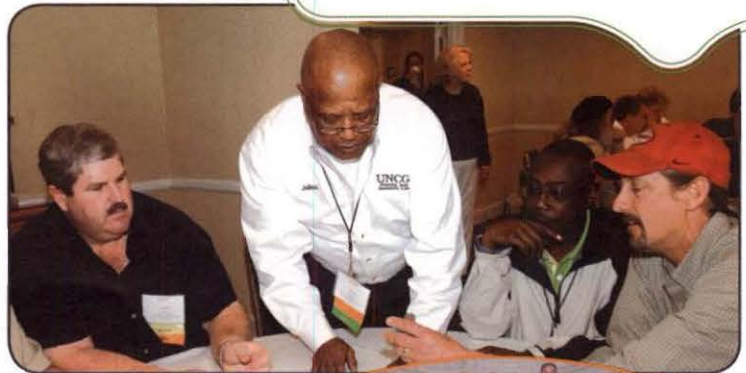
Institute offerings covered the key elements of APPA's body of knowledge—general administration; operations and maintenance; energy and utilities; and planning, design, and construction—and the revival of the facilities finance program, led by Jim Roberts (Campbell University).

Students interacted with experts who shared their knowledge and experiences and also networked with peers in the industry. The programs also provided unique tools for professional development and proven solutions to use at their institutions.

There were 158 new attendees and 96 Institute graduates, and as always, a special thanks to our deans and master trainers:

Institute Deans: Mary Vosevich, University of New Mexico; Jay Klingel, University of Virginia; Lynn Finn, South Dakota State University; and Don Guckert, University of Iowa
Toolkit Trainers: Michelle Frederick, American University and Carol Trexler, Rutgers University

We look forward to hosting the next group of Institute/Toolkit attendees in Austin, Texas this September.



February 2008 Institute Graduates

Corina A. Alejo, University of Texas /Austin
 Walter Alexander, Alabama AM University
 Kami Archibald, Miami University
 Brent Ascher, University of Northern Iowa
 Chris Aspiration, Southern Louisiana University
 Melissa Beckwith, Middlebury College
 Martin Best, University of Virginia
 Scott D. Bitikofer, Rollins College
 Judy G. Blankenship, Western Kentucky University
 Zhang Bo, Ohio State University
 Debra Burbank, Bentley College
 Tim Carney, Bowling Green State University
 Lennie P. Chamberlin, Dallas County Community
 College District
 Frank P. Connelly, Theil College
 James R. Cunningham, Brigham Young University
 Ken Dehkes, Hamline University
 Anthony DeLuca, Stanford University Medical Center
 Ron Desrochers, Arizona State University
 James Earles, Randolph Macon College
 Mark Eichenberg, Ferris State University
 Theodore Elonis, Rutgers University
 Vickie Evans, Emory University
 Lou J. Farino, Cornell University
 Shaun Farrell, University of Virginia
 Dana Fischer, The Salk Institute
 Dan Foster, Snohomish School District
 Gayle Freel, Central College
 Brett Garrett, Ohio State University
 Marie-Andree Gervais, University of Vermont
 Tony Goudie, Emory Riddle University
 Hattie Gregory, UCLA
 Marty Grozdanich, Rollins College
 Duane Hamilton, Bowling Green State University
 Larry D. Harmon, University of Dallas
 Mark Henson, University of Colorado
 Jean Hill, Dallas County Community College District
 Jim E. Hines, University of Nebraska/Lincoln
 Luke Hoff, University of North Carolina/Chapel Hill
 Robert W. Holzwarth, Iowa State University
 Rodney C. Hull, Western Kentucky University
 Roger A. Jones, Dalhousie University
 Corey Key, University of Missouri/Kansas City
 Yvonne Kielb, University of Massachusetts
 Gregory Lambert, University of Michigan
 Janice LaRiviere, Southern Illinois University/
 Edwardsville
 Robert Lawhorn, University of Tennessee
 Robert Lazo, UCLA
 Larry Livingston, Harrisburg Area Community College
 Ray M. Maag, Brigham Young University

Cecilia Ann Madrid, University of Arizona
 Lisa A. Mangione, Aikent Technical College
 Giuseppe Marzullo, Montclair State University
 Timothy P. Massey, University of Mary Washington
 Brian McKinnon, California State University/Long Beach
 Steve Meckel, University of Alaska/Fairbanks
 Frank Messina, University of Virginia
 Tom Miller, University of Colorado/Boulder
 Melanie S. Moorshead, UT MD Anderson Cancer Center
 Gloria L. Myaard, Grand Valley State University
 Karen Neely, Western Washington University
 John Nurenberg, Michigan State University
 Wes Penrose, Metropolitan Community College/
 Kansas City
 Linda A. Petee, Delta College
 Richard M. Petraglia, Emerson College
 Derek Philip, College of Science Tech Applied Arts
 John Pope, California State University/Monterey Bay
 Steven Prater, Iowa State University
 Thomas Ramler, California Polytechnic State University
 Randy Rasmussen, Guilford College
 David Reiber, University of Arizona
 Valerie RiChard, University of Iowa
 Fred W. Ricketson, III, Augusta State University
 Mary E. Rodriguez, University of Texas/Austin
 Dean Ruck, University of Houston
 Mike Sawyer, Casper College
 Patrick Schlanger, Regis University
 Bernard Schumacher, University of Saskatchewan
 Brian K. Sholes, Stanford University Medical Center
 Elizabeth J. Simpson-Weeks, University of Texas/Austin
 Roger Sneed, Mt. San Antonio College
 Gerald Stuart, Saginaw Valley State University
 Alan Swan, University of Michigan
 Angela J. Sye, Harrisburg Area Community College
 Brett Thompson, Harrisburg Area Community College
 Thomas Timbol, Dallas County Community
 College District
 Carol Varney, University of Michigan/Ann Arbor
 Rob Wagner, Milton Hershey School
 Steve Wallner, University of Wisconsin/Parkside
 Douglas B. Watson, Brigham Young University/Idaho
 Michael Wygant, SUNY at Fredonia
 Michael R. Whitener, California State University/
 Northridge
 Nathan Wilson, University of Michigan/Ann Arbor
 Juan Zamora, St. Thomas University

February 2008 Toolkit Participants

David Barkenhagen, University of North Texas
 Brian Barmmer, Harvard Medical School
 Jenny Barrett, University of Alaska/Fairbanks
 Mike Bartosch, Western Washington University
 Alan Billau, University of New Mexico
 Nick Bowen, Babson College
 Ronald Burkes, University of North Carolina/Greensboro
 Mayra Couce-Houston, California State University/
 Long Beach
 Jason Fairchild, Yakima County, WA
 William Farish, University of Virginia
 Alex Ferrance, Rice University
 Tony Garrit, University of California/Irvine
 Reginald Gofortt, Yakima County, WA
 Karl Greis, Colorado College
 Glenn Gross, Carnegie-Mellon University
 Alejandro Higareda, Marin Academy
 Tonya Hunt, University of New Mexico
 Angela Jackson, UCLA
 Quinn Jenkins, Dallas County Community College District
 Gerald Jerao, San Diego State University
 Linda Jones, Bellarmine University
 Teresa Kramer, Kutztown University of Pennsylvania
 John Laxen, Rice University
 Juan Macias, California State University/San Bernardino
 Frank Manibusan, University of California/Berkeley
 Dave McAllister, National College of Natural Medicine
 Chris Medina, University of California/Irvine
 Clarence Miles, University of California/Los Angeles
 Valerie Miller, Harrisburg Area Community College
 William Miller, Marquette University
 Dale Mills, Bellarmine University
 Doug Moore, University of California/Irvine
 Julius Moore, University of North Carolina/Greensboro
 Rae Mosley-Brooks, Harrisburg Area Community College
 Michael Nielsen, Los Rios Community College District
 Keith North, National College of Natural Medicine
 Sue Petrisin, Michigan State University
 Mark Prevostnik, Kutztown University of Pennsylvania
 Steven Richards, Syracuse University
 Jeffrey Smith, Lorain County Community College
 Lynn Smith, Brigham Young University/Idaho
 Terry Tindal, Bellarmine University
 Edward Valencia, Albuquerque Academy
 Irene Vielma, Dallas Theological Seminary
 Ray Wiersma, Harrisburg Area Community College
 Rick Will, Yakima County, WA
 Robert Zurkuhlen, Bellarmine University



the 800 POUND GORILLA:

The Threat and Taming of Global Climate Change

Animals are on the run. Plants are migrating too. The Earth's creatures, save for one species, do not have thermostats in their living rooms that they can adjust for an optimum environment. Animals and plants are adapted to specific climate zones, and they can survive only when they are in those zones. Indeed, scientists often define climate zones by the vegetation and animal life that they support. Gardeners and bird watchers are well aware of this, and their handbooks contain maps of the zones in which a tree or flower can survive and the range of each bird species.

Those maps will have to be redrawn. Most people, mainly aware of larger day-to-day fluctuations in the weather, barely notice that climate, the average weather, is changing. In the 1980s, I started to use colored dice that I hoped would help people understand global warming at an early stage. Of the six sides of the dice only two sides were red, or hot, representing the probability of having an unusually warm season during the years between 1951 and 1980. By the first decade of the twenty-first century, four sides were red. Just such an increase in the frequency of unusually warm seasons, in fact, has occurred.

by Jim Hansen

ANIMALS AND PLANTS ARE ADAPTED TO SPECIFIC CLIMATE ZONES, AND THEY CAN SURVIVE ONLY WHEN THEY ARE IN THOSE ZONES.

Studies of more than one thousand species of plants, animals, and insects found an average migration rate toward the North and South Poles of about four miles per decade in the second half of the twentieth century. That is not fast enough. During the past 30 years, the lines marking the regions in which a given average temperature prevails ("isotherms") have been moving poleward at a rate of about 35 miles per decade. That is the size of a county in Iowa. Each decade the range of a given species is moving one row of counties northward.

As long as the total movement of isotherms toward the poles is much smaller than the size of the habitat or the ranges in which the animals live, the effect on species is limited. But now the movement is inexorably toward the poles and totals more than a 100 miles over the past several decades. If emissions of greenhouse gases continue to increase at the current rate—"business as usual"—then the rate of isotherm movement will double in this century to at least 70 miles per decade. If we continue on this path, a large fraction of the species on Earth, as many as 50 percent or more, may become extinct.

The species most at risk are those in polar climates and the biologically diverse slopes of alpine regions. These animals, in effect, will be pushed off the planet—though some like the polar bear may be "rescued" and allowed to survive in zoos.

If human beings follow a business-as-usual course, continuing to exploit fossil fuel resources without reducing carbon emissions or capturing and sequestering them before they warm the atmosphere, the eventual effects on climate and life may be comparable to those at the time of mass extinctions. Life will survive, but it will do so on a more desolate planet.

MELTING ICE AND HIGHER SEA LEVELS

The greatest threat of climate change for human beings, lies in the potential destabilization of the massive ice sheets in Greenland and Antarctica. As with the extinction of species, the disintegration of ice sheets is irreversible for practical purposes. Our children, grandchildren, and many more generations will bear the consequences of choices that we make in the next few years.

The level of the sea throughout the globe is a reflection primarily of changes in the volume of ice sheets and thus of changes of global temperature. When the planet cools, ice sheets grow on continents and sea level falls. Conversely, when the Earth warms, ice melts and sea level rises.

Future rise of sea level will depend, dramatically, on the increase of greenhouse gases, which will largely determine the

amount of global warming. Sunlight enters the atmosphere and warms the Earth, and then is sent

back into space as heat radiation. Greenhouse gases trap this heat in the atmosphere and thereby warm the Earth's surface as we are warmed when blankets are piled on our bed. Carbon dioxide (CO₂), produced mainly by burning fossil fuels (coal, oil, and natural gas), is the most important greenhouse gas made by human beings.

In order to arrive at an effective climate protection policy, we can project two different scenarios concerning climate change. In the business-as-usual scenario, annual emissions of CO₂ continue to increase at the current rate for at least 50 years, as do non-CO₂ warming agents including methane, ozone, and black soot. In the alternative scenario, CO₂ emissions level off this decade, slowly decline for a few decades, and by mid-century decrease rapidly, aided by new technologies.

The business-as-usual scenario yields an increase of about five degrees Fahrenheit of global warming during this century, while the alternative scenario yields an increase of less than two degrees Fahrenheit during the same period. How much will sea level rise with five degrees of global warming? Our best information comes from the Earth's history. The last time that the Earth was five degrees warmer was three million years ago, when sea level was about 80 feet higher.

Eighty feet! In that case, the United States would lose most East Coast cities: Boston, New York, Philadelphia, Washington, and Miami; indeed, practically the entire state of Florida would be under water. Fifty million people in the United States live below that sea level. Other places would fare worse. China would have 250 million displaced persons. Bangladesh would produce 120 million refugees, practically the entire nation.

A rise in sea level, necessarily, begins slowly. Massive ice sheets must be softened and weakened before rapid disintegration and melting occurs and the sea level rises. It may require as much as a few centuries to produce most of the long-term response. Even if we kept global warming under two degrees Fahrenheit, there would still be a significant rise in the sea level, but its slower rate would allow time to develop strategies that would adapt to, and mitigate, the rise in the sea level.

ENERGY SCENARIOS AND RESPONSIBILITY

Both the U.S. Department of Energy and some fossil fuel companies insist that continued growth of fossil fuel use and of CO₂ emissions are facts that cannot be altered to any great extent. The danger is that their false prophecies will become self-fulfilling. In reality, an alternative scenario is possible



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THE GREATEST THREAT OF CLIMATE CHANGE FOR HUMAN BEINGS, LIES IN THE POTENTIAL DESTABILIZATION OF THE MASSIVE ICE SHEETS IN GREENLAND AND ANTARCTICA.

and makes sense for other reasons, especially in the United States, which has become an importer of energy, hemorrhaging wealth to foreign nations in order to pay for it.

The situation is critical because of the clear difference between the two scenarios I have projected. Further global warming can be kept within limits (under two degrees Fahrenheit) only by means of simultaneous slowdown of CO₂ emissions and absolute reduction of the principal non-CO₂ agents of global warming, particularly emissions of methane gas. Such methane emissions are not only the second-largest human contribution to climate change, but also the main cause of an increase in ozone—the third-largest human-produced greenhouse gas—in the troposphere, the lowest part of the Earth's atmosphere. Practical methods can be used to reduce human sources of methane emission, for example, at coal mines, landfills, and waste management facilities. However, the question is whether these reductions will be overwhelmed by the release of frozen methane hydrates—the ice-like crystals in which large deposits of methane are trapped—if permafrost melts.

If both the slowdown in CO₂ emissions and reductions in non-CO₂ emissions called for by the alternative scenario are achieved, release of “frozen methane” should be moderate, judging from prior interglacial periods that were warmer than today by one or two degrees Fahrenheit. But if CO₂ emissions are not limited and further warming reaches three or four degrees Fahrenheit, all bets are off. Greater warming could release substantial amounts of methane in the Arctic causing even more warming.

The United States has heavy legal and moral responsibilities for what is now happening. Of all the CO₂ emissions produced from fossil fuels so far, we are responsible for almost 30 percent, an amount much larger than that of the next-closest countries, China and Russia, each less than 8 percent. Yet, our responsibility and liability may run higher than those numbers suggest because we have persisted as the world's leading polluter of greenhouse gases while we were well aware of the consequences.

But it is not too late to redeem ourselves. The United States hesitated to enter other conflicts in which the future was at stake. But enter we did, earning gratitude in the end, not condemnation. Such an outcome is still feasible in the case of global warming, but just barely.

We have at most 10 years to alter fundamentally the trajectory of global greenhouse emissions. Our previous decade of inaction has made the task more difficult, since emissions in the developing world are accelerating. To achieve the alternative scenario

will require prompt gains in energy efficiencies so that the supply of oil and natural gas can be sustained until advanced

technologies can be developed. If instead we follow an energy-intensive path of squeezing liquid fuels from tar sands, shale oil, and heavy oil, and do so without capturing and sequestering CO₂ emissions, climate disasters will become unavoidable.

POLICY SOLUTIONS AND THE ROLE OF HIGHER EDUCATION

A good energy policy, economists agree, is not difficult to define. A carbon tax, involving a combination of a fuel tax and a cap-and-trade on carbon emissions, should encourage conservation, but with rebates to taxpayers so that overall levels of taxation and government tax revenue do not increase. The taxpayer can use his rebate to fill his gas-guzzler if he likes, but most people will eventually reduce their fuel use in order to save money and will spend the rebate on something else. With

An Unrecognizable World? Likely Consequences of Climate Change

- Higher temperatures, more frequent heat waves
- Greater warming at high northern and southern latitudes
- Loss of Arctic summer ice cover and melting of permafrost, possibly releasing methane and accelerating warming
- Melting of ice sheets, ice shelves, and glaciers, raising sea levels and inundating coastal areas worldwide
- Intensification of the hydrologic cycle, that is, stronger heat waves, droughts and fires, but also heavier downpours and flooding
- Decreased fresh water supplies, especially in subtropical regions and large areas dependent on runoff from mountain glaciers
- More powerful storms driven by latent heat, including hurricanes and thunderstorms, and thus increased storm damage
- Migration of tropical diseases and pests toward the poles
- Shifting of ecological niches poleward, threatening massive species extinction
- Disruption of agriculture and increased risk of famine
- Exacerbation of eco-refugee problem as millions abandon their homes in search of survival
- Increasing political strife and risk of war



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slow and continual increases of fuel cost, energy consumption will decline. The economy will not be harmed. Indeed, it will be improved since the trade deficit will be reduced; so will the need to protect U.S. access to energy abroad by means of diplomatic and military action. U.S. manufacturers would be forced to emphasize energy efficiency in order to make their products competitive internationally. Our automakers need not go bankrupt. Our quality of life need not decline.

Of course, the carbon tax should be complemented by other ways to encourage energy conservation and efficiency. Government policy should reflect a variety of strategies that include an appropriate mix of building codes, efficiency standards, incentives, and public education—all intended to significantly and quickly reduce the amount of fossil fuel we burn and consume. The carbon tax need not be large. The certainty that it will grow will be sufficient to drive innovations and technology development, assuring that consumers have options to minimize their costs.

An increasing carbon tax will promote a switch to renewable energies such as solar, wind, biomass, and other sources that do not produce CO₂. Nuclear power should be included among these options—but we must recognize that several serious issues have yet to be adequately addressed, including procedures for disposal of nuclear waste and assurance that weapons-grade nuclear material can and will be kept out of the hands of terrorists. Governments should address these issues with greater urgency than they have to date.

It has become clear, to scientists, that consumption of oil and gas alone will take global warming close to the dangerous level. And oil and gas are such convenient fuels (and located in countries where we can't tell people not to mine them) that they surely will be used. Thus the only way to keep CO₂ from going well above the dangerous level will be to enact a moratorium on the building of any more coal-fired power plants until we have the technology to capture and store the CO₂. The problem posed by carbon-intensive coal is so severe that old, dirty-coal power plants will also need to be shut down over the next few decades. This can be accomplished if we take advantage of the potential of energy efficiency and renewable energies.

Even with these two strong actions, a carbon tax and


phase-out of dirty-coal, it is likely that CO₂ will reach and at least marginally pass the dangerous level. A way to combat an overshoot of the safe level of CO₂ is “negative CO₂ power plants” that generate electricity by burning biomass and then capture and store the carbon dioxide emissions. These power plants would take carbon dioxide recently removed from the atmosphere by growing biomass and sequester it deep beneath ocean sediments—thus producing a net reduction of atmospheric carbon dioxide. Improved agricultural practices—such as no-till—and reduced deforestation will also increase carbon storage in the soil and biosphere.

Science and policy implications are clear. Despite population growth and increasing demands for energy from developing nations, we must meet our energy needs while dramatically

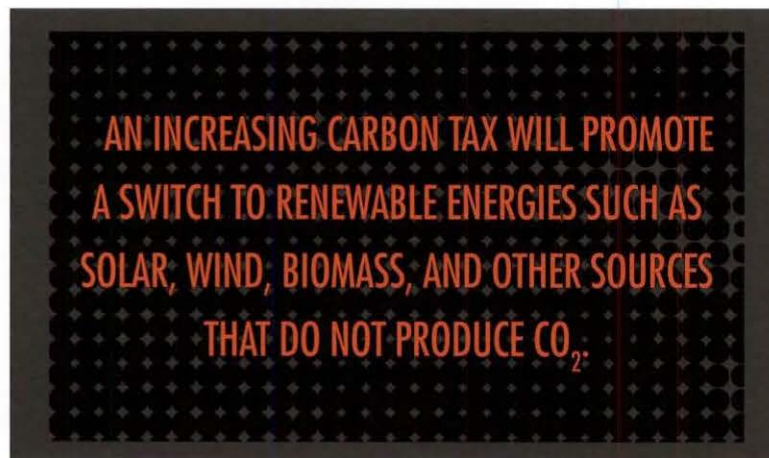
reducing greenhouse gas emissions. This challenge is huge. In order to stabilize climate and avoid the worst consequences of global warming and climate change, we must reduce annual greenhouse gas emissions by 2050 to a fraction of present emissions.

College and universities have a critical role to play.

By demonstrating that

their campuses can operate effectively while curtailing greenhouse gas emissions, institutions of higher learning can show what is possible and point the way for others. The American College & University Presidents Climate Commitment is a particularly hopeful development. By committing to achieve climate neutrality at the earliest possible date, signatories to the pledge are recognizing the urgency of the problem, not waiting for government to take actions. These efforts should inspire similar actions in other economic sectors and create momentum needed to get political leaders and government on all levels to act before it is too late. 

Climatologist Jim Hansen is a director of the NASA Goddard Institute for Space Studies and Adjunct Professor of Earth and Environmental Sciences at Columbia University's Earth Institute. This article, Hansen's first for *Facilities Manager*, is an abridged version of his chapter in APPA's new publication *The Green Campus: Meeting the Challenge of Environmental Sustainability*.



A yellow hard hat is positioned on the right side of the frame, resting on a rolled-up architectural blueprint. The blueprint is unrolled to the left, showing detailed technical drawings of a building's layout, including rooms, corridors, and structural elements. The text on the blueprint includes "PHASE I", "PHASE III", and "PHASE IV". The background is a soft, out-of-focus light color.

Empowering Your Vision.

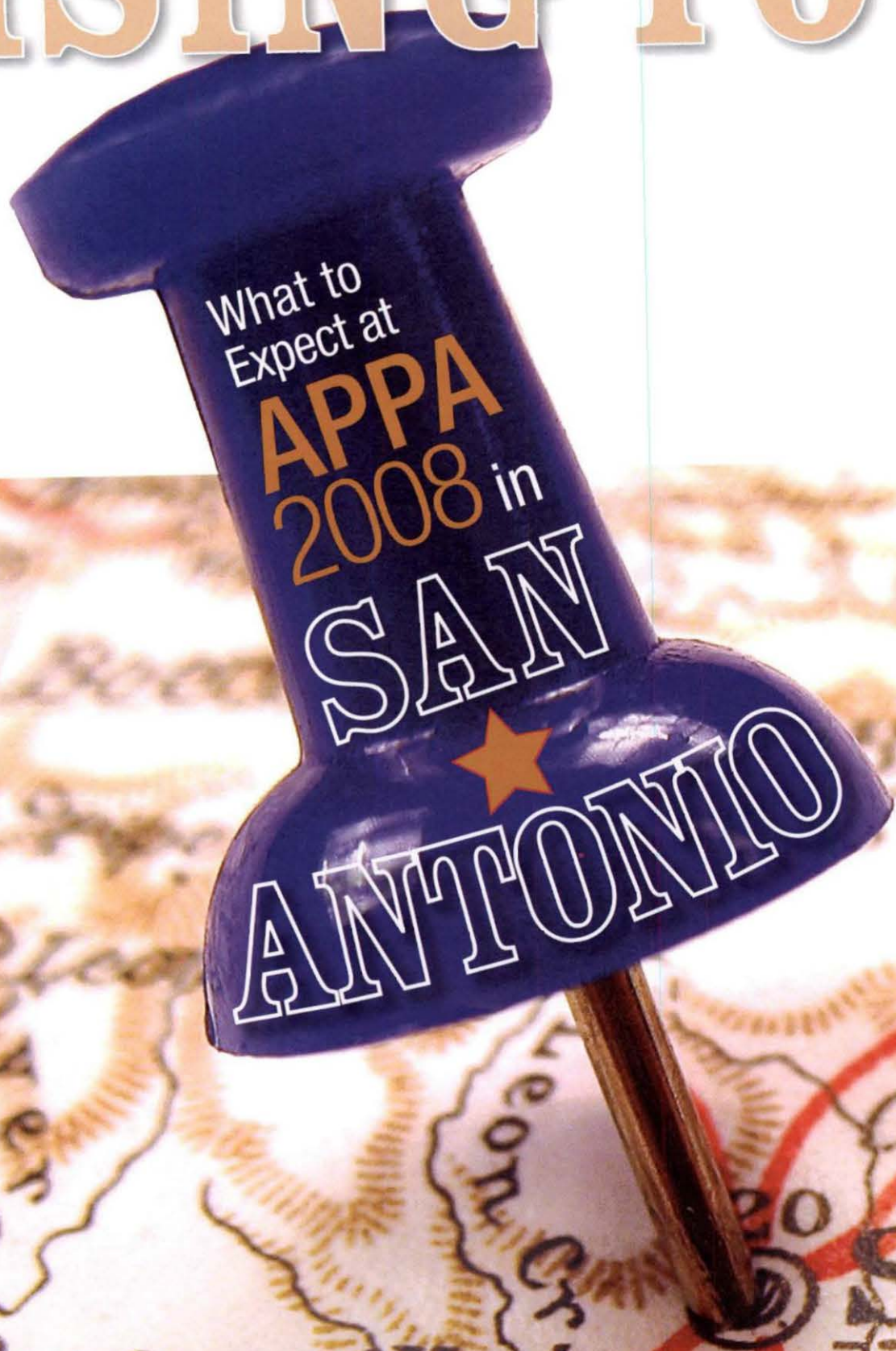
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The construction of a new building is an exciting campus event. ARAMARK can manage a project from planning to delivery, handling all the details while ensuring that your institution's long-term goals are met. With our supervision, your facility will be delivered on time and on budget. Our proven approach, backed by the successful completion of over 430 projects, reduces change orders, avoids cost overruns, and minimizes campus disruption. We protect the owner's interests throughout the life of a project. Our expertise in building design, construction, and operations will bring your project to fruition with confidence and peace of mind. For more reasons to choose ARAMARK, call 866-428-1094 or contact projects@aramarktechservices.com.

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What to
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REATNESS

in Educational Facilities

There is nothing like being part of a winning organization. The satisfaction that comes from success—achieving your department's full potential—is unlike anything else. APPA is committed to promoting such excellence in educational facilities through professional development, credentialing, and research and publications. However, APPA's 2008 conference, July 9–11, in San Antonio, Texas is the premier event.

APPA 2008: The Rise to Greatness is the world-class conference where you can garner the tools to build your career and transform your institution. This annual conference showcases a host of well-known experts who address the latest trends, issues, strategies, and solutions tailored to inspire and elevate the educational facilities professional to new heights. In fact, the line-

up of speakers is exceptional—rivaling any other conference, anywhere. Sessions will focus on three perspectives:

- **Leadership & Collaboration.** Explore the desire and necessity to build strong leadership and experience the benefits of collaborative interaction.
- **Connection & Communication.** Understand expectations, bridge gaps in communication, and learn about the future of interaction.
- **Solution Revolution & Technology.** Learn to embrace changes in technology, understand the impact new developments have on educational environments, and hear about student needs and expectations for technology at learning institutions.

BY DAVID GRAY



It will be exciting to explore key leadership principles and discover best practices that can energize people and organizations. Whether your organization is just beginning its ascent or is already on the rise to greatness, APPA 2008 is for you.

Leadership and collaboration will help you rise to your potential, inspire your employees to embrace future challenges, and achieve high performance results. That means that much of the success of your organization will be determined by your leadership. So, how are you doing?

- Is your organization making meaningful contributions to the success of your institution?
- Are you making meaningful contributions to the success of your organization?
- Are you thriving or merely surviving?
- Are the people in your organization engaged, energized, and productive?
- Is the future bright, bleak, or hard to see?

Perhaps now is a good time to evaluate the course of your organization and the effectiveness of its leadership throughout.

Don't let another year go by simply hoping for better results. Attend the APPA 2008 conference.

Helping your staff develop their leadership skills will ensure a greater **connection and communication** with the university community and ensure increased responsiveness to all stakeholder's needs. Truly, this is the template for achievement and success.

Good teams win. Great teams are distinguished further by their ability to sustain their success over a prolonged period of time. Certainly, great organizations must be similar to great teams in that they include characteristics such as:

- mission mindedness
- goal orientation



CONFERENCE SESSION HIGHLIGHTS

Register today for APPA 2008: The Rise to Greatness, July 9-11 in San Antonio, TX.

LEADERSHIP & COLLABORATION

Go Put Your Strengths to Work: 6 Powerful Steps to Achieve Outstanding Performance

Speaker: Marcus Buckingham

Many people can tell you what they do well, but few discover and maximize their true strengths. In his plenary address, Marcus Buckingham—the current guru of management—will provide insights on how you can find success by applying your greatest assets in both your life and career. He'll explain why your strengths aren't "what you're good at" and your weaknesses aren't "what you're bad at." But more importantly, he will discuss how you can recognize your strengths and use them to your best advantage and benefit.

Confronting Future Challenges

Moderator: Jack Colby

At the 2007 Thought Leaders Symposium, representatives from student affairs, academic affairs, and administration joined facilities leaders to consider three major challenges confronting higher education as a whole: evolving technology, changing stakeholder expectations, and the impact of competition on both those drivers of change. Hear the questions devised to encourage dialogue on campuses between educational facilities professionals and the rest of the academy.

Intuitive Leadership

Speaker: Dr. Judith Orloff

Empower employees, foster a creative and vibrant work environment, and help team members learn to be more optimistic and motivated on the job.

Judith Orloff, MD, is a psychiatrist, speaker, energy/intuition expert, and best-selling author. As a pioneer in a new branch of medicine recognizing the value of high energy, she will explore the techniques and strategies for infusing positive energy into your body, moods, workplace, relationships, and career.

Vital Friends: The Folks You Can't Live Without

Speaker: Teri Bump, American Campus Communities

We are motivated and deeply affected by the friends we keep. This fast-paced, interactive session will allow you to reflect on the friends in your life and understand the roles they play. Come discover strategies for developing new relationships.

SOLUTION REVOLUTION & TECHNOLOGY

Succeed in the Age of Collaboration

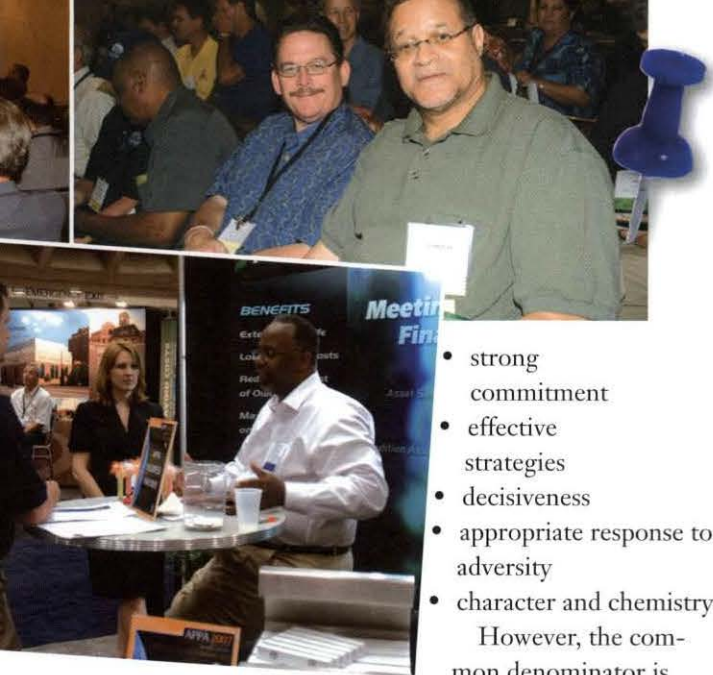
Speaker: Don Tapscott

Don Tapscott, author of the best-seller *Wikinomics*, will give you the tools and insights required to succeed in the current and emerging Age of Collaboration. Today, the World Wide Web promotes mass collaboration in a way that is changing the world. Innovation and change continue to accelerate collaboration. End-users—whether consumers, employees, business partners, or competitors—now harness technology to challenge incumbents like never before. This plenary presentation is supported by data based on one of the largest research projects ever funded (at \$4.2 million) by 22 large corporations seeking to understand the changing nature of business and competition.

Intelligent Buildings

Moderator: Paul Ehrlich

In this panel discussion, we will explore safety in our industry, advise you of the key trends driving the need for intelligent buildings, and define the opportunities for investment or implementation over the next 3-5 years.



- strong commitment
- effective strategies
- decisiveness
- appropriate response to adversity
- character and chemistry

However, the common denominator is

people—intelligent, energized, principled, hard-working, and effective people. Add to the mix, the current speed of business today, challenges, effects of technology, impacts of decision

making, and accountability. Results matter—the wires must be hot, the water must be cold, and the trash must be emptied—it is **technology and the need for a solution revolution**.

Truly great teams are successful because they are not satisfied with less than their best. There are no gimmicks—**character counts**. It requires good people and hard work. Even at the top of their game they continue to seek improvement. Losers become winners, winners become champions, and champions become dynasties when greatness is the goal. If you are not satisfied with the current level of success within your organization, make a good investment and plan to attend *APPA 2008: The Rise to Greatness*. See you in San Antonio in July. 📍

David Gray is associate vice president at Middle Tennessee State University in Murfreesboro and chair of the APPA 2008 Programming Committee. E-mail him at dgray@mtsu.edu. This is his first article for *Facilities Manager*.

Pirate's Dilemma

Speaker: Matt Mason

New technologies, coupled with some interesting, subversive ideas from today's youth are behind current and emerging problems of "piracy." Dealing with these pirates is proving to be more than confusing for many businesses. Matt Mason will share his views about navigating through the challenges and opportunities and help you understand and take advantage of the new conditions that the pirate's dilemma is imposing on society.

Virtual Handshake

Speaker: Scott Allen

The Internet offers powerful tools to help you find the right people, connect with them, and close deals quickly and cost-effectively. Web 2.0—blogs, social networking, Web conferencing, podcasting—continues to transform e-business. And while many of these tools are easy to use, determining how to effectively use them for institutional and professional purposes can be a challenge. Scott Allen will explain how to use emerging tools, as well as how to maximize familiar technologies to build better business relationships.

CONNECTION & COMMUNICATION

The Leader's Legacy

Speaker: James Kouzes

James Kouzes, with friend and colleague Barry Posner, penned the best-selling book *The Leadership Challenge* in which the connection between leadership and legacy is explored. In his plenary session, Kouzes will address the issues that leaders must examine to ensure that they leave a lasting impact—and, ultimately, how the legacy you leave is the life you lead.

Coming Revolution and Personal Broadband

Moderator: Scott Slater

PING me later. What did her TEXT say? Communication is essential and learning how to embrace the new methods of communicating in today's world is critical. Hear from this panel of experts on the next generation of communication.

Motivation Keeps a Team

Speaker: Kevin O'Connor

In this follow-up to his session What a Leader Needs to Know, Kevin O'Connor will share secrets for those seeking excellence in teamwork. He will examine the elements of successful teams, the roles of each team member, and will provide attendees with a way to assess their teamwork skills on a regular basis.

Conflict Management: Change Agents—Successful Resolutions

Speaker: Gwen McCay

Conflict is unavoidable but can be controlled effectively. Gwen McCay has over 30 years of professional experience performing leadership training and development. Participate in her high-energy session and learn to create a motivating environment that will minimize the long-term impact of conflict. Walk away with useful tools, hear about intervention methods, and learn the characteristics of successful conflict resolution.

For more information and to register, visit <http://appa.org/training/appa2008>.



APPA 2008 the rise to GREATNESS

The Premier International
Event for Educational
Facilities Professionals

JULY 9-11

San Antonio, Texas

GREATNESS BEGINS WITH YOU

As a leader in educational facilities, you strive for quality and excellence. APPA 2008 is the only annual event of its kind where educational facilities professionals come together to learn, network, inspire, and elevate the profession, as well as discover ways to transform and enhance educational institutions.

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APPA 2008 is designed to make sense of the endless demands on the educational facilities professional and provide you with innovative and cutting-edge ideas on how you can:

- Meet the demands of an increasingly competitive environment.
- Assess and validate your organization's financial performance.
- Ensure the effectiveness of the facilities department's primary processes.
- Lead and inspire your employees to embrace future challenges.
- Meet and exceed your customers' needs.
- Reap the benefits from developing a quality, high performance organization.

APPA 2008 CONFERENCE PROGRAMMING

Designed by facilities professionals for facilities professionals, APPA 2008 conference sessions will focus on three perspectives:

Leadership & Collaboration

Explore the desire and necessity to build strong leadership, and experience the benefits of collaborative interaction.

Solution Revolution & Technology

Learn to embrace changes in technology, understand the impact new developments have on educational environments, and hear about student needs and expectations for technology at learning institutions.

Connection & Communication

Understand expectations, bridge gaps in communication, and learn about the future of interaction.

BEGIN YOUR RISE TO GREATNESS...REGISTER TODAY!

To register, visit the APPA website today and complete the online registration form at www.appa.org.



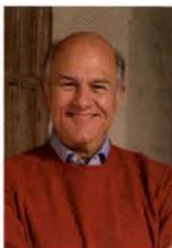
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- **Dr. John Maxwell** is the author of more than 30 books and has used his unique coaching style to mentor groups including the Green Bay Packers, San Diego Padres, USC Trojans, NCAA coaches, and Indianapolis 500 drivers.
- **Marcus Buckingham** is the author of *The One Thing You Need to Know* and co-author of *First, Break All the Rules*. He is the subject of in-depth profiles in *The New York Times*, *Fortune*, *Fast Company*, *Harvard Business Review* and *USA Today* and is routinely lauded as an invaluable resource in informing, challenging, mentoring, and inspiring people to find their strengths and obtain and sustain long-lasting personal success.
- **James Kouzes** is the author of *A Leader's Legacy* and coauthor of the award-winning and best-selling book, *The Leadership Challenge*, with over 1.5 million copies sold. Kouzes is also the Dean's Executive Professor of Leadership, Leavey School of Business at Santa Clara University.
- **Don Tapscott** is an internationally renowned authority on the strategic value and impact of information technology. Tapscott's most recent book—*Wikinomics: How Mass Collaboration Changes Everything*—is an international bestseller, has appeared on the *New York Times* and *BusinessWeek* bestseller lists, and has been translated into 19 languages.
- **Stephen M.R. Covey** is the author of *The SPEED of Trust*, a groundbreaking and paradigm-shifting book that challenges our age-old assumption that trust is merely a soft, social virtue. Discover why establishing, growing, extending, and restoring trust with all stakeholders is today's critical leadership competency.



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Conference Room Rate: \$168 per night + 16.75% tax (Single/Double)
Please call the hotel directly to reserve your room(s). Remember to advise your reservation agent that you are attending APPA 2008 to obtain the group rate.

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The Hall of Resources provides business partners the opportunity to connect with key decision-makers from institutions around the world. Interested in participating as an exhibitor at APPA 2008? Visit us at www.appa.org to download your application for space today. For assistance with booth reservations, please contact Maxine Mauldin, exhibits coordinator, at mmauldin@appa.org. Sponsorships of APPA 2008 meals, sessions, and special events are also available. Please contact Suzanne Healy, director of professional development at suzanne@appa.org for sponsorship opportunities.

Spouse/Guest Program

(subject to change and additional charges)

La Villita. A unique arts and crafts community with shops, working artists, and restaurants.

Mission San Antonio de Valero (The Alamo). Established in 1718 as the city's first mission, contains relics and mementos from the Republic of Texas and offers narration on the fall of the Alamo.

Missions and Margaritas. Sights of the Mission Trail followed by lunch with margaritas and a cooking demonstration.

Missions of San Antonio. For history lovers wanting to go back to the mission period to explore the sites from the time of the Spanish drive to save souls and expand their world dominance in south Texas.

This is San Antonio. Includes a trip down the San Antonio River on a guided barge; a visit to Hemis Fair Park; a driving tour through many of the city's historic and arts districts; a stop at the Alamo and the historic and haunted Menger Hotel.

Also taking place in San Antonio during APPA 2008...

Supervisor's Toolkit: Nuts and Bolts of Facilities Supervision
San Antonio July 7-11, 2008



This introductory program was developed for and is presented by facilities trainers and supervisors working in the field. The Toolkit focuses on new supervisors and others who seek to hone their supervisory skills.

For more information and to register, visit www.appa.org/training/toolkit/schedule.cfm or call 703-684-1446.

Get Credit and Accredited for All Your Hard Work



Take a giant step in your rise to greatness by earning APPA's Educational Facilities Professional (EFP) credential. The EFP gives you the official credentials to illustrate your extensive experience and knowledge as an educational facilities professional dedicated to advancing the credibility of the field and your career within it.

Managing a campus is like managing a small city, requiring vision and comprehensive understanding of structures and their environments. The EFP shows that you get it—you have familiarity with standards and best practices; the ability to perform research-based stewardship; and the facts, ideas, and principles that contribute to creative and sound decisions.

The EFP prep course and exam will be offered in conjunction with APPA 2008:

- Prep course: July 12
- Exam: July 12 or July 13

For more information, to register for the course or to apply for the exam, visit www.certification.appa.org or contact Suzanne Healy at suzanne@appa.org.

In addition to outstanding general sessions, the APPA 2008 program will explore each of the three perspectives in depth through:

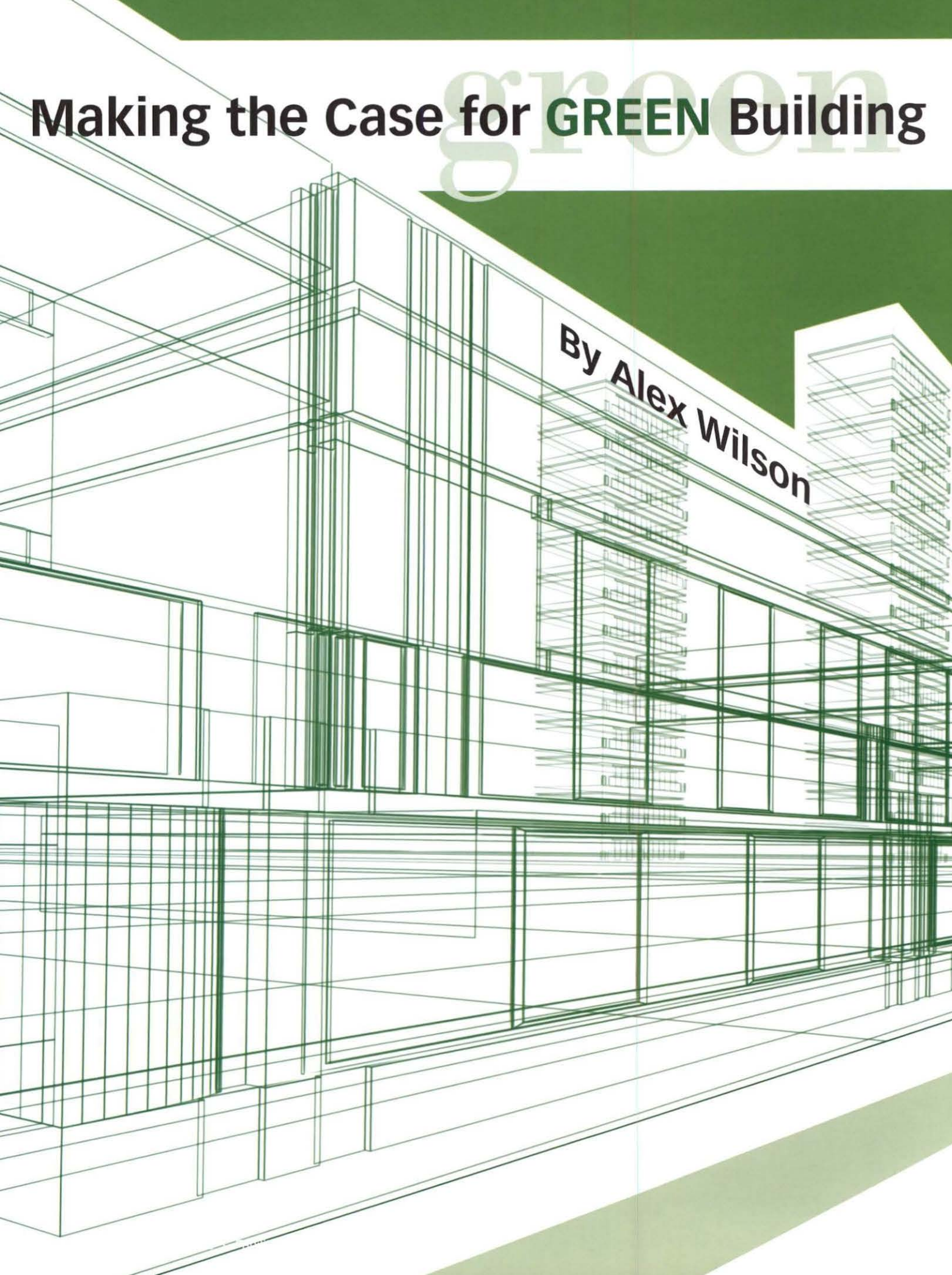
Panel Sessions: Discussions with experienced educational facilities professionals on today's most critical challenges to provide you with both practical and innovative solutions.

Breakout Sessions: Lectures and presentations from leading facilities management experts on applications for specific topics affecting educational facilities today.

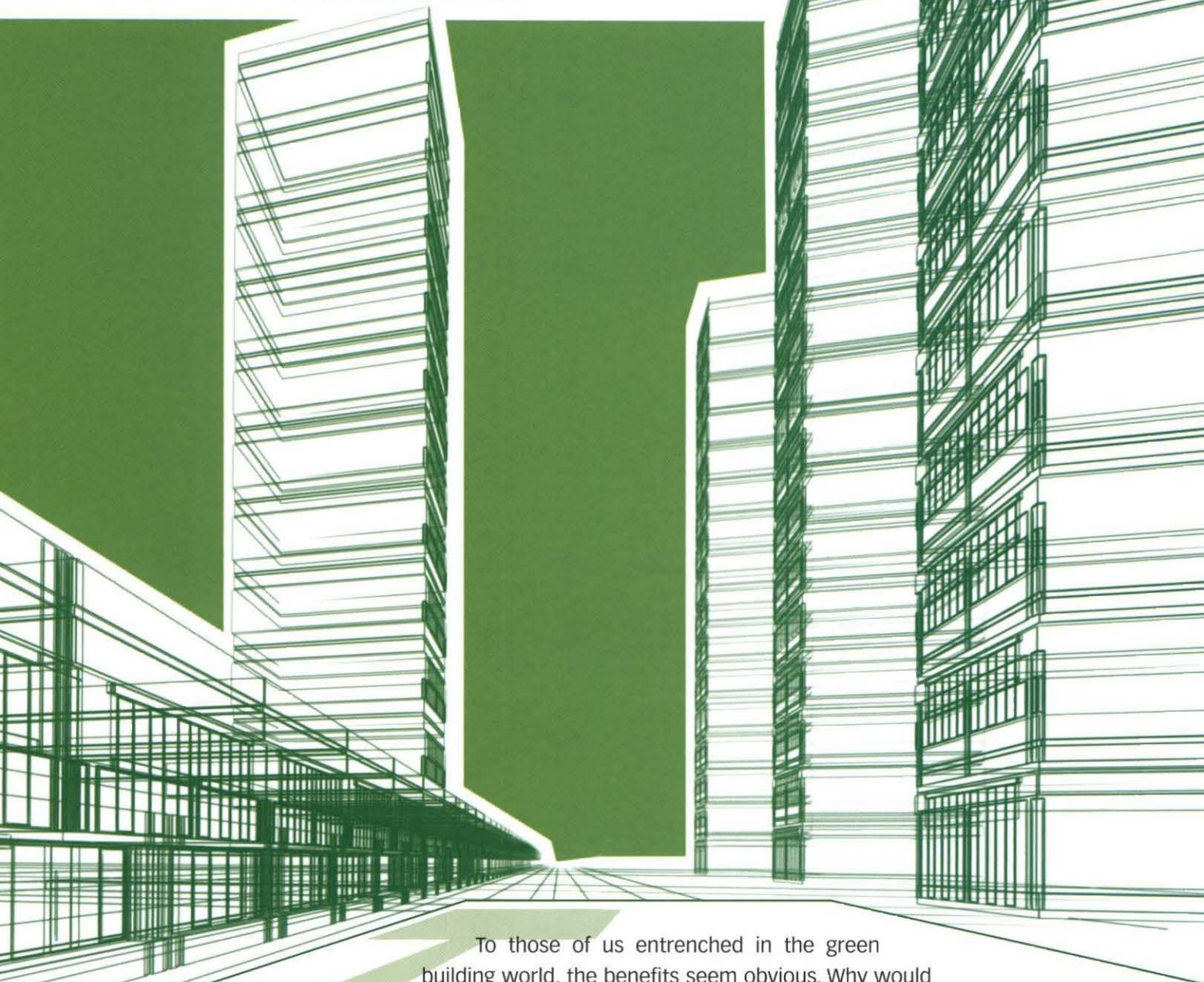
View the APPA 2008 Conference preliminary program at www.appa.org/training/appa2008/program.cfm.

Making the Case for **GREEN** Building

By Alex Wilson



CATALOGING THE BENEFITS OF ENVIRONMENTALLY RESPONSIBLE DESIGN & CONSTRUCTION



To those of us entrenched in the green building world, the benefits seem obvious. Why would anyone choose to build in a way that isn't comfortable, healthy, energy efficient, and environmentally responsible? In the process of designing and building green, however, we keep running into others who are not yet as convinced. For those situations, it is useful to be able to spell out the benefits.

Even within a single college or university project, different team members often have different reasons for promoting a green agenda. Architects may promote environmental measures because they feel it is the professionally responsible thing to do. The facilities manager who will take care of a building may recognize inherent durability, maintenance, and energy cost advantages. Students and faculty may insist on clean energy technologies and the smallest possible carbon footprint. And the administration may look strictly at bottom-line financial benefits of green.

There are lots of reasons for building green. This article examines a spectrum of reasons and benefits. Even if many of these items are already familiar, this list may provide some new insights and help you convince "the powers that be" on your campus to pursue an even deeper shade of green.

ENVIRONMENTAL BENEFITS

Reduced Global Warming Impacts

To the extent that green buildings use less energy and generate less carbon dioxide through their operation, require less transportation energy for their occupants, or avoid release of other greenhouse gases (such as HCFC and HCFC refrigerants and foam insulation blowing agents), they contribute less to global warming—clearly one of the greatest environmental threats we face today.

Why would anyone choose to build in a way that isn't comfortable, healthy, energy efficient, and environmentally responsible?

It is important to recognize that climate change impacts are global in nature—what we do in one part of the United States affects the world's climate, and, conversely, anything we do to reduce greenhouse gas emissions results in global benefits.

Reduced Contributions to Air Pollution

Burning fossil fuels to operate buildings and to transport people to and from those buildings causes local and regional air pollution—so any measures that reduce this energy use will help control air pollution. Some building materials also contribute to air pollution (smog) through the release of volatile organic compounds (VOCs). With green building and the selection of green building materials, air pollution sources should be minimized.

Reduced Energy Production Impacts

Fossil fuels require mining, drilling, processing, and transporting before arriving at their end use—whether in a power plant, building, or automobile. These processes may destroy the land, impact negatively on wilderness areas, and may result in air and water pollution. The production of nuclear fuel used in nuclear power plants has similar impacts. Energy production impacts are reduced when buildings use less energy from conventional sources.

Reduced Impacts of Transporting Materials

The greater the distance building materials and products need to be shipped (and the distance raw materials have to be shipped in the manufacturing of these finished goods), the greater the energy use and environmental impacts. With green building, there is often an effort to select more local materials.

Minimized Ozone Depletion

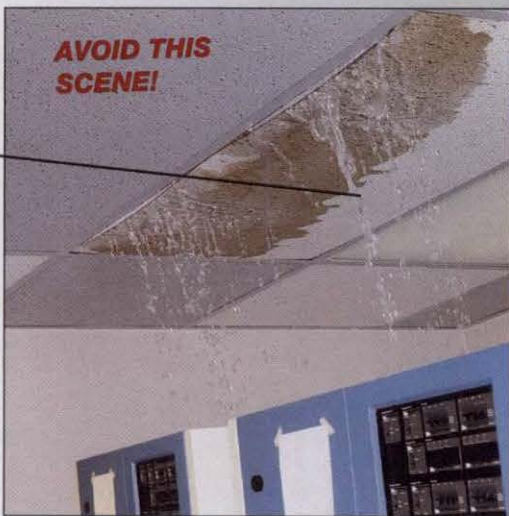
Green buildings minimize the use (and release) of ozone-depleting substances. This involves replacing CFC-based chillers, specifying non-HCFC mechanical equipment and avoiding foam insulation produced with

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Reduced Water Pollution

Buildings contribute to water pollution in a number of ways: stormwater runoff that carries contaminants into nearby surface waters, effluent from manufacturing plants that produces the products used in constructing a building, and the wastewater generated by a building that either introduces residual pollutants into surface water after treatment or more directly contributes pollutants to the groundwater with onsite wastewater treatment. With green building, efforts are made to minimize these impacts and select products that carry minimal "upstream" or "downstream" water-pollution impacts.

Reduced Water Consumption

Many resource experts are more worried about freshwater supply than energy supply over the coming decades. Through a combination of indoor and outdoor water conservation strategies, many green buildings are using less than a quarter as much water

as conventional buildings. In addition to conserving water, some green buildings collect water off their rooftops or separate and treat building wastewater in order to provide nonpotable water for use in landscape irrigation or toilet flushing.

Increased Environmental Awareness

Green buildings can be learning laboratories for all who use them, especially if educational or interpretive materials are provided to teach occupants and visitors about the building's green features. Green buildings that offer a direct connection with the natural environment may also nurture a more wholesome relationship with that environment among populations that are increasingly isolated from it.

FIRST-COST SAVINGS

Reduced Infrastructure Costs

Substantial first-cost savings can often be achieved with green building through differences in how infrastructure is handled. For example, innovative stormwater infiltration systems can reduce or eliminate the need for storm sewers and stormwater detention ponds; narrower streets to slow traffic

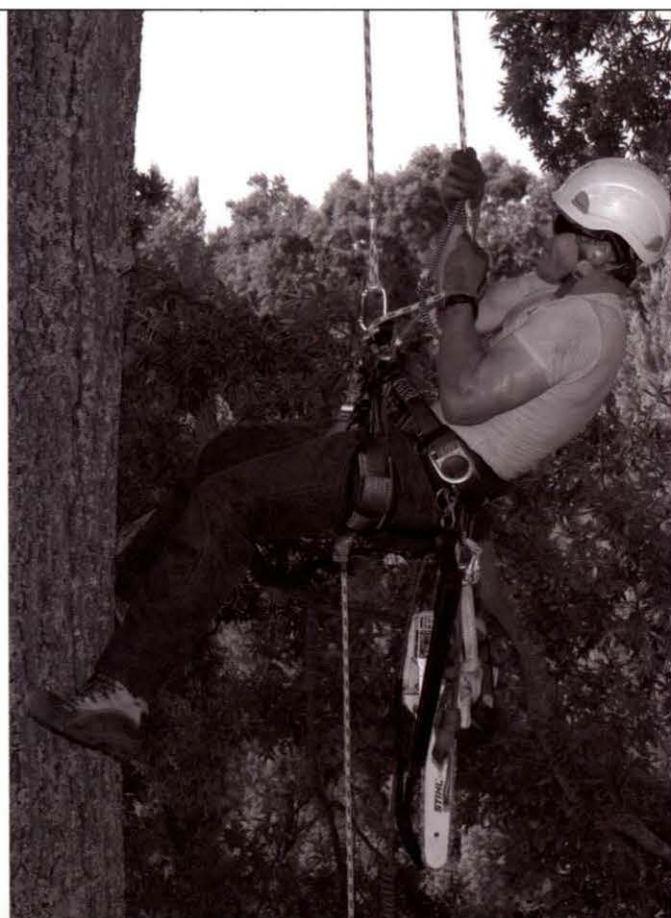
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can reduce paved area; and clustering buildings on a site can reduce the amount of paved area and the length of sewers and utility lines. Highly energy efficient new buildings may make campus power plants, heating or chilled water loops, or substation expansions unnecessary.

Reduced Material Use and Construction Waste

Designing smaller, more compact buildings can save a substantial amount of materials. Because construction waste volume is generally proportional to building size, smaller buildings also generate less construction waste. Reducing material use and construction waste through optimizing building dimensions (designing on a two-foot module, for example) and separating and recycling waste can also dramatically reduce construction waste and disposal costs.

Savings from Downsizing Mechanical Equipment

By improving the energy performance of a building envelope, it is often possible to downsize mechanical equipment as well as perimeter heating systems. Once loads have been reduced significantly, whole new approaches to heating and cooling

sometimes become available—for example, using radiant systems rather than air distribution for heating and cooling and separating ventilation air from comfort air. In some cases, by going even further with improved envelope energy performance, it is possible to totally eliminate heating or cooling equipment—and in the process pay for much or all of the envelope improvements.

REDUCED OPERATING COSTS

Lower Energy Costs

Green buildings commonly use less than half as much energy as their conventional counterparts and some green buildings consume less than a quarter as much energy—or even operate on a net zero-energy basis (using renewable energy to generate as much energy as they consume). Much of this benefit often comes from an improved building envelope and more energy efficient equipment, though improved space coupled with a smaller building size can also play a role. Increasing concerns about climate change and rising energy costs will make energy savings an even greater driver of green building.

Lower Water Costs

Green building water (indoor and outdoor) conservation strategies not only significantly reduce water consumption but also reduce water and sewer costs.

Greater Durability and Fewer Repairs

An important, yet often overlooked, feature of green buildings is durability. Durable buildings cost less to operate because repairs and replacement of failed building components are less common. Although durable building materials and equipment may cost more up front, their life-cycle costs are often lower than conventional products because they last longer and require fewer repairs. Green (vegetated) roofs, for example, can significantly increase the durability of the roof membrane by protecting it from exposure to ultraviolet (UV) light and thermal shock.

Reduced Cleaning and Maintenance

Some green building strategies, materials, and products require less maintenance or reduce the

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need for cleaning. Track-off entryway grates and carpeting keep a building cleaner by capturing dirt before it enters the building—and thus reduce the costs of cleaning. A natural landscape created with native plants generally requires significantly less maintenance than conventional turf and shrubbery.

Reduced Costs of Churn

Reconfiguring office spaces and relocating office workers (churn) is a huge cost for many companies, agencies, and schools. Certain green building strategies, principally raised access floors and modular wiring, can dramatically reduce this expense.

OTHER ECONOMIC BENEFITS

Positive Public Image

A stellar green building or a commitment to healthy, environmentally responsible buildings generally can bolster the public image of a college, university, or school.

Easier Recruiting and Better Retention

Recruiting quality students, faculty, and staff can be a challenge for any institution. Green buildings enhance a campus image, drawing the attention of prospective students and faculty. Also, the quality of the space in which prospective students, faculty, and staff will be learning and working in, including such features as daylighting, views to the outdoors, and indoor air quality, can have a significant impact on drawing the best and keeping them there.

Reduced Liability Risk

Lawsuits over mold in buildings and sick-building syndrome are increasingly common. Green buildings that have been designed with state-of-the-art knowledge about building science and moisture control pose a much lower risk of lawsuits related to these problems.

HEALTH AND PRODUCTIVITY BENEFITS

Improved Health

By virtue of the materials used—

Many green buildings have lower water demands and produce less wastewater than conventional buildings, thus reducing demand on municipal services as well as campus infrastructure.

moisture-control detailing, pollution- and contamination-rejection strategies, and ventilation strategies—green buildings are healthier buildings. Americans spend 85 to 95 percent of their time indoors, so the quality of the indoor environment is extremely important.

Enhanced Comfort

Measures that reduce drafts, minimize floor-to-ceiling temperature stratification, and control noise improve comfort in buildings. The controllability of individual workspaces—a feature in many green buildings—addresses the fact that different people have different needs when it comes to temperature, ventilation, and light levels. Individuals often



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benefit psychologically just from knowing that they have this control over their workspace environment.

Reduced Absenteeism

Keeping workers healthier—through control of contaminants and displacement ventilation strategies (as achieved when

raised access floors are used for conditioned air supply)—can significantly reduce work lost to illness.

Improved Worker Productivity

The economic benefits of boosting productivity are tremendous, with salaries and benefits costing on average \$318 per square foot per year in a U.S. office building (according to data collected from Carnegie Mellon University), compared with \$50 for technology, \$16 for the mortgage or lease, \$2.35 for energy, and \$1 for churn. Just a 1 percent increase in productivity, for example, will more than offset the total energy costs in the average building. Studies by Carnegie Mellon University have shown productivity increases in green buildings ranging from 0.4 to 18 percent.

COMMUNITY BENEFITS

Reduced Demand on Municipal Services

Many green buildings have lower water demands and produce less wastewater than conventional buildings, thus reducing demand on municipal services as well as campus infrastructure. In areas where droughts are frequent or where municipal water utilities are already pushed to capacity, this benefit that green buildings offer can be significant. With Oakes Hall at the Vermont Law School, a moratorium on new hook-ups to the town's wastewater treatment plant drove an aggressive water conservation agenda, which included composting toilets in the four-story classroom building.

Reduced Erosion and Stormwater Runoff

Some of the most localized environmental impacts of buildings are the erosion that occurs during construction and the increase in stormwater runoff that results from added impervious surface. By incorporating green roofs, rooftop rainwater harvesting systems, porous pavement, and other practices to



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provide for onsite stormwater infiltration, the environmental impacts of stormwater runoff can be significantly reduced.

Creating "Community"

Development patterns that have been common during the last half of the twentieth century have contributed to a loss of community in many areas. Green development, when implemented on a campus or community scale, can help to reverse these trends and return to people-focused neighborhoods in which residents interact with their neighbors.

WHAT GREEN BUILDING WILL BE

Given the many benefits of green building, it is not surprising that these practices are becoming more and more common on college and university campuses—as well as throughout the building industry. Educational institutions have long been leaders in green building, perhaps due to their awareness of environmental concerns facing the world. What is new, however, is the understanding of all the *other* benefits of green building, the ones that go beyond environmental protection. On campuses today, green building is being advanced as much by the bottom-line driven fiscal managers as the environmentally focused science faculties.

As motivation for building green expands beyond the early environmental advocates, the uptake is mushrooming, but there are also some risks. Demand for green design services in some areas is outpacing the available knowledge base, and mistakes are being made. It is critically important for facilities departments at colleges and universities to develop their own expertise in green building so that they can effectively evaluate solutions proposed by design teams. Investment in knowledge is key to the long-term success of green campus buildings. ☞

Alex Wilson is president of BuildingGreen, Inc. in Brattleboro, VT

and executive editor of *Environmental Building News*. E-mail him at alex@buildinggreen.com.

This is his first article for *Facilities Manager* and was adapted from a chapter in the new APPA book, *The Green Campus: Meeting the Challenge of Environmental Sustainability*.

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A Sustainability Assessment and Rating System for Colleges and Universities

What's the best defense against charges of "greenwashing?" It's measurement, of course: accurate, verifiable assessments provide evidence that an institution is "walking the walk" in its efforts to operate more sustainably.

— Jeff McIntire-Strasburg, senior editor & content director at Green Options Media, a network of environmentally-focused blogs.

Given the rapid growth of sustainability initiatives at institutions of higher education in the United States, measuring and assessing progress toward sustainability goals has become increasingly important. While many institutions have undertaken campus-wide assessments of their progress toward sustainability, and while a variety of sustainability assessment tools and frameworks are available, there is currently no system that assesses and compares a large number of campuses in terms of overall level of sustainability achievement.

Such a system would address all the dimensions of sustainability (social, economic, and ecological) and all the functions of a campus, from curriculum and research to operations and community outreach. It would also need to recognize that even the most accomplished colleges and universities may still have a long way to go before achieving comprehensive sustainability. Despite the challenges, development of such a system is now underway.

By Judy Walton, Ph.D.



Elements of the Rating System

Proposed basic features include:

- **Standardized "checklist" and documentation.** To be submitted by participating institutions, with different levels of achievement based on one's score.
- **Categories.** STARS is divided into three broad categories of credits: Education and Research, Operations, and Administration and Finance.
- **Weighting.** Indicators will be weighted by point values, enabling numerical summation of data. Also, categories may be weighted and/or scores combined using an algorithm.
- **Updates.** AASHE will undertake periodic updates of the system, to be released as new versions.
- **Voluntary.** Institutions can decide whether to participate. Since an institution's level of achievement will be known after completing the report, it may decide at that time not to submit the data for posting. Because the system is voluntary, the process is intended to be relatively streamlined and cost-effective, and the benefit of gathering and reporting data should be readily apparent to the institution.
- **Public reporting.** Completed reports and supportive information will be posted on a central site hosted by AASHE and open to the public, allowing for questions about an institution's submitted data.

CURRENT STATE OF CAMPUS SUSTAINABILITY ASSESSMENT

Campuses have been measuring their progress toward environmental and sustainability goals for many years, using a variety of different instruments and formats. One of the best collections of these reports was compiled by the Campus Sustainability Assessment Project at Western Michigan University between 1999 and 2003. It includes a searchable database of over 1,200 campus sustainability assessments, with details on the assessment framework employed for select projects. (<http://csap.envs.wmich.edu>)

In 2006, the Association for the Advancement of Sustainability in Higher Education (AASHE) compiled a list of assessment frameworks developed for use by multiple institutions regionally, nationally, and internationally. Fewer than a dozen could be found at that time, and of those, only one was intended as a "rating system" (i.e., offering aggregate scores for comparison purposes). However, these assessment frameworks focused on academic programs rather than institutions. Several environmental and sustainability



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assessments were developed for *regional* use—under the assumption that institutions within a region share common constraints and opportunities—but these either were not meant to be rating systems with distinct levels of achievement, or are not very comprehensive.

In 2006, a number of elements came together, creating a renewed interest in the development of a rating system. First, AASHE was established, offering a potential organizing entity for the project. Second, over a dozen key higher education associations established the Higher Education Associations Sustainability Consortium (HEASC), and one of its first acts was to issue a call for a sustainability assessment and rating system for higher education. Finally, wide support for creating a rating system developed from within the community via discussion lists and AASHE-led workshops at

campus sustainability conferences. The next step was to begin development of the system. Toward that end, AASHE convened key stakeholders in a two-year collaborative process by the higher education community to develop a pilot version of the system, called STARS (Sustainability Tracking, Assessment & Rating System).

GOALS OF A RATING SYSTEM

A widely-used, standardized rating system accomplishes a number of important objectives toward rapidly advancing sustainability in higher education. The goals of STARS include:

1. Provide a guide for advancing sustainability in all sectors of higher education, from governance and operations, to academics and community engagement.
2. Enable meaningful comparisons over time and across institutions by establishing a common standard of measurement for sustainability in higher education.
3. Create incentives for continual improvement toward sustainability.
4. Facilitate information sharing about higher education sustainability practices and performance.
5. Build a stronger, more diverse campus sustainability community, and promote a comprehensive understanding of sustainability that includes its social, economic, and environmental dimensions.

WHY "RATING" VS. "RANKING"?

STARS offers institutions recognition for their absolute level of achievement (their rating). STARS is not a ranking system, in which institutions are ranked in relation to their peers, rather than by absolute achievement. It is a self-administered system and the methodology for achieving a STARS rating is fully transparent, unlike some rating systems and most ranking systems. Advantages of a rating system include:

- A rating system offers beginner levels of achievement, which give even novice schools something to work toward. In contrast, a ranking system offers only schools that expect to be in the top grouping an incentive to participate.
- A rating system can be self-sustaining through a small

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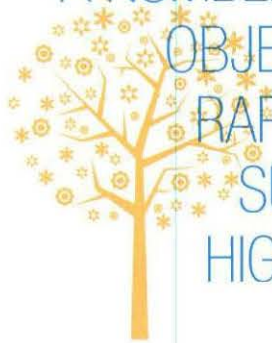


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submission fee while a ranking system requires significant outside funding each time for the third party to perform its work.

- A rating system provides a clear road map for a campus to reach a benchmark level at any time. In contrast, a ranking system provides no clear target (a campus can't know in advance where it will end up in the rankings).
- A rating system offers a friendly way of promoting change, as institutions strive toward the highest level of achievement rather than focusing on getting ahead of other institutions. With a ranking system, an institution may wind up at the top just by virtue of being ahead of the rest—even if it's still far from achieving sustainability—while in a rating system, the top classification could be empty for many years while schools work toward it.
- Rating systems give only positive recognition via levels of achievement, while ranking systems also provide negative recognition (i.e., being “bottom of the heap”) and can generate bad feelings. Ranking systems may lead to

invidious competition between schools closely ranked in order, which creates incentives to “game the system.”

- In a rating system, campuses generally participate in anticipation of receiving positive recognition, and are therefore more motivated to respond to a thorough survey with some complex questions. A ranking system, in contrast, generally requires filling out a survey for a third party, which means the survey must be fairly short and easy to complete so institutions will respond.

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WHAT ABOUT THIRD-PARTY CERTIFICATION?

Due to added costs, complexity, and time, third-party certification will not be required in the initial release of the rating system. Instead, the system will rely on openness, public oversight, and institutional integrity. At some point in the future, as the need arises, third-party verification may be instituted.

Meanwhile, institutions that choose to pursue voluntary certification may be rewarded with additional points or other special recognition. If there is sufficient interest, AASHE may even create a system for peer review of STARS submissions.

STARS has several strategies to ensure that the information institutions submit is accurate (without requiring third-party verification). First, for each credit, a responsible party from the institution must provide a statement attesting to the accuracy of information

submitted. Second, submissions must be accompanied by a letter from the president or chancellor verifying the integrity of the report. Finally, the entire system—weighting, scoring process, criteria for fulfilling credits—is designed to be transparent. Completed reports and supporting documentation will be posted on a central site open to the public, allowing for any questions about an institution's submitted data. AASHE will host and maintain the site.


COMMITTEE STRUCTURE AND DELIBERATIVE PROCESS

The development of the rating system has been a collaborative and transparent process, with stakeholders from higher education, government, business, and NGOs. It is being guided by a small steering committee charged with overall management and direction.

In addition, two advisory committees are supporting and shaping the initiative. Members of the Strategic Advisory Committee, representing over 25 higher education associations, advise on the purpose, vision, goals of the project, and strategies

for its successful development. The Technical Advisory Committee consists of over 100 individuals with expertise in the many areas covered by the rating system. Their job is to review proposed credits and make recommendations. A list of committee members is on the STARS website.

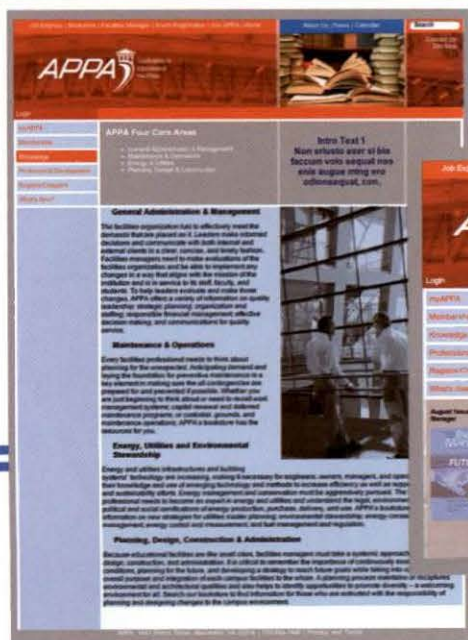
TIMELINE AND MORE INFORMATION

The pilot phase of STARS was launched in early February, 2008 with more than 90 participating campuses. Following the year-long pilot phase, the official 1.0 version of STARS is scheduled for release in spring 2009. For more information, visit www.aashe.org/stars. 

Judy Walton, Ph.D., is the director of strategic initiatives and interim executive director for the Association for the Advancement of Sustainability in Higher Education, Portland, OR. E-mail her at judy@aashe.org. This article for *Facilities Manager* is her first and was adapted from a chapter in the new APPA book, *The Green Campus: Meeting the Challenge of Environmental Sustainability*.

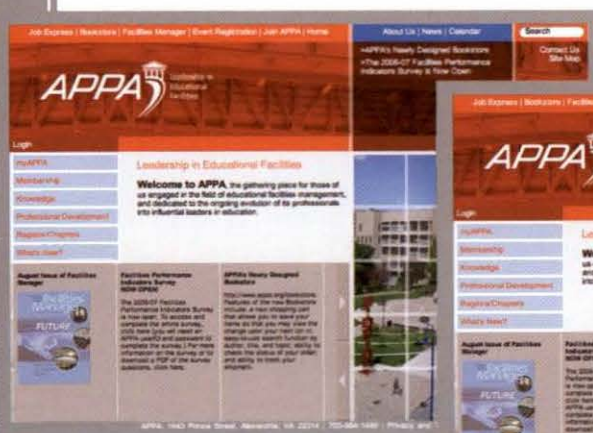
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PERSPECTIVE

WHAT IS



A CARBON FOOTPRINT?

and HOW CAN YOU REDUCE YOURS?

by Kenneth B. Jones, AIA, LEED AP

Over the past several years, terms such as “green building,” “sustainable design,” and “LEED Certified” have become commonplace within the design, construction, and facilities management industries. The trend toward more environmentally conscious buildings is gaining momentum. In fact, many government and private organizations are beginning to require that all of their new and renovated buildings be designed and constructed to obtain LEED (Leadership in Energy and Environmental Design) Certification through the U.S. Green Building Council (USGBC).

The building industry’s impact on the environment is substantial when we consider that the USGBC estimates that approximately 65 percent of all electricity generated by power plants is used to operate new and existing buildings. Generating this amount of electricity through the consumption of fossil fuels (crude oil, natural gas, etc.) causes large amounts of carbon dioxide (CO₂) to be emitted into the atmosphere.



WHAT IS A "CARBON FOOTPRINT"?

The scientific community generally agrees that emission of carbon dioxide and other greenhouse gasses (GHGs) into the earth's atmosphere will be primary contributors to changes in the earth's climate over the coming decades. As carbon dioxide is released into the atmosphere, it accumulates and forms a barrier, trapping the heat created from the sun and increasing the temperature of the earth. The term *carbon footprint* is used to quantify the

THE 2030 CHALLENGE

In response to growing concerns about how buildings are affecting the environment, the American Institute of Architects (AIA) has supported the 2030 Challenge, promoted by the organization Architecture 2030. The 2030 Challenge calls for a 50 percent reduction in the amount of fossil fuel consumption by the year 2010 and an additional 10 percent reduction every five years after that, with the ultimate goal of buildings that are "carbon-neutral" by the year 2030. The term "carbon-neutral" refers to buildings and activities that result in a net quantity of carbon emissions equal to zero.

THE 2030 CHALLENGE CALLS FOR A 50 PERCENT REDUCTION IN THE AMOUNT OF FOSSIL FUEL CONSUMPTION BY THE YEAR 2010 AND AN ADDITIONAL 10 PERCENT REDUCTION EVERY FIVE YEARS AFTER THAT, WITH THE ULTIMATE GOAL OF BUILDINGS THAT ARE "CARBON-NEUTRAL" BY THE YEAR 2030.

impact that a building, an individual, or an organization has on the environment relative to the quantity of CO₂ it emits into the atmosphere. Some organizations have created spreadsheets that will allow you to calculate your carbon footprint and have made these available on the Internet. One good example can be found at www.cleanair-coolplanet.org. Generally, your carbon footprint will be measured in tons per year of CO₂ emissions.

WHAT CAN YOU DO TO MOVE TOWARD CARBON NEUTRALITY?


Whether you are an owner, a contractor, or an architect, one simple answer in how to move toward carbon neutrality is to design and construct buildings that require far less energy to operate than the typical buildings that have been constructed in the past. For new facilities, there are many ways in which this can be accomplished. Begin by following the LEED guidelines for New Construction established by the USGBC. Some strategies include properly locating and orienting a building on its site to take advantage of the path of the sun, optimizing the building's form to minimize environmental impact, and carefully considering the size and location of windows to incorporate day-lighting strategies. Preserving the quantity of existing trees on a site and reforestation efforts can help offset carbon dioxide that is released by your facility, as trees absorb and store CO₂.

Some energy-saving strategies that can be applied to both new and renovated facilities include properly insulating the building, installing a highly reflective "cool" roofing system, and incorporating natural heating, cooling, and ventilation into the design. Installing photovoltaic (solar) panels on a roof can reduce the amount of electricity required to be purchased from fuel burning power plants. Commissioning, and later recommissioning, building systems will ensure that they are operating at optimal efficiency. For additional strategies related to renovation and facility upgrade projects, refer to the LEED guidelines for Existing Buildings (www.usgbc.org).

KEY MOMENT IN THE PROCESS

We are at a critical point in the history of design and construction. As stated in a report by the AIA titled *Architects and Climate Change*:

About 5 billion square feet of new construction, 5 billion square feet of renovation, and 1.75 billion square feet of demolition takes place in the United States each year. By the year 2035, three-quarters of the built environment in the U.S. will be either new or renovated. This transformation over the next 30 years represents a historic opportunity for the U.S. architecture and building community to lead in addressing greenhouse gas emission reductions.

Understanding and implementing design, construction, and operational strategies to reduce your carbon footprint will result in buildings that are more energy efficient, cost less to operate, and greatly reduce their negative impacts on the environment. 

Ken Jones is a vice president with Grimm + Parker Architects, Calverton, MD, and a licensed architect and a LEED Accredited Professional. E-mail him at kjones@gparch.com. This is his first article for *Facilities Manager*.

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Transitioning to Planned Maintenance

By Matt Adams, P.E.

The problem with planned and organized maintenance is that it's not as thrilling as reactive maintenance. The day goes by much faster if you spend all of your time "putting out fires." It's exciting and unpredictable. Unfortunately, it's not in the best interest of your institution. Despite the often used complaint of insufficient resources, senior administrators want some demonstrable improvement in

trade staff productivity. To do this we must give up the reactive thrill for the more predictable tasks of maintenance planning and work loading.


There is always the complaint that resources are too short to begin a planned maintenance effort. This sense of collective inability is easy to understand. If there is chaos everyday and the phone at the service desks rings constantly, it can be hard to imagine that there is any room for planned work. In other words, if your collective days are full of reactive

- **Type B.** Facilities that are of previous code design and the systems are near or at the end of their life cycle (candidates for renovations).
- **Type C.** Those unique facilities that require hard decisions and must be razed or renovated for political reasons.

It is important to rationalize our portfolio and the attendant systems in this way. Given the fact that we are short on resources, we cannot possibly change overnight from a reactive approach to a planned program. We must institute a carefully phased approach that allows trades staff to make progress with limited resources and demonstrate a new operating mode to the senior administration. From the total portfolio of facilities—by categorizing them into either A, B, or C—we have completed the first rationalization of facilities to find those buildings that offer the possibility of transition to planned maintenance.

Now that we have our "A" buildings, we have a group of buildings that will actually respond in a positive way to planned maintenance. Theoretically, these buildings and their systems have life remaining. Preventive maintenance and planned renewal will result in various forms of return on investment to the institutions and our department. This is key to the transition. The planned maintenance must deliver increased system reliability (less unplanned reactive work) and extend the life of the systems, even reduce energy usage. These simple metrics are easily base lined and measured over an annual reporting cycle. After as little as two years, some real return on investment should be demonstrable to prove the merits of the new transition initiative to the administration.

Now many will say that even the "A" portfolio is too big to handle for a transition. Given this likelihood, the "A" list must be further rationalized.



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customer work and unplanned corrective work, where is the extra capacity for delivering preventive maintenance? It seems impossible or at least improbable. However, this is where many of us are, and we have to find a way to change.

The fundamental principle of a transition from reactive to planned maintenance is one of prioritization or weighting. Regardless of the size of the institutional facility portfolio, there are at least three types of facilities included:

- **Type A.** Facilities that are relatively new and the systems still have considerable life cycle remaining.

Remember, we are not trying to change the whole campus overnight. We are trying to demonstrate that the transition from a reactive to a planned approach is possible, at least for a subset of our portfolio. From the "A" list it is ideal to isolate a subset of facilities that meet the logistical and usage/occupant criteria to form a best practice "zone."

If your institution is small, this might be only one or two facilities. Otherwise, a zone is typically considered to be from 500,000 GSF to 1,000,000 GSF. The size is important for this initiative only in that we don't want to bite off more than we can chew. The new zone of "A" buildings is the target group of facilities that offer the best opportunity to transition from reactive to planned maintenance.

So far, this transition is primarily about slicing and dicing the facility list and not much about actual trades staff. Assuming we are limited in staff and feeling overstretched already, executing a new work plan for the zone requires guts.


If the zone is large enough to allow for dedicated staff, then the staff must be dedicated. In the absence of a more scientific approach, one of each trade including HVAC, electrical, plumbing, and general tech or helper would form a zone team. This team must gradually move into the zone, exclusively, over a three-to-six-month time period. Despite the fact that many will think this is impossible because of the workload on campus, it is possible. In fact, given an active effort to dedicate this team to work within the zone only, the remainder of the department will either make due without this team's capacity, or service to the reactive pool of work on campus will slow, or both. This is part of the price of transition. The goal in the proof of concept phase is to demonstrate benefits to reduce the strain experienced by the plant trades staff.

Finally, the details of work loading for the zone are vital. An equipment inventory for the zone's maintainable equipment is required to establish the

ONCE THE FIRST ZONE IS UP AND RUNNING AND FINE-TUNED, THE BENEFITS BECOME OBVIOUS IN TERMS OF METRICS AND ALSO CUSTOMER SATISFACTION.

base workload. From the inventory, planned maintenance tasks are linked to equipment inventory and loaded or planned over at least a month. As the zone team becomes dedicated to work in the new "A" zone, their priority must be to execute all planned maintenance from the work loading assembled in advance. This is critical to the proof of concept. The cycle times for the planned maintenance should be gradually compressed to recommended standards

as the program begins to show benefits.

The fact that the work in the zones begins with the completion of the planned maintenance program as the first priority in and of itself, is a tangible transition from reactive to planned maintenance. There should be more ability to plan work based on the nature of the buildings in this zone. They were selected to enable this transition. Once the first zone is up and running and fine-tuned, the benefits become obvious in terms of metrics and also customer satisfaction. The accountability demonstrated by this process should be more than enough justification to the senior administration for a proposal to expand the transition initiative to the other facilities on campus. 

Matt Adams, P.E. is president of FM², Atlanta, GA. E-mail him at matt@adamsfm2.com.

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

We are in a data intensive business. Whether tracking the data of work/service requests, employee time, maintenance parts, or paint colors—we are dependent on a great deal of supporting information. One key provider of facility data is Whitestone Research. Three Whitestone publications are reviewed here. Due to their overlapping nature, all three are reviewed as one.

THE WHITESTONE BUILDING MAINTENANCE AND REPAIR COST REFERENCE 2007-2008, 12TH ED.

385 pages, softcover, \$295.

THE WHITESTONE BUILDING OPERATIONS COST REFERENCE 2007-2008

231 pages, softcover, \$199.

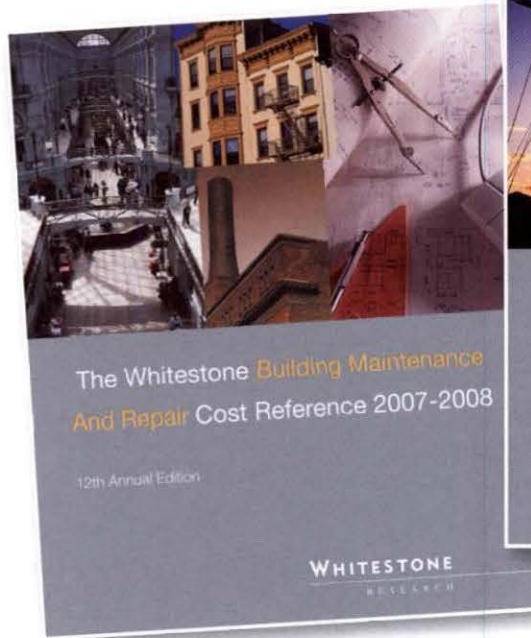
MARS 7.0

CD and Users Guide, \$7,000.

Whitestone Research, Santa Barbara, CA, 2007.

Whitestone's *Maintenance and Repair Cost Reference* is the primary reference guide for assembling maintenance and repair information into a budget for trades work. The data used is a compilation of several information resources familiar to higher education facility officers. Whitestone data uses real examples with key details—rather than a generic, less informative, square-foot format.

Whitestone makes extensive use of data available from federal agencies, including foundation material developed in the 1980's by the Army's Civil Engineering Research Laboratory in Champaign, Illinois and reported through several venues, including an APPA conference. The data elements have been assembled into several model



The Whitestone Building Operations Cost Reference 2007-2008

1st Annual Edition

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facilities that provide examples of maintenance and repair costs such as: annual, preventive maintenance, major repairs, and capital renewal forming a 50-year life-cycle cost profile. Behind these examples are detailed maintenance costs based on time, material, equipment, and repair frequencies. Adjustments can be made to the data

to resolve regional differences in wages and material costs.

My copy of the 1996 reference had 24 buildings modeled with data to make adjustments for 64 cities and over 250 components. The 12th edition reflects the growth of Whitestone's database, with increases in the number of models (56), cities (210), and components (1,000+). In addition, there is important life-cycle data for heating and cooling equipment to make adjustments for 10 climate zones.

All components are organized following ASTM Uniformat II, from exterior closure (B20) through site electrical utilities (G40). There is an extensive list of heating and cooling components. One can start with a model facility; add and subtract components to match specific conditions; and develop a budget for preventive maintenance and capital renewal. Sounds easy, but the process

to arrive at a detailed budget can get almost as complicated as designing the actual facility.

The *Building Operations Cost Reference* closes the gap by addressing the operating costs of custodial, utilities, grounds, security, and seven other areas of service necessary when a facility is occupied and used. While preventive maintenance and capital renewal are important and significant costs, they only address the needs of the facility, not the occupants.

Similar to the *Maintenance Reference*, this manual builds on the 56 model facilities, identifies the kinds of service levels provided, and identifies the costs to provide those services. APPA members will recognize several descriptors for operational services and be able to tie them to APPA's staffing guidelines.

WHETHER IT INVOLVES TRACKING THE DATA OF WORK/SERVICE REQUESTS, EMPLOYEE TIME, MAINTENANCE PARTS, OR PAINT COLORS—WE ARE DEPENDENT ON A GREAT DEAL OF SUPPORTING INFORMATION.

It is possible to compare the service levels with APPA service levels and then compare costs.

There are three service level alternatives provided (high, medium, and low) which are tied to facility use, rather than service delivery. "High" describes a facility with heavy use, greater than 80 hours per week; "medium" for facilities used between 40 and 80 hours per week; and "low" for a facility used less than 40 hours per week. This makes sense for utilities, security, and tele-

com, but less so for grounds, management, and other operating costs. One area of particular concern was security which described basic (a fourth level, below low) security as having electronic locks. Some APPA members may find great value in electronic locks but at a higher maintenance cost than suggested. Regardless, these are helpful metrics that can be applied to a higher education setting.

While not a competitor to APPA's annual Facilities Performance Indicators

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(FPI) survey, it is possible that the cost of this manual may be reasonable for a budget officer wanting to verify a facility officer's projections. The data is good but in the wrong hands, it can be easily misinterpreted.

The software, *MARS 7.0*, used to produce the two aforementioned

references can be purchased and used to facilitate customized facility information and to produce budget information for specific facilities or campuses. This level of added detail and customization of building models is great for a large facility and for facility officers in need of support without the cost of consulting fees.

MARS is a custom database built on an MS Access foundation. There is no need to have an MS Access license prior to installation. All 56 building types appearing in the *Maintenance Cost Reference* are available and can be edited to reflect the exact size and component list. Components and maintenance tasks, including life-cycle and replacement costs, can be modified or added and applied to any facility. So, it is possible to insert specific manufacturer maintenance recommendations and apply them to buildings. Reports provide the usual information, individual building costs over a 50-year life, aggregate building costs, and normalized costs (\$/sf), to name a few.

The user's guide provides a great deal of helpful information. User software is often complex and not always intuitive. However, the manual identified at least two helpful features that weren't available in the package—uploading building data and uploading building deficiencies. These features are apparently available for an additional cost.

This is no small software package. I used a Dell D430 with a duo core processor, but some operations took a minute or more to process. One should not use this software and expect instant results.

While I still value the data Whitestone provides through the 56 building models, I think I'll stick with the annual paper copy of the data rather than use *MARS*. And, I'll use the *Operational Costs* with caution but to my advantage. ☺

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

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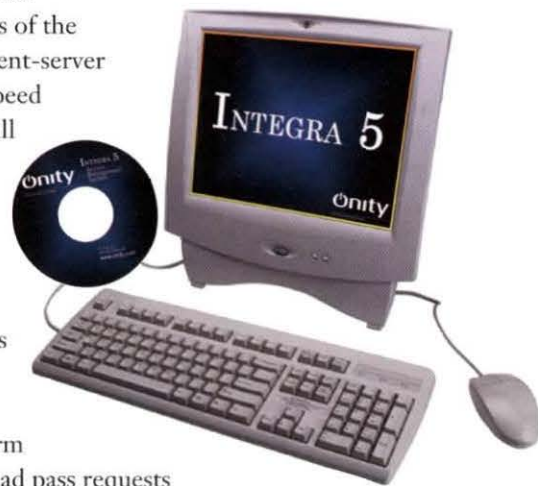


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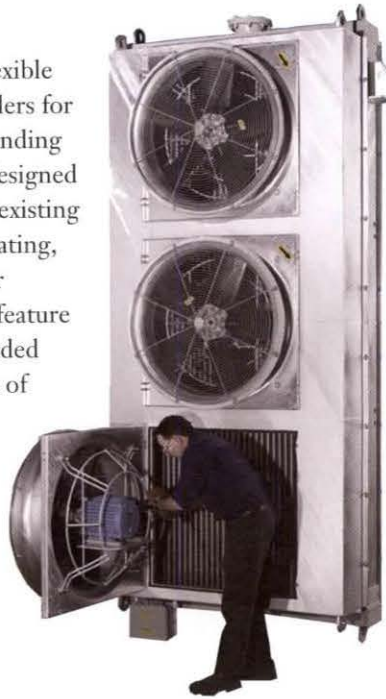
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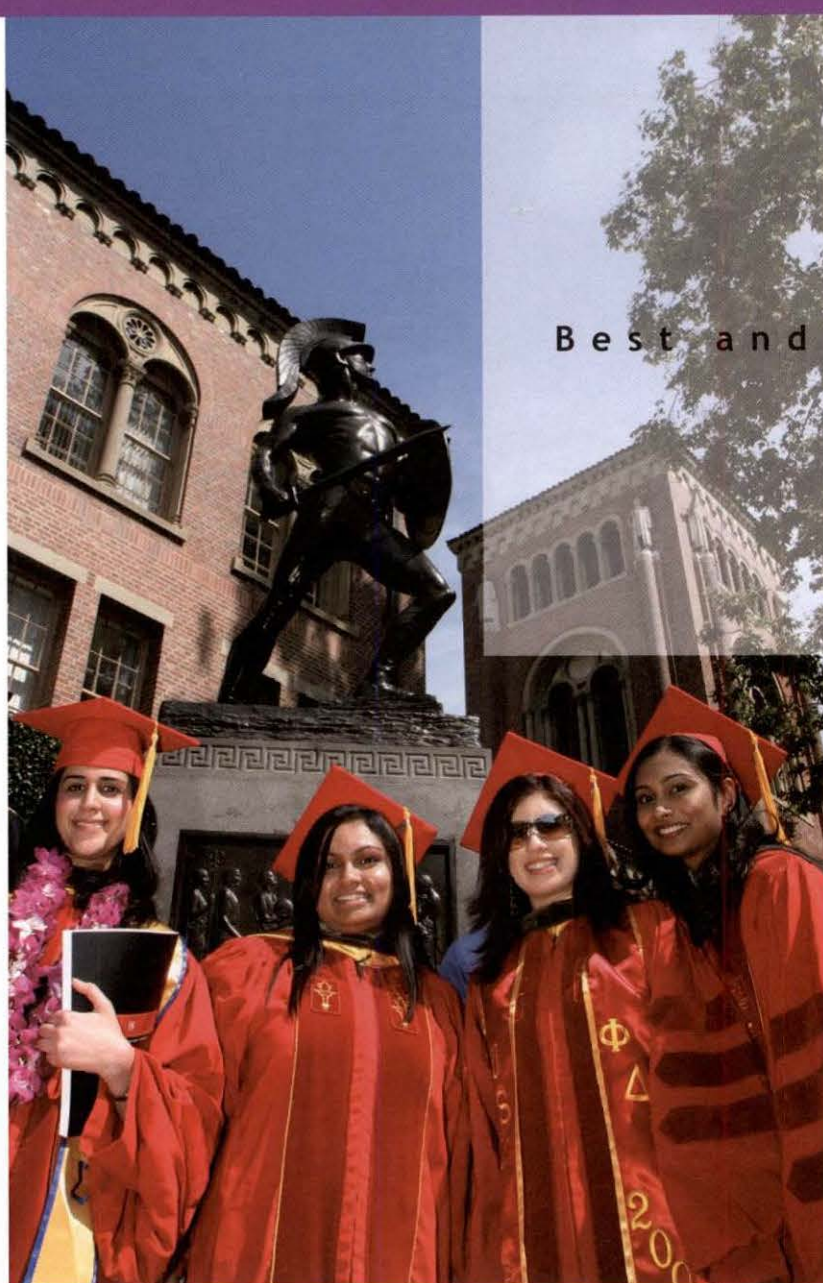
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