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FACILITIES manager

JULY/AUG 2009

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LEAN Approach

Making it Stick

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Mike Abrashoff

Cornell's Climate
Action Plan

Focusing
ON
THE
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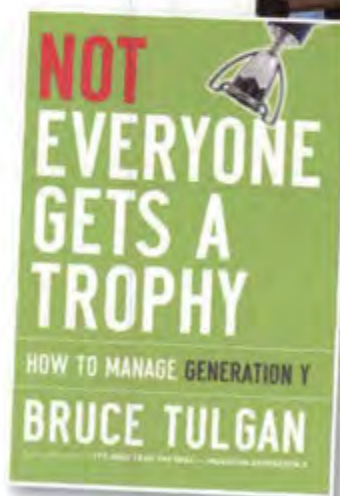
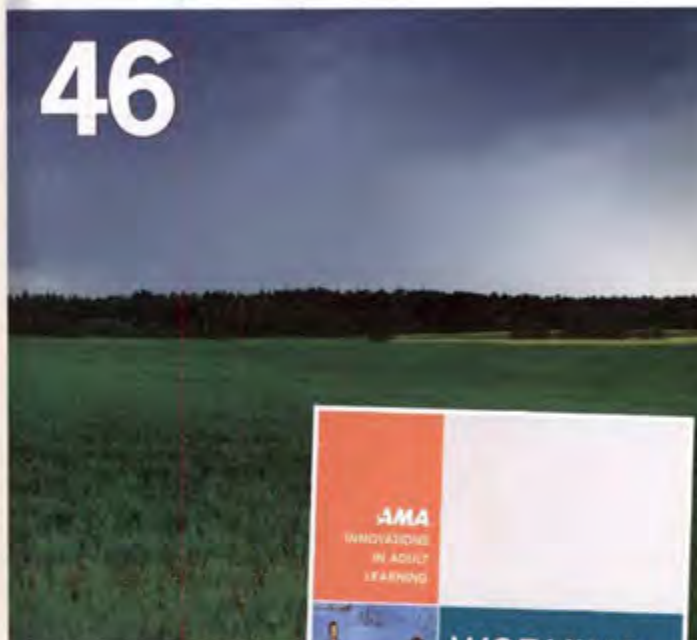
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The theme for the APPA 2009

conference, held July 8-10 in Vancouver, British Columbia, is Focusing on the Critical Few. APPA's Professional Development Committee, led by Vice President David Gray, noted that "amid the constant change in educational facilities, a critical few issues remain constant. APPA 2009 will focus on these issues that surround everything you do as an educational facilities professional." The major tracks will focus on the following:

- Influence/Leadership/Communication
- Disciplines/Accountability/Expectations
- Sustainability
- Total Cost of Ownership

We have crafted this issue of *Facilities Manager* to touch on some of these topics. We're pleased to include interviews with keynote speakers Chip and Dan Heath and Michael Abrashoff, as well as the focus article on applying the lean approach to process assessment and continuous improvement.

Also in this issue is a look at the creation of Cornell University's Climate Action Plan, developed as a result and support of the American College & University Presidents Climate Commitment. In addition, Past President Alan Bigger gives us a valuable perspective on surviving through difficult economic times. And we've included a glimpse of the active and varied conversation that goes on among the 1,000-plus subscribers of the APPAinfo discussion list.

Finally, we'd like to remind you of the APPA staff members who serve you throughout the year and support your college, university, school, district, museum, business partner, or other educational facility. 

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Coming in Sep/Oct 2009

- Profile of 2009-10 President Polly Pinney
- Award for Excellence Institutions
- Effective & Innovative Practices Award Winners
- APPA 2009 Highlights
- APPA's 2008-09 Annual Report

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www.appa.org/facilitiesmanager

Facilities Manager (ISSN 0882-7249) is published six times a year (January, March, May, July, September, and November). Send editorial submissions to steve@appa.org. A portion of APPA's annual membership dues (\$53) pays for the subscription to *Facilities Manager*. Additional annual subscriptions cost \$66 for APPA members, \$120 for non-members. Contact the editorial office for article reprints.

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POSTMASTER: Send address changes to *Facilities Manager*, 1643 Prince Street, Alexandria, VA 22314-2818.

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.

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APPA's Inaugural CEFP Certification Recipients

APPA congratulates the following individuals who passed the first Certified Educational Facilities Professional (CEFP) exam in January 2009 and received the CEFP designation, validating not only their superior proficiency in educational facilities, but their mastery and practice in the field. The certification is earned through a comprehensive examination testing both knowledge and experience in four core areas key to the profession: general administration; operations and maintenance; energy and utilities; and planning, design, and construction. Those receiving the inaugural CEFP designation are:

*Allen Boyette, North Carolina State University
Alan Daeke, North Carolina State University
Terry Fenstad, Westfield State College
Kenneth Klika, Case Western Reserve University
Thomas Shewan, Florida State University*

You too can be recognized as among the most accomplished in our profession by earning the Certified Educational Facilities Professional (CEFP) designation. The CEFP confirms one's achievements and demonstrates understanding and application of skills to create and maintain safe, functional, and inspiring learning environments for current and for future generations. Furthermore, attaining the CEFP elevates an individual's credibility as an educational facilities professional and that of their institution.

For additional information on either program visit <http://www.certification.appa.org/> or contact Suzanne Healy at suzanne@appa.org.

APPA AWARDS ANNOUNCED

The Professional Affairs and Award & Recognition committees recently granted the following awards. Award recipients will be honored at the APPA 2009 conference in Vancouver. Other awards will be announced in the next issue.

Effective & Innovative Practices Awards:

University of North Texas

"Revised Small Renovation Delivery Process"

University of Texas at Austin

"Employee Recognition SITES Award"

Valparaiso University

"Natural Gas and Medium Voltage Distribution Systems"

Weber State University

"Safety Training Board Game"

Western Michigan University

"In-House Capital Asset Documentation Program with GIS"

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NEW FLIPPABLE FILE FOR FACILITIES MANAGER

A new feature has been added to the online version of *Facilities Manager*. In addition to the PDF files being posted, we've also added a flash file that will allow you to electronically view the magazine in its entirety. You will be able to "flip" the pages and view the magazine in spreads (to flip the pages, just run your cursor over the bottom corner of the page.)

For an example of this new feature, visit <http://appa.org/FacilitiesManager/index.cfm> and click on "View Full Version in Flash" to view last month's issue of *Facilities Manager*. This feature is only available to members.



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St. John's University is making environmental history by launching an A500 Rocket® model food composter, becoming the first U.S. university to use this technology. The Rocket, an onsite in-vessel food composter,

is used in approximately 16 percent of UK universities, with more than 260 Rocket composters operating throughout the UK. This is a significant milestone for U.S. higher education, where St. John's is taking the lead to implement this cutting-edge technology and treat food waste in a sustainable way. Educational institutions using the Rocket composter have cut waste collection costs, saved money on buying compost and pest control, helped divert food waste out of landfill sites, and educated students in sustainability.

NEW APPA E-BOOK

*Facility Management Shared Services:
The Balance Between In-House Services
and Outsourcing*

by Jeffery L. Campbell, Ph.D.,
Brigham Young University

Member Price: \$39

Non Member Price: \$54

ISBN: 1-890956-51-1

Published 2009, e-book, 64 pages

Most universities utilize both in-house and outsourced services to operate their campuses, or in other words, they incorporate shared services. The definition of a shared service model is the optimal balance of in-house services, resources, and management with



outsourced services to provide the highest level of services at an affordable price.

Facility Management Shared Services: The Balance Between In-House Services and Outsourcing focuses on the symbiotic and collaborative relationships and partnerships are working with outsourced contracted services. This book will help to:

- better define a shared service model between in-house and outsourced facility services;
- increase understanding of how to optimize the value of shared services; and
- forecast future outsourcing trends based on current practices.

Includes interviews with facilities professionals using both in-house services and outsourcing, research findings, recommendations, and questionnaires to use in gauging the needs of your own facility.

Purchase at the APPA Bookstore www.appa.org/bookstore.

EVENTS

APPA EVENTS – 2009

Jul 11 EFP Prep Course, EFP Examination, and CEFP Examination Vancouver, BC, Canada

Jul 12 EFP Examination Vancouver, BC, Canada

Sep 10-14 Institute for Facilities Management Hilton Head, SC

Sep 15 EFP Prep Course, EFP Examination, and CEFP Examination Hilton Head, SC

Sep 16 EFP Examination Hilton Head, SC

Sep 20-23 RMA Annual Meeting Tucson, AZ

Sep 26-30 CAPP Annual Meeting Grand Forks, ND

Sep 27-30 MAPPA Annual Meeting Iowa City, IA

Oct 4-7 ERAPPA Regional Meeting Portland, ME

Oct 7-9 PCAPPA Regional Meeting Universal City/ Hollywood, CA

Oct 24-27 SRAPPA Regional Meeting Daytona Beach, FL

Oct 27-30 ACUHO-I/APPA Housing Facilities Conference Columbus, OH

OTHER EVENTS – 2009

Jul 11-15 CSHEMA Annual Meeting, New Orleans, LA

Jul 18-22 SCUP Annual Meeting, Portland, OR

Sep 12-16 URMIA's Risk Management Conference Nashville, TN

Sep 20-23 Greening of the Campus Conference, Indianapolis, IN

Dec 7-10 NIBS Annual Meeting, Washington, DC

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Five Key Issues for APPA's Facility Professionals

By E. Lander Medlin and William M. Elvey

APPA took advantage of the opportunity this past April to continue its collaboration with its international strategic alliance partners – AUDE (the U.K.'s Association of University Directors of Estates), TEFMA (Australasia's Tertiary Education Facilities Management Association), and HEFMA (Higher Education Facilities Management Association of Southern Africa) – and engaged in a dialogue concerning our perspective of the five key issues educational facilities professionals face. APPA's perspective of the five key issues is reflected in this column. We found it important and useful to frame our discussion relative to both the ongoing *megatrends* and the *context* influencing higher education and the facilities profession.

Using Bill Daigneau's award-winning article *Megatrends and Myths: Facilities Management Practices in Higher Education* (*Facilities Manager*, November/December 2006) as the basis, we found the *megatrends* that drive the future are important for us to understand since they will fundamentally influence the functions and processes of higher education now and well into the future. These megatrends he described remain as:

- *Changing student demographics* – Diversity amongst those seeking postsecondary education has changed significantly from the previous student pool. The ramifications of these shifts are still being explored.
- *Access and efficiency* – Given a choice between putting higher education out of the financial reach of large portions of the population and finding more efficient ways to deliver that education,

achieving greater cost efficiencies is likely to prevail.

- *Technology* – IT has made possible the shift from the traditional instructional paradigm to a learning paradigm. And, technology in general has become ubiquitous in its use and need by all stakeholders. However, the cost of technology is outpacing our ability to pay for it.
- *Accountability* – The federal government has increasingly inserted itself into the management and delivery of higher education and education in general. Performance outcomes must be identified, substantiated, and justified by all stakeholder groups in order to receive even minimal funding for programs and services.
- *Green and lean* – Reduce, reuse, recycle. Environmental degradation and protection concerns have heightened and gained traction. In turn, long-term sustainability practices are increasingly on the rise.

Today's *context* is equally important and is a reflection of the financial constraints presently felt from the global economic downturn. Although the education sector is currently considered one of the U.S. growth industry sectors, resource scarcity has heightened at many education institutions causing near-term delays in building construction, operational budget reductions, and some corresponding reductions in the workforce. The financial strain from a myriad of funding shortfalls is significantly impacting the kinds of decisions we need to make in a contracted economic climate. Indeed, we are not immune from the effects of an uncertain global financial market.

The *critical facilities issues* we face in educational facilities have been documented in detail in the three issues of APPA's *Thought Leaders Series* monographs (*University Facilities Respond to the Changing Landscape of Higher Education*, 2006; *Educational Facilities and the Impact of Technology, Expectations, and Competition*, 2007; and *The Challenges of Demographic Changes and Accountability to Campus Facilities*, 2008). However, given the dramatic changes being felt from the global economy's free fall, we offer the following *five key issues* that we believe are the most critical for educational facilities professionals at this time:

- **Integration of Sustainability Throughout Operations** – Being "green" has taken on new meaning and import. Even the federal economic stimulus package incorporated green rating systems for modernization, renovation, and repair projects and green industry worker preparation into their requirements, along with massive funding for alternative energy/renewables. For the facilities professional, the key is "integration," from green design to recycling construction debris, and incorporating green principles and practices into the trades, custodial, and grounds landscape daily operations. And, all of this must be done in a financially viable and environmentally sound and friendly way.
- **Energy Efficiency & Renewable Energy** – Reliability of system infrastructure and delivery is critical to the institutional mission. Given the energy intensity and use at our educational institutes, demand-side management is critical, especially since price volatility exists on the supply side. Complex network systems, ever-increasing technologies (building automation, digital controls, security, etc.), and expanding computing power are requirements of North American education energy systems in


particular. In addition, year-round operations are affecting efficiency and effectiveness. Most capital decisions are made on a short-term basis with little regard or understanding for the long-term impact on operations and maintenance budgets. It is a difficult task to control costs in this environment. In addition, alternative fuels and renewables have become increasingly important and gaining attention, focus, and momentum.

- **Accountability & Performance Measurement** – The focus on accountability of performance extends beyond the teaching/instructional side of the academy. Establishing and utilizing metrics for performance measurement, benchmarking other organizations, and identifying best practices for the industry are becoming a critical part of everyday operations. The gloomy economic picture for most campuses has only increased the need for operational efficiency and effectiveness in order to successfully streamline costs. It has been said many times, "We measure what we value. We manage what we measure!" This is essential in today's environment and we suspect will be the case well into the future.

- **Aging Workforce** – Workforce demographics are changing, and the "graying of America" has increased the number of boomer generation workers looking at retirement. It has become increasingly important for organizations to assess these demographics shifts in their geographic area, determine their service needs and requirements, and use this information as the criteria for decision-making to ensure they have the proper workforce plans in place to address their future staffing needs and requirements (both managerial and technical staff). In addition, there needs to be a greater focus on creating the "workplace of choice." This will require organizations to institute organizational climate surveys, assess systems and procedures that are impeding recruitment and retention of key and critical staff, and establish formal accession and succession planning programs. The issue is clearly the "800 pound gorilla" in the room.

- **Campus Safety & Security** – Since the Virginia Tech tragedy in April 2007, focused attention has renewed how colleges and universities deal with campus safety and security issues. In the past two years a number of states have conducted comprehensive reviews of campus safety and security. However, despite this activity, very little is known about the specific plans and procedures that colleges and universities have implemented to address today's all-hazards state of campus safety and security. Hence, a National Campus Safety and Security Project is currently underway to document the current state of college and university emergency preparedness plans as a measure to inform the higher education community about the scope of campus safety and security today. The higher education sector and its counterparts in the K-12 sector as well are

clearly going through a period of unprecedented change. The choices we make today will affect education for years to come. Indeed, these are tough times. However, the investment decisions we make in the short term will have a major impact in the future. Therefore, it has become increasingly clear that **leadership and change management** skills are a necessary part of the educational facilities professional's skill set as we seek a long-term resolution for each of these issues.

The educational facilities professional must be able to *balance and articulate stakeholder expectations*, provide an intense *focus on the customer needs*, employ exceptional *communication skills*, and recognize that *collaboration is key* – the neon sign for success! 

Lander Medlin is APPA's executive vice president; she can be reached at lander@appa.org. Bill Elvey is APPA President and can be reached at wmedley@utdallas.edu.



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APPA BOK: The Big Reveal

By Maggie Kinnaman

Did you know that one of the most comprehensive, ambitious initiatives ever undertaken by APPA is taking form? For the past three years, a team of your peers has been hard at work updating our 12-year-old Body of Knowledge (BOK), also known as the third edition of *Facilities Management: A Manual for Plant Administration*.

What makes this project ambitious is the vision that we are working to implement. The new BOK will be a digital body of knowledge available in a searchable format, available 24 hours a day, 7 days a week. This searchable database of knowledge – related to the facilities management profession operating within an educational environment – will be the first project of its kind, and is sure to transform how information is provided to educational facilities professionals.

You may wonder what's been accomplished on this project so far. First has been the creation of a team that is committed to making this project our collective reality. Heading up this activity is yours truly, the editor-in-chief assisted by a myriad of APPA staff. We have four content coordinators each responsible for covering the playing field of one of our four core competency areas:

- General Administration and Management
- Operations and Maintenance
- Energy, Utilities, and Environmental Stewardship
- Planning, Design, and Construction

Additionally we have over 60 authors who are busy rewriting the *Facilities Management* manual for a specific content area. Providing technical and editorial assistance is a business partner, EEI Communications, who is responsible for

creating the digital workspace as well as the infrastructure that supports the delivery of the searchable body of knowledge to our members. Finally, our Editorial Board is responsible for oversight of the entire project.

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APPA Staff Editor

Steve Glazner

APPA Publications Manager

Anita Dosik

APPA Database/Web Manager

Leslie Young

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- *Part 2 (Operations and Maintenance)* **Gary Reynolds**, APPA Fellow and Past APPA President, University of Colorado at Colorado Springs.
- *Part 3 (Energy, Utilities, and Environmental Stewardship)* **Darryl Boyce**, Carleton University
- *Part 4 (Planning, Design, and Construction)* **Bill Daigneau**, APPA Fellow, University of Texas M.D. Anderson Cancer Center

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- *Operations and Maintenance*, **Jay Klingel**, University of Virginia
- *Energy, Utilities, and Environmental Stewardship*, **Cheryl Gomez**, University of Virginia, and **Lynne Finn**, South Dakota State University
- *Planning, Design and Construction*, **Don Guckert**, APPA Fellow, University of Iowa, and **Steve Thweatt**, Emory University

AT-LARGE MEMBERS:

- **Doug Christensen**, APPA Fellow and Past APPA President, Brigham Young University
- **Phil Cox**, Past APPA President, Cornell University
- **Bill Middleton**, Past APPA President

Next has been the creation and testing of the digital workspace that facilitates a workflow for authors to share their work with their content coordinator. The workspace enables the content coordinator to insert comments into the digital workspace, and allows the content coordinators to share the chapter with peer reviewers. Each knowledge entity will be peer reviewed and will become part of CFAR's research. Finally, the workspace allows the editor-in-chief to follow the progress of every content coordinator and each author.

Content coordinators have reviewed the third edition of the *Facilities Management Manual* and cross-referenced the chapters with courses taught in both the APPA Institute for Facilities Management as well as the Leadership Academy. From this they have identified the new sections of their respective BOK section. Additionally they have identified authors for each section. Authors are hard at work updating the knowledge related to their topic areas.

THE BIG REVEAL

So when will this marvelous concept be available for member use? We are targeting early 2010 for the "Big Reveal." In part, this is because all APPA's credentialing tests are based on the BOK, so it is key to the credentialing effort. For example, the source for the current round of credentialing questions was the third edition of the *Facilities Management* manual – supplemented by electives from the Institute and Academy. The credentialing initiative requires that the questions be updated every three years, and those three years are up in January 2010.

THE FUTURE OF THE BOK

An added benefit of a digital BOK is the ease of updating. Just as newspapers are becoming passé with the advent of instant news updates digital news sites, Twitter and Wikipedia, so are the publication of books. I know many of

you, including myself, are feeling a great sense of loss with the demise of the printed word – the trade-off being ease of maintenance and updates.

Every three years the credentialing initiative will reinvent itself drawing upon the evolving digital BOK. This is a project that will become a living, dynamic, evolving body of knowledge for our profession. The basics will stay much the same, but around the edges will evolve new technology, new techniques, new approaches – all begging for recognition and capture in our BOK.

Your hat should go off to the creativity and cutting-edge vision that APPA has been bold enough to embrace. So watch for the big reveal! ☺

Maggie Kinnaman retired June 30 as director for business administration for facilities at the University of Maryland, Baltimore. She is a Past APPA President and can be reached at kinnaman@comcast.net.

TWELVE steps are tracked in the delivery of each digital knowledge section:

- STEP 1** Chapter Assigned
- STEP 2** Chapter Draft Completed by Author and Submitted
- STEP 3** Chapter Draft Preliminary Review Completed
- STEP 4** Chapter Draft Author Revision 1 Completed
- STEP 5** Chapter Draft Education Dean Review Completed
- STEP 6** Chapter Draft Author Revision 2 Completed
- STEP 7** Chapter Draft Sent to Editorial Board
- STEP 8** Chapter Draft Sent to Peer Review
- STEP 9** Chapter Draft Back from Peer Review
- STEP 10** Chapter Finalized with Author
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Using the *Lean* Approach

SOME DAYS SEEM LIKE BOUTS IN AN ENDLESS GAME OF TUG-OF-WAR.

At one end of the rope, facilities professionals must do more — tackle deferred maintenance, develop a climate strategy, and meet the energy and operational needs for a complex mix of building types and stakeholders. Tugging on the other end are the obstacles of less money, staff, and support. Many of us are faced with accomplishing more with fewer resources, all while managing stakeholders with competing interests.

By.....

**Stephen MacIntyre,
Kelly Meade,
and Melissa McEwen**



Consider the story of Charles, who had to reduce energy costs with a vanishing capital budget.

Problems – Charles, an engineer, maintained an industrial campus with 300+ aging buildings. Coming from the latest budget cut meeting, he wondered how he could reduce energy costs when his capital allowance had almost vanished. His boss' demands were clear: find a way to get rid of one of the power plants, stop capital spending, reduce energy costs by 10 percent and reduce greenhouse gas emissions without spending a lot on building improvements. He knew that some manufacturers had experienced recent dramatic improvements by applying something called "*lean*." So, he phoned Glen, one of the company's internal *lean* advisors to find out what *lean* was about.

At the same time, Charles pursued a standard approach to finding cost savings. He had his staff look for outside energy consultants who could provide solutions.

A Lean Approach – Charles was surprised when Glen suggested that they avoid jumping to "solutions" by hiring consultants. He believed Charles' own staff could do most of the work. Following Glen's advice, Charles assembled people from across the campus and took time to understand energy generation and consumption as a "system." They came to understand that the most important value arising from energy was to maintain manufactured product quality and worker comfort. They also identified key problems and wastes across the site. To Charles, this uncovering of new problems actually made things look worse!

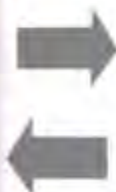
Glen helped him to use these problems to his advantage by forming internal teams to conduct a series of rapid improvement workshops, known as *kaizens*. Using their initial findings to guide them, each team strengthened their understanding of the problems by going to see how the energy was used (or wasted). They examined what was important to keep in order to maintain product quality and worker comfort and considered solutions that would get rid of waste. Teams identified many demand-side savings, such as reducing building air flow and implementing more effective time of day schedules. Other teams worked the generation side, identifying ways to improve steam performance and to reduce parasitic loads (air conditioning an area that simultaneously uses process steam heat). Over two years these teams met regularly and relentlessly studied problems, prioritized savings opportunities, and quickly implemented the lowest-cost, highest-value changes.

Outcomes – The outcomes were surprising – \$27 million in annual energy savings, a 12 percent reduction in greenhouse gases in one year, and a 16 percent the following year.

A better approach gave them better results. *Lean* is increasingly being applied to tackle non-manufacturing problems, like those of the facilities professional. As stewards of the campus built environment, the role of a facilities professional has never been more important or challenging than in today's economic conditions. Similar to the manufacturer's energy conundrum, obstacles get in the way of delivering desired value. You might recognize some of the forces at play in the tug-of-war on your own campus.

Desired Values

- Facilities that attract and retain students
- Being recognized for contributing to the campus mission
- Buildings that support learning and the campus mission
- Effective long-range planning
- Energy savings
- Reduced greenhouse gas (GHG) emissions
- Reduced operating costs
- Collaborative work culture
- Working productively as a team on the most important things
- Decision-making based on total cost and value



Obstacles/Waste

- Customers/Stakeholders don't always see the value contributed by facilities staff
- Facilities staff don't see how they could contribute to the campus mission
- Financial constraints, unfunded mandates
- Competing budgets
- Disagreement on the things that are of greatest value across the organization
- Lack of buy-in from administration
- Difficulty seeing the whole picture; everybody sees something different in the system
- Institutional "silos"; disconnected departments
- Different groups are measured on different, and often competing goals
- Deferred maintenance

The value and obstacles on campus may change over time, but the effects remain – frustrated facilities staff, sub-optimal decision making, lack of buy-in, and competing priorities.

This article is an introduction to *lean*, an approach that can help you to understand what your customers value, reach consensus on what's most important, work with others to get obstacles out of the way, and get more of the right things done.

Applying *lean* to address those problems can yield surprising benefits.

Lean:

- Offers a means to engage key stakeholders across the campus
- Builds a *shared* understanding of desired outcomes and helps people focus on the right things
- Helps people see system wastes and costs
- Uses an internal team to develop ideas and solutions
- Reduces waste and creates more customer value
- Creates more meaningful work for staff
- Breaks down departmental silos
- Applies "learning by doing" to enable people to work together more productively

Why are results from using a *lean* approach so different? *Lean* is a value-focused approach that prioritizes customer value and respect for workers, while reducing system wastes and costs and removing obstacles to stakeholder value. It emerged from the manufacturing world and is now helping organizations as diverse as education and healthcare institutions, consumer products companies, and the real estate and construction industries to increase delivered value.

In order to understand some of the fundamentals of *lean*, it might be useful to consider who a facilities professional's customers and stakeholders might be. Facilities professionals serve many kinds of customers. There may be customers within your own department, such as the utilities manager, who serves an individual building manager. Other customers may be the campus sustainability coordinator or the institution's administration. Your customers may also be the end-users of your buildings and services, such as students and faculty. Your stakeholders are equally diverse and may include employees, partners, alumni, donors, the trustees, and the community, as well as your customers. *Lean* will help you to understand what your stakeholders value and deliver that value in the least-waste way.

LEAN FUNDAMENTALS

Two of *lean*'s basic principles are integral to Glen's situation and can be applied to campus operations.

1. Understanding **value vs. waste**. Knowing who your customers are and what they value helps you see what parts of your process delivers that value. A deep understanding of value can guide your decisions.

Lean Users

Cape Cod Community College
Kodak
The Mayo Clinic
Kaiser Permanente
State of Ohio
Turner Construction
Sutter Health
HOK

2. Recognize the **value stream** – the entire system. Consider *all* of the activities, materials, information, problems, equipment, and people in the system involved in providing what your customers want. Facilities professionals are responsible for significant projects, and must rely on the participation of people and resources in that system they don't directly manage. A group of stakeholders working together can create a map of the value stream that helps them discover why things are done, what's really impor-

tant, who can best contribute and what gets in the way. Creating the value stream map is a useful technique for breaking down mental barriers between departments, identifying waste, and serves as a foundation for improving a process together.

On the next page is a value stream map that depicts paper use and waste at a college that applied *lean* principles; the team reduced paper use by over 20 percent and simultaneously created more value for campus stakeholders.

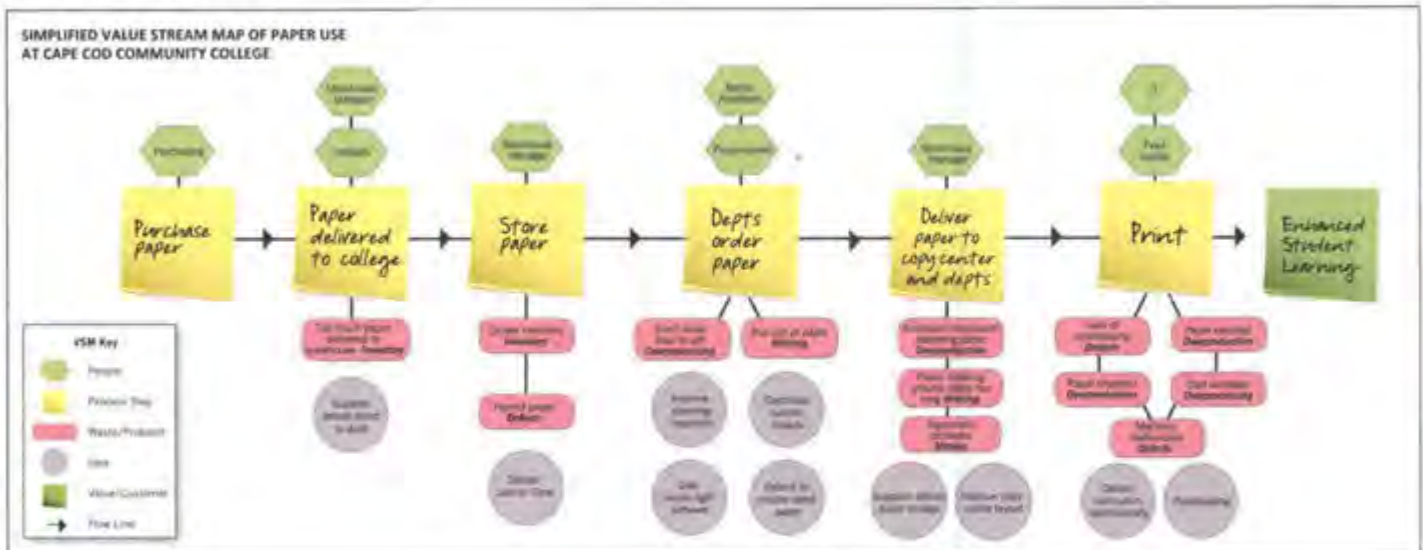
The other fundamental principles of *flow*, *pull*, and *perfection* are equally useful; however this article focuses on the first two.

By using *lean* principles, and understanding where waste comes from, facilities professionals can take a holistic approach to identifying value, removing waste, and building value within

Look for these types of wastes on your campus:

- **1. Transportation:** When information, materials, or equipment are physically moved without adding value in the eyes of the customer (i.e., moving and delivering supplies and mail from one end of campus to another).
- **2. Inventory:** A buildup of information, materials, or equipment the customer (or next process) is not ready for (i.e., unused space).
- **3. Motion:** Movement (of a person) that consumes time and energy while adding no customer value, (i.e., walking across campus when equipment you need isn't in the truck).
- **4. Waiting:** Resources (people, machines) capable of adding value are waiting but not contributing to creating customer value (i.e., construction scheduling delays).
- **5. Overproduction:** Making more information, services, or products than demanded by the customer (i.e., delivering more heat than is needed by building occupants).
- **6. Overprocessing:** Doing more than is necessary to provide the customer with what they need (i.e., discussing the same thing over and over again, without reaching a decision).
- **7. Defects:** Items, information, or services that don't meet customer specifications and require scrapping, repair, or rework (i.e., poorly maintained temperature control valves in buildings).

Value Stream Map Example



departments and across campus. Imagine if everyone in the value stream (facilities, administration, students, and faculty) understood how the process *really* looked.

The following example describes how a major university recently applied *lean*:

Disclaimer: names have been changed to protect the successful.

Problems – Matt, a project manager for climate action planning, was charged with motivating seven workgroups to generate ideas for carbon emissions reductions across campus in support of a climate action plan that was to go before the Sustainability Steering Committee. These ideas also had to reduce costs and contribute to the mission of the university. Some of the teams were also faced with hidden wastes and costs, a lack

of understanding about the processes that were creating carbon emissions. They were more concerned with meeting existing departmental goals and challenges rather than spending time on a seemingly unrelated sustainability project. After all, what did *they* have to do with the American College & University Presidents Climate Commitment?

Their standard approach would have involved countless meetings with smaller sub-groups, each trying to determine which ideas would generate energy savings and reduce greenhouse gas emissions, all without knowing which ideas would have buy-in from stakeholders. They also lacked the knowledge of how their ideas would impact parallel values and obstacles working within the campus system.

A Lean Approach – Matt assembled two cross-functional teams for a rapid improvement workshop (*kaizen*) that included representatives from administration, facilities, IT, energy services, and students; he used *lean* facilitators for guidance. Before the team talked about carbon emissions, they discussed what shared goals they wished to accomplish that would be supportive of their *existing* department goals and that would address existing challenges. Several team members were skeptical about this application of *lean*; after all, “Isn’t this process just for manufacturing?” However, the team did agree on some metrics for the improvement project that included:

- Decrease carbon while being cost-neutral or generating cost-savings
- Enhance education and awareness of environmental impacts on campus
- Contribute to existing department goals
- Strengthen partnerships with suppliers and vendors

The groups decided that examining IT use (including computers and servers) and paper use would be tangible processes where they could achieve these metrics. Together, the teams created visual maps of both IT and paper processes that showed

Lean Facts vs. Fiction

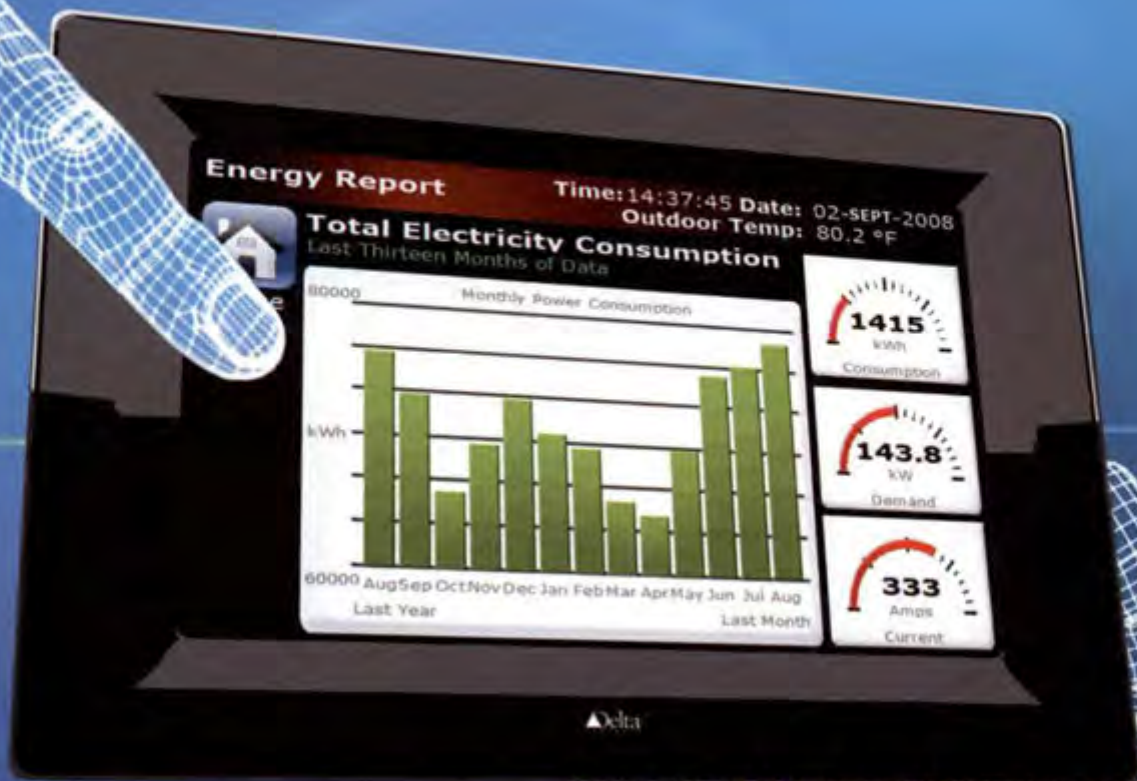
Lean is not an acronym

Lean is not just a set of tools, it is a system that includes principles, ways of thinking, and tools.

Lean is not contrary to Six Sigma and ISO frameworks, they can provide tools which are easily used in Lean.

Lean is not another, separate initiative, or contrary to existing goals – it’s an approach that improves the things we already do

Lean is not job cutting – while sometimes thought of as a necessary measure, cutting jobs is not consistent with the concept of respect for people and is therefore not the same as lean.



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the realistic flow of material, information, people, value, and waste in the systems (otherwise known as *value stream maps*).

By seeing and mapping the processes, they uncovered many hidden problems such as underutilized servers; non-standard purchasing processes; too many operating systems and software; environmental information not built into purchasing decisions; unfamiliarity with electronic means of delivering educational materials; 4.5 tons of catalogs sent to the university every week. In all, the teams uncovered 87 problems and wastes in their systems.

They collaborated to brainstorm ideas for reducing waste and cost and generating more value to campus stakeholders. A detailed Impact/Difficulty analysis helped them to prioritize the ideas, identify obstacles to implementation, and find resources and people and who could help with implementation.

Outcomes – The teams and individual departments delivered great value to the university that was visible and recognized. Their results, generated in just two days, included:

- 95 ideas prioritized for their ability to reduce GHG, wastes, and problems
- Several ideas for saving money and contributing to the university's mission that could be implemented in less than one year
- Ideas that contributed to departmental goals and addressed systemic problems
- New cross-departmental/campus connections and improved working relationships
- Increased staff and student awareness of processes (seeing what *actually* happens)
- Project manager equipped to use *lean* approach with other workgroups

TOGETHER, THE TEAMS CREATED VISUAL MAPS OF BOTH IT AND PAPER PROCESSES THAT SHOWED THE REALISTIC FLOW OF MATERIAL, INFORMATION, PEOPLE, VALUE, AND WASTE IN THE SYSTEMS.

Imagine yourself in one of Glen's or Matt's organizations. You would be involved in teams that need to make improvements with people who don't always get along or normally work together. As you applied *lean* thinking, people with competing priorities would find common threads, customers would be satisfied, value would increase, and the organization would be able to avoid unnecessary costs.

So what steps would you go through to apply *lean*?

1. Get help from someone with *lean* experience. This person will help you understand value, and how *lean* principles and tools will apply.

To learn more about applying *lean* thinking, here are some resources we recommend:

The Toyota Way by Jeffrey Liker (McGraw-Hill, 2003)


Lean Thinking: Banish Waste and Create Wealth in Your Corporation by James Womack and Daniel Jones (Free Press, 2003)

Lean for Dummies by Natalie Sayer and Bruce Williams (For Dummies, 2007)

2. Focus on value – clarify who your customer is and what's important to them (value).
3. Identify problems in delivering that value.
4. Get management support. Identify the key sponsors/champions of this improvement effort. They can help ensure you're working on the right things.
5. Get a diverse group involved – identify and reach out to your stakeholders. Ask if they see the problem in the same way. You'll likely find there's a lot you don't know. Ask the group for their help in finding improvements.
6. Consider the value stream together – go and see what actually happens in a process. Try to create a simple map of the process you're considering.
7. Don't jump to solutions – instead, examine the value stream together. Evaluate the contribution of every part of the process to identify problems and ideas to improve.
8. Prioritize the ideas and select the best ones to implement quickly.
9. Standardize – make the new approach standard. When you implement the new process, you'll often find more problems.

Don't give up. Improve the new process, too!

10. Share success, recognize and celebrate – with *lean*, the ideas and solutions to the problems should make things better for your customers and your team. Take the opportunity to celebrate the success and things you've learned together!

As a facility professional, you're ideally positioned to discover the same ways of collaborating and bringing clarity to your challenges. It's often been said that *lean* is a journey. By reading this article you've started your own journey. We wish you well and hope you continue with great success. 

Written by *lean* collaborators, Stephen MacIntyre, smacintyre@haleyaldrich.com, Kelly Meade, kmeade@haleyaldrich.com, and Melissa McEwen, mmcewen@haleyaldrich.com. Based in Boston, MA, Haley & Aldrich focuses on strategic environmental, engineering, and management challenges. This is their first article for *Facilities Manager*.

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MAKING IT STICK

**Your PowerPoint is a snooze.
Your ideas are lame.
But all is not lost.**

By Justin Ewers



It seems to happen every day. A meeting is called

to outline a new strategy or sales plan. Down go the lights and up goes the PowerPoint. Strange phrases appear—"unlocking shareholder value," "technology-focused innovation," "maximizing utility." (What does that mean?) Lists of numbers come and go. Bullet point by bullet point, the company's goals float across the screen. Eyes glaze over.

Some ideas have longer shelf lives than others. Nike said "Just do it," and people did. James Carville insisted the 1992 presidential election was about the economy, stupid, and politicians still talk about it. John F. Kennedy announced that the U.S. would put a man on the moon in under ten years—and it happened. Most managers can't get their employees to remember the salient points of their last presentation.

In *Made to Stick: Why Some Ideas Survive and Others Die*, brothers Chip and Dan Heath aim to change that. Chip, a professor of organizational behavior at the Stanford Graduate School of Business, and Dan, a consultant at Duke Corporate Education, argue that great ideas are made, not born—and that businesses can drastically improve their messages. Drawing on the work of psychologists, education researchers, and political scientists, the Heaths identify six traits they think all great ideas—from urban legends to public policy to product design—have in common. Call it the tipping point for the *How to Win Friends and Influence People* set. The Heaths' own big idea is already generating business school buzz. We spoke with the authors about the six things managers can do to tap into their inner JFK—and keep employees awake.



SIMPLICITY

First things first, the Heaths insist: Drop the PowerPoint. "PowerPoint is like kryptonite for stickiness," says Dan. It may seem like a simple way to get information out into a big room, but for too many people, PowerPoint has become a crutch: Clicking away at their keyboards, speakers don't have to do the essential work of tailoring their message to their audience. "Business managers seem to believe that, once they've clicked through a PowerPoint, they've successfully communicated their ideas," write the authors. "What they've done is share data."

The Heaths call this the "Curse of Knowledge." The more executives understand a concept, the harder it can be to explain. Execs who use the phrase "maximizing shareholder value" may know what they mean when they say it, but employees have no idea how it applies to their everyday work.

The Heaths' solution: Managers need to spend more time simplifying their messages. "This is the hardest step," says Chip, "taking your idea and distilling it down, whittling away everything that's not essential." One reason Southwest Airlines has enjoyed over 30 years of profitability, the authors contend, is its founders' willingness to winnow the company's mission down to a meaningful mantra: Southwest is "THE low-fare airline." When tempted to expand the business over the years—marketing once suggested the airline should offer chicken salads on some flights—Herb Kelleher, the cofounder and onetime CEO, responded with a question: Would chicken salads help Southwest be "THE low-fare airline?" The answer, of course, was no.

UNEXPECTEDNESS

The old saw about the importance of telling a joke before starting a speech has some truth to it. Surprise works. It puts listeners at ease and makes them more receptive to ideas. Eventually, though, workers go back to their jobs and presentations are forgotten.

So how can managers make their ideas—and not just their jokes—last? The best companies, the Heaths say, find ways to maintain surprise even after meetings are over. Take Nordstrom, the upscale department store—an organization, as Chip puts it, "that's going to charge you a lot of money but that's really going to blow your mind with customer service." To get employees to buy into the Nordstrom model, the company doesn't just hold meetings telling floor workers to smile, or use abstract phrases like "world-class customer service."

What Nordstrom does, instead, is spread motivational stories about "Nordies," floor employees who have gone above and beyond the call of duty in serving customers. Tales like the Nordie who ironed a shirt so a customer could use it in a meeting; the Nordie who warmed up customers' cars while they shopped; or the Nordie who wrapped gifts customers had purchased at Macy's. PowerPoints end, says Dan: "An unexpected story has a chance of living on."

CONCRETENESS

There is a reason so many managers can be so hard to understand. "We've just had it pounded into our heads that the way you seem smart is by using numbers and being abstract," says Dan. Before developing a new product, managers tend to err on the side of vagueness, keeping their options open and hoping for the best. This is not wise, the Heaths argue. When they speak in abstractions, workers may *seem* like they understand each other, but, ultimately, the truth comes out. If employees don't get the concept, the product won't launch on time. Managers who choose to embrace every idea end up with none.

Coming up with big, hairy, audacious goals isn't easy, but done right, the Heaths say, it can lead to products—and ideas—that last. When executives at Boeing began working on the 727, their next-generation passenger plane, in the 1960s, they faced the ultimate business challenge: how to get thousands of far-flung engineers moving in the same direction? "A typical business organization would have said, 'We're going to dominate the short-haul passenger market for jets,'" says Chip.

Boeing execs, though, were far more specific: Their new plane, they said, not only would seat 131 passengers—a large number at the time—but it would be able to fly nonstop from Miami to New York City and, most important, land on runway 4-22 at LaGuardia, which, at less than a mile long, was too short for large planes. The concrete goal gave engineers the flexibility to be creative, while keeping everyone in the sprawling organization on the same page. The Boeing 727 went on to become the bestselling airliner of its time.

CREDIBILITY

When the surgeon general talks about smoking or a Supreme Court justice weighs in on the law, people listen. The experts never worry about their ideas being ignored. But what about the rest of us? Most people don't have a bully pulpit. And while many businesses seek out the obvious solution—getting someone famous to endorse a product—there are only so many shoes and shampoos Michael Jordan and Oprah can't live without.

Still, there are other, equally effective ways to demonstrate credibility, the Heaths say. Take Safexpress, a FedEx-style shipping company based in India. Safexpress promises its customers safe, on-time delivery of their packages, and since its founding in 1995, it has grown by leaps and bounds. But when Rubal Jain, a member of the company's founding family, sought out the business of a major Bollywood studio recently, the moviemakers balked at working with a company in piracy-riddled India. Jain needed credibility—and fast.

Instead of using data to make his case, though—pointing out, for example, that more than 98 percent of Safexpress's deliveries arrive on time—Jain found a better way. He told the Bollywood executive he was negotiating with the story of how Safexpress, in 2003, had safely distributed the latest *Harry Potter* novel in India—an incredibly complex process that involved deliver-

ing nearly 69,000 copies into bookstores all over the country at precisely 8:00 a.m. on the morning of the release. Jain also knew, based on an earlier conversation, that the exec's brother had just completed his high school board exams—which, Jain told him, Safexpress had delivered on time as well. "Now, *that's* sticky!" says Dan. The combination of the two stories was far more compelling than any number Jain could have used. It certainly convinced the studio. The deal was signed in two months.

EMOTION

Making an idea compelling is one thing. Getting someone to act on it is another. Once again, though, the Heaths say, too many managers blindly push their charts or graphs when making employees *feel* something is much more likely to inspire action. They point to a study published in the *American Journal of Public Health* in 2002 that demonstrated just how much an emotional appeal can trump one based on hard facts.

In the study, researchers looked at how more than 10,000 teenagers responded to two different antismoking TV commercials—the emotion-based "Truth" campaign, which featured teens piling up body bags outside the offices of a Big Tobacco company, and an analytical, fact-based series of ads sponsored by Philip Morris called "Think. Don't Smoke." The researchers weren't surprised to find that the emotional ads were more memorable: 22 percent of teens recalled seeing the "Truth" commercials while only 3 percent remembered the "Think" spots. But they were shocked by how much more the emotional ads motivated teens to take action. After seeing the "Truth" ads, 66 percent of viewers said they were less likely to smoke. The "Think" teens, meanwhile, said they were 36 percent *more* likely to smoke.


There is a reason that politicians use emotional, negative campaign ads and that charities seek donations with touching stories of a suffering child, says Dan: "Emotion sparks action."

STORIES

If there is one piece of advice the Heaths have for managers struggling to breathe life into their ideas, it is this: Tell a story. For the past five years, Chip has been running a simulation in a class he teaches at Stanford called "Making Ideas Stick" that demonstrates how much the average business presentation fails to live up to a well-told tale. After giving a class of M.B.A. students detailed numbers on U.S. property crime

rates, Chip asks them to make impromptu, 60-second speeches for or against tougher crime laws. Under pressure, the students fall into the same trap most speakers do: The typical student uses 2.5 statistics in a one-minute talk. Only 1 in 10 tells a story.

Chip then distracts the class for 10 minutes by showing a clip of a *Monty Python* movie. When it's over, he asks the students what they remember about the presentations. "There's this kind of nervous laughter that goes around the room," says Chip. Only 1 out of every 20 people in the class is able to recall any individual number from any of the presentations they heard. When the speaker told a story, on the other hand, about a personal experience with property crime, two out of three students remembered. "You can take the moral out of a story, but you can't reconstruct the story out of the moral," says Dan.

Stories may not fit neatly into a spreadsheet or a PowerPoint, but the more managers rely on narratives—instead of charts and graphs—to share their ideas, the less sleep the rest of us will be getting in their meetings. 

This article, written by Justin Ewers, first appeared in *U.S. News and World Report* and was adapted for *Facilities Manager*. Chip and Dan Heath are keynote speakers at the APFA 2009 conference in Vancouver, BC.

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Your Leadership Traits:

An Interview with Mike Abrashoff

By Suzanne Healy

A PPA 2009: Focusing on the Critical Few has been designed to offer perspectives on leadership and management from many experts in various walks of life. During the program one such individual speaking to us in Vancouver is Captain Mike Abrashoff, former Commander of the USS *Benfold* and author of *It's Your Ship: The No-Nonsense Guide to Leadership*. Captain Abrashoff is a native Pennsylvanian and a Naval Academy alumnus of the Class of 1982.

His most recent book, *It's Your Ship*, explores changing the culture or beliefs systems within an organization, from obedience to performance, and shows how managers will be rewarded as will the organization with marked improvement of productivity. In a difficult economic time, coupled with our need to reinforce the message that our staffs are our greatest resources, *It's Your Ship* shows how leaders who are good listeners incorporate the ideas from their employees to make procedural improvements that are team created and accepted.



Recently we had the pleasure of sitting down with Captain Abrashoff to talk about what drives him, who has influenced him, and where he sees future challenges for today's leaders.

1. What influence has most affected your leadership style?

Everyone learns differently – some learn via text, some learn experientially, and others still have another way of gaining knowledge. My learning style is experiential. When you have an outstanding role model you can work to generate the type of results that you desire. It is important to remember that role models may come into your life later as did mine. I learned that blending leadership with technical expertise is the best balance. Always remember to treat people with respect and this will ensure the understanding that each person has just as much stake in the matter at hand.

2. Who has inspired you? Why?

My number one role model was [former Secretary of Defense] William Perry. I saw him as a great leader who was able to balance strong leadership traits and strong technical competency. I learned from him to lead with humility. He would treat everyone he came in contact with, from the custodian to the top level of the Naval Academy, with the same level of respect. Instilling that everyone has value. I learned from him that one should lead with excellence without arrogance. It is these styles of leadership that I aspired to when I was on the ship and now in my everyday life and business.

3. What challenges do you see future leaders being faced with in the next five years?

The biggest challenge I see for future leaders is to ensure that they stay safe. When I was on the ship I heard that the crew didn't feel safe. As our mission was to protect others, we had to instill in the crew that they in fact were safe too – again making sure that they had a stake in the task at hand.

In today's global economy, with transition always occurring, change is happening with much more frequency and with greater violence. Leaders need to foster the climate of safety within their organizations. Work to develop an attitude of embracing the challenges that are coming and work to solve them so they are in your favor. Ready yourself to anticipate the change required and develop the essence of managing and leading in anticipation of what the future holds. Don't just let it happen to you.


4. What advice do you have for brand new leaders and managers that can get them started off on the right foot?

Before you can lead you must ensure that your level of technical expertise is to the level of competency of those that you will be managing or leading. You have to be able to prove that your level of technical knowledge is high in order to earn the respect of your people. With their earned respect and an understanding that you are technically competent, then you can lead toward a great outcome in any situation.

The challenge will always be how to earn the respect of many different individuals at all levels as you grow. Learn to develop the concept that everyone needs to respect the team effort, as it will be this that leads to victory. Remember that balance between technical abilities and strong leadership qualities and behaviors – it's all about balance.

5. What's the best advice you have ever been given?

The best advice I was given was to remember to do your job, do your boss' job, make your boss look good as you support their work, and everyone will be successful.

The message is clear – empowerment of staff is critical for the successful advancement of any organization. However, the critical lesson to be learned is to lead with a balanced approach of humility and respect – it will take you a long way in your leadership career. 

Suzanne Healy is APPA's director of professional development; she can be reached at suzanne@appa.org.

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Planning a Course for Success

By David Gray



There are some things we know all too well: things are not the same as they once were; change is here to stay; and facilities professionals are in a position to make a difference in the future of our institutions. With this in mind, some of us are now scrutinizing the request and opportunities for professional development.

Continual technical improvements have always been a mark of a strong workforce. The ability to compete strategically for resources justifies projects and training, as well as indicate an able workforce. Both require a set of learned and developed skills. As the landscape for our training needs has changed, APPA has remained committed to providing a new perspective, and defining a roadmap for success by providing the principles and skills required to be an effective leader.

At each level of a facility professional's career, APPA has a proven track record of supporting the necessary development opportunities. The beginning of the Professional Development Continuum guides us into the Supervisor Toolkit and the Institute for Facilities Management. Over time, APPA has taken several strong steps in its leadership-centered offerings. Leadership Academy, the Thought Leaders Series, and the SFO are examples of offerings that provide the facilities professional leadership skills and opportunities to network with others, allowing for preparation to face the challenges ahead.

As we head into the next few years – where garnering resources may in fact continue to be a challenge – APPA will continue to partner with its regions, and state and local chapters, as well as its strategic alliance partners and others in the industry, to provide offerings that have been developed to:

- Promote critical thinking and problem solving;
- Provide facilities professionals with proven techniques to engage staffers;
- Explore strategies and tools to help better educate us on global issues and sustainability;
- And much more

APPA will continue to seek out the best thinkers and practices from all business areas and industries, refine the best ideas, and incorporate them into their program offerings. APPA is also committed to employing technologies (such as webcasts/webinars, etc.) that could prove to be attractive to younger professionals, be cost-effective for all and support APPA's position as the association of choice for facilities professionals.

On July 8, 2009, the APPA 2009 annual meeting will open. We will be anticipating the rewards of a strong program that has been developed by a dedicated group of our colleagues. Slated are experts in the areas of leadership and communication, accountability and disciplines, sustainability, and the concept of total cost of ownership. We will have the opportunity to hear from world-renowned speakers such as Stephen Covey, Michael Abrashoff, and Chip and Dan Heath, who will each share with us the essence of leadership, how to continually be self renewed and how to draw strength from your staff – especially important at this critical time.

Over the days of the event, opportunities for networking will be plentiful as we gather with our colleagues from around the world to represent various types of institutions as well as functions within our campus communities. The benefits of your attendance to APPA 2009 are endless.

Our time is at hand to make a difference in the success of our institutions. We look forward to supporting you and your staff at every level. ☺

David Gray is assistant vice president, facilities services at Middle Tennessee State University, Murfreesboro, TN, and APPA's Vice President for Professional Development. E-mail him at dgray@mtsu.edu.

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Cornell University's Climate Action Plan:

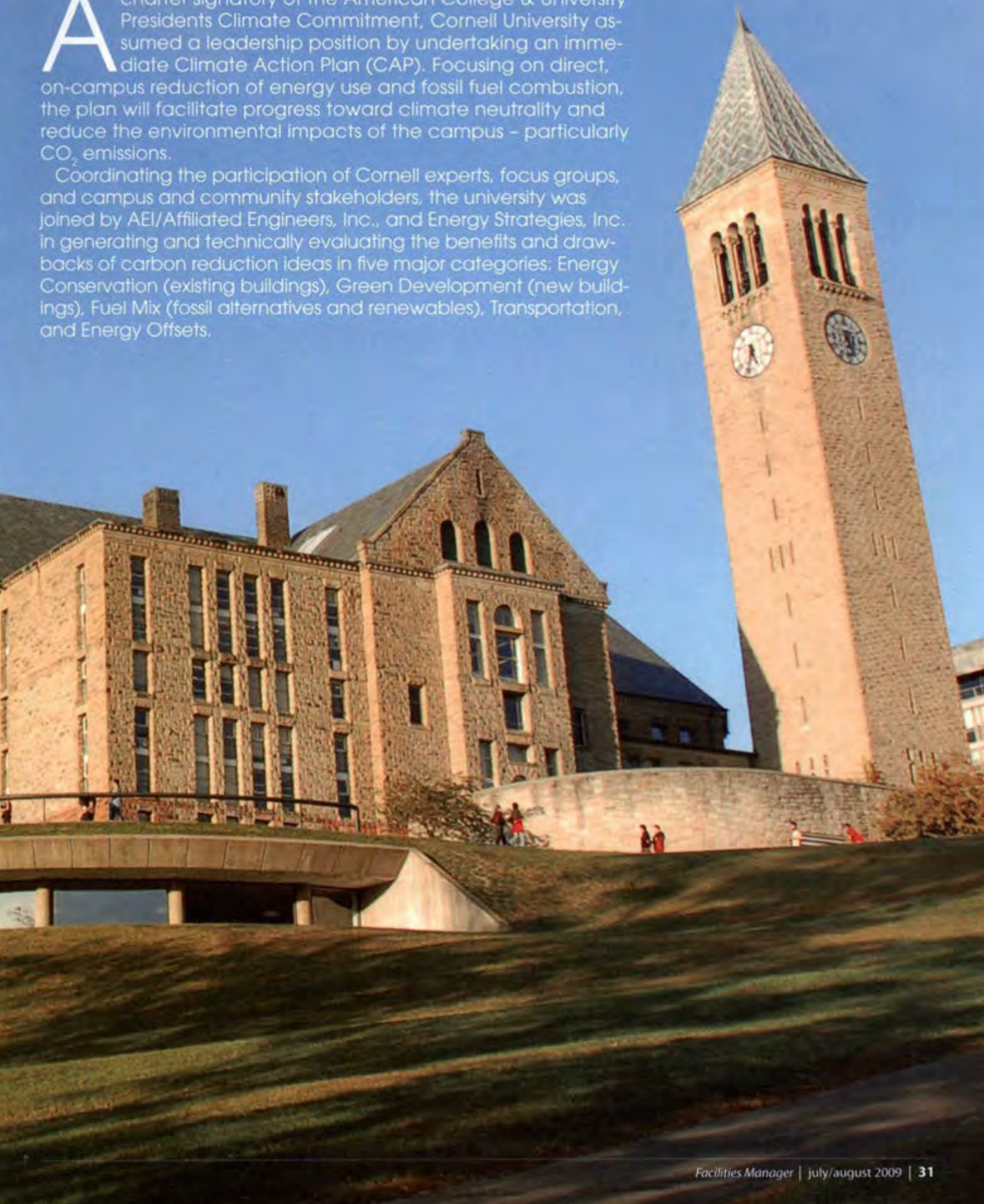
The Engineer's **Q&A** with the Owner

By Mike Walters, P.E., LEED® AP, and Steve Beyers, P.E., LEED® AP



A charter signatory of the American College & University Presidents Climate Commitment, Cornell University assumed a leadership position by undertaking an immediate Climate Action Plan (CAP). Focusing on direct, on-campus reduction of energy use and fossil fuel combustion, the plan will facilitate progress toward climate neutrality and reduce the environmental impacts of the campus – particularly CO₂ emissions.

Coordinating the participation of Cornell experts, focus groups, and campus and community stakeholders, the university was joined by AEI/Affiliated Engineers, Inc., and Energy Strategies, Inc. in generating and technically evaluating the benefits and drawbacks of carbon reduction ideas in five major categories: Energy Conservation (existing buildings), Green Development (new buildings), Fuel Mix (fossil alternatives and renewables), Transportation, and Energy Offsets.



Technical rigor was applied to a broad range of opportunities, assessing the viability and maturity of such possibilities as biofuel, geothermal, and sequestration. Selection and prioritization were informed by a transparent triple bottom line decision system, balancing qualitative and quantitative considerations, and including life-cycle cost analysis, growth pattern projections, and future energy cost scenarios. The year-long project is culminating in recommendations for approval and implementation of hard (capital improvements) and soft (behavior and policy) options, on short (one- to six-year), intermediate (six- to ten-year), and long (over ten-year) timetables.

Upon completion in September 2009, the CAP will define a plan to achieve carbon neutrality as soon as possible, representing an elimination of roughly 320,000 metric tons of greenhouse gas emissions. The plan will be flexible to allow update and revision as new developments in technology, impact, risk, and cost emerge.

Cornell envisions the CAP as a model for other campuses and institutions seeking direct, measurable improvements in efficient energy use and reduction of greenhouse gas emissions, and as a means to advance education for sustainability in all sectors of our society. To share the experiences of the past year with others considering the CAP process, Steve Beyers, services team leader of Cornell's Environmental Compliance and Sustainability Office, joined AEI's Sustainability Practice Leader, Mike Walters, for the following conversation.



MIKE WALTERS: Not including the carbon inventory that had to be completed before proceeding, at this point we're eight months into Cornell's Climate Action Plan. With what we know now, what decisions at the outset have been most effective or inspired? Given a do-over, is there anything you wish we hadn't done?



STEVE BEYERS: Actually, I can think of three good decisions that were made right from the start. The first was to divide the effort into the five categories – we used the term “wedges” – which really allowed groups to focus on the range of opportunities within each wedge without getting overwhelmed by the task at hand. A second sound decision was to seek a plan that was central to Cornell – representing who we are as an institution, where our strengths are, and what resources, both intellectual and physical, are strong in our community. But the best decision of all was to take the carbon neutrality goal seriously – we aimed for zero. Only by setting such an ambitious goal could we be sure that every option was in play – that we didn't make the mistake of dismissing ideas too readily, and just falling back into the same old assumptions that brought us to this critical point in the first place.

Bad decisions? I can't think of any really bad decisions. We

tried a lot of things that didn't work out, but we learned things along the way. We've stumbled a bit, but stumbled forward – and we've been way too busy to look back.

WALTERS: Signing the ACUPCC guarantees a college or university's commitment to undertaking a CAP. What would you suggest to a facilities management group that wants to undertake a CAP if the school's president hasn't signed? What are the best avenues to pursue to gain approval for a CAP initiative?

BEYERS: Let me first just say that leadership from Cornell's President David Skorton was a tremendous boost to our efforts. I really can't understate the importance of his strong, consistent, top-down support.

On the other hand, I can understand why a president would not want to sign the pledge. Not every institution is prepared to take on such a serious challenge. In addition, universities tend to be decentralized, and top-down mandates are not always popular. For that reason, many institutions will likely develop their best efforts from the bottom up. But even bottom-up initiatives are likely to require key support from institutional leaders in order to be successful.

One key to success is to show the economic advantages of a CAP. For a university, this is a bit easier than for the average corporation. After all, our income stream is a bit more discretionary – tuition, research grants, and alumni donations are all choices made by someone to support an institution. I think a good CAP can improve income in all of these categories, while at the same time reducing future liabilities like energy and regulatory costs. If one can demonstrate that kind of win-win result, politics really don't matter.

WALTERS: A CAP requires the participation of a broad campus-wide representation. The president's office can actively participate in only so much. Who are the key leaders in driving a CAP forward?

BEYERS: We've had so many leaders, such broad support, that I can't possibly name them all. They are all key, from President Skorton to former Executive Vice President Steve Golding to Vice President Kyu Whang. Our leaders in our division of Utilities and Energy Management, especially Jim Adams, the director, and Lanny Joyce, our energy genius, provide just fantastic support for the effort. Dean Koyanagi and Dan Roth from our sustainability staff. All of our administrative support staff has been exceptional. There are dozens in between – this is really a broad effort here at Cornell.

But if you asked me to name one person, I'd be foolish not to laude the primary role of Bert Bland, our director of environmental compliance and sustainability. Not only is he the principal driver and the real inspiration behind this effort – he is also my boss!

WALTERS: With an eye toward town-and-gown relations, did you find that representatives from the surrounding community were sources of valuable input or primarily of opposition?

BEYERS: We have a wonderful, interactive, smart, creative, forward-thinking community here in Ithaca, New York. This means that the answer to both questions is "yes." Yes, they are a source of valuable input and great ideas, and we will get great community support for our efforts. And yes, members from that same community will undoubtedly form the most ardent opposition to any initiatives that impact their lives or our shared environment!

Our aim is to ensure that the positive aspects of our actions outweigh any negative impacts, but no true action has zero impact, and independent-minded citizens often disagree on many issues. In the end, we all know that Cornell is important to the community and the community is important to Cornell, so we will work it out.

WALTERS: Cornell University would appear to enjoy rather ideal circumstances for student involvement in CAP-related activities. What can an institution do to encourage this, particularly in more urban settings or schools with substantial enrollments of commuting students?

BEYERS: Our students are simply the best, but I can't think of a school that doesn't have broad student support for efforts to improve our future environment. My daughter attends American University in Washington D.C., and AU students are very much involved in environmental issues.

Each institution needs to look at its own footprint and focus on the efforts that support their core mission. Here at Cornell, our land-grant mission and strong research capabilities led us to initiatives involving agriculture resources and innovative renewable energy research. At AU, their strong public policy program and excellent urban transportation systems are key. The needs are broad, and every institution can play to its strengths in this endeavor.

WALTERS: Early adopters always bear the brunt of the expense in blazing new trails. In retrospect, what efficiencies do you see possible for institutions undertaking CAPs subsequent to Cornell's efforts?

BEYERS: The efforts of Cornell and other leaders can't help but provide inspirational ideas, processes, and options that others may readily adopt. For example, one of our initiatives, which we refer to as Smart Growth, can be tailored to any institution's needs in helping to direct future growth on a path that supports future sustainability initiatives and minimizes future energy


and climate liabilities. While each institution needs to follow their own strengths, having a ready-made menu of options and process tools is a good starting point.

WALTERS: Gaining approval for a CAP will require making a business case beyond ROI projections. Identifying possible additional sources of funding is a start. Any recommendations?

BEYERS: The leaders of institutions are well schooled in traditional economic principles, where short-term paybacks are always preferred. This has tended to minimize the value of long-term sustainable investments. In order for society to respond to climate change, institutions need to challenge assumptions about their own economics and the impacts of their actions in the near and long term. The latest economic cycle has also forced institutions everywhere to reexamine such assumptions. CAP actions, which tend to work as hedges against the uncertain future volatility of energy costs and climate legislation, fare better and better when other investment choices are less certain.

Cornell's leaders also understand the unique economies of academic institutions, where tuition, research or teaching grants, and alumni support combine to keep our institution fiscally strong. Our principal income streams are all discretionary choices made by individuals and organizations that are looking for inspiration, leadership, and results. In that context, ROI becomes much less important than helping to solve global problems.

WALTERS: A CAP stretches decades into the future so the plan itself has to be a dynamic document that can adapt to changing circumstances, priorities, and whatever other unseen developments await us. We're working together to develop an online tool to track progress, post updates, and project outcomes. How do you foresee the various constituencies who have been involved to date using this tool?

BEYERS: We've been working on that. Our goals are many—we hope to inform and educate, remain transparent about our progress, and create clear metrics to guide the way. We want the information to be widely available, so that it provides valuable information to our community, our student body, and our trustees. Ask me in a couple decades and I'll tell you how it all worked out! 

Mike Walters is sustainability practice leader for Affiliated Engineers, Inc. based in Madison, WI; he can be reached at mwalters@aeieng.com. Steve Beyers is the services team leader of Cornell University's Environmental Compliance and Sustainability Office, Ithaca, NY; he can be reached at smb75@cornell.edu. This is their first article for *Facilities Manager*.

LESSONS FROM CACTI

HOW TO
SURVIVE
THE

Pric

The visitor stepped off the airplane and gasped for air. A wave of hot dry air hit him in the face and took his breath away. It was hard to believe that it could be so hot. After leaving the airport the taxi took the visitor to his final destination, on the outskirts of the city. On the drive from the airport, the visitor noticed that the terrain was quite barren except for places that artificial irrigation was in use; those areas were lush and green.

The landscape was much different from his home area. Hills loomed up nearby that were pretty much barren of vegetation, whereas in his home area the trees and grass tended to be green at this time of year. When he reached his final destination, he stepped out of the taxi and gasped for air again. It was hotter here than it had been at the airport. He was on the outskirts of a desert and was to spend a week here. Only after he settled into his hotel room did he notice the temperature gauge on the local weather channel, 109 degrees Fahrenheit, with a forecast of more days of the same.

Once he had settled into his room he decided to take a walk around the hotel resort. Different types of plants greeted him, and as he wandered through the grounds he was greeted by odd shaped plants that had names engraved on a stone plaque at their base. The names were somewhat foreign to him: hedgehog, prickly pear, fish hook barrel, Miller's pincushion, night blooming cereus, and the most imposing of all the plants, the saguaro. The saguaro dwarfed the other cacti. Others had arms on them, and all seemed to have blooms on the top from whence birds were pecking the juice and seeds.





Knives of Life

DURING TOUGH TIMES

By | Alan S. Bigger, B.S., M.A., R.E.H., and Linda B. Bigger, B.A., B.S.

Being a person with an inquisitive nature, the visitor wondered, "How on earth do plants that are so large, live in a climate that seems so inhospitable?" He wandered further through the grounds and looked at the local hillside. The saguaro looked a little like humans, in different shapes and sizes, but how on earth did they survive? During the next few days he talked to people that were indigenous to the area and purchased a book titled *The Great Saguaro Book* by Susan Hazen-Hammond.

He discovered that it's possible to learn lessons for life from a cactus, if one can only get beyond the thorns, and that these lessons will assist one to survive during tough or prickly times! These plants survive under great stress of duress, day in and day out, yet in their splendor they can grow to over 50 feet high, weigh eight tons, and live to be well over 100 years old.

CACTUS AND FACILITIES

Like the cacti in the desert there is no doubt that the facilities industry is going through some trying times and that we are all under a lot of stress. Hardly a day goes by without one hearing of a downsizing, rightsizing, hiring and travel freezes, or closing of operations. In addition, some in-house services continue to be outsourced at both the hourly and salaried employees' levels.

Frontline employees are expected to do more today than yesterday, and managers are expected to cut costs and increase productivity without any lapse in quality of service. In these times of stress and change there is much that we can learn from the saguaro that we can apply to our individual situations today, that will help us survive the prickles of life and help us to make it through tough economic times.

The saguaro survives because it is well prepared to survive dry and severe times of drought. It is a survivor. The roots of the saguaro radiate outwards from the plant as it grows, and if a saguaro grows to 50 feet, the root system will radiate outwards from the base of the saguaro an equivalent distance. This incredible root system acts as a net, and when it rains the system can capture upwards of 200 gallons of water during one rainfall. The saguaro saves for the future, much like a camel. During good times, the saguaro saves so that during times of drought it can survive. *The saguaro teaches us that one should plan for bad times, during good times.*

During good times, the saguaro saves so that during times of drought it can survive. The saguaro teaches us that one should plan for bad times, during good times.

Interestingly, as the visitor walked around and inspected some saguaro he noted that one needed to be careful when trying to touch the skin of the saguaro, as on each ridge in the skin there were some very sharp needles. As he looked closer he noticed little birds drilling in between the ridges without a care in the world, making their nests in the cool interior of the saguaro. The birds, he learned, would make the nests and later leave, then upon their departure other desert animals would take over the space. Even though the saguaro had prickles to protect itself, it did not become so prickly that birds could not live in its stems or on its top.

The birds played a vital role in distributing the seeds that they pecked off the flowers of the plant and distributing them to the wind. A critical function, without the dispersion of seed, the saguaro would not survive. So no matter whether times are good and there is plenty of water, or times are bad and there is no water, the saguaro has to rely on others for its survival such as the Gila woodpecker, white winged dove, gilded flicker, and javelina to spread their seeds. *The lesson is that the saguaro cannot survive without the help of others.*

The side of the saguaro is made up of ridges. These ridges are much like an accordion, except that on each protruding ridge there are sharp needles. This accordion-like skin provides a unique service to the saguaro. The saguaro must learn to expand and contract, to be flexible, no matter what the climatic conditions might bring. During times of rain, the saguaro drinks up the water through its root system and expands. The accordion-like ridges expand so that the saguaro can hold more water. When there is less water in the saguaro the ridges contract. If the saguaro could not flex with the times, when it drank a lot of



water it would burst! The saguaro teaches, through its accordion-like skin that *we must be flexible and adjust to the ever-changing conditions that life will bring us*. If we do not, we could "burst" from the stress of the times.

As the saguaro develops, it grows from a single-stemmed plant into one that may have one or more arms. As these develop, flowers appear on the tips of the arms. Therefore the chance of propagation of the species is enhanced by the saguaro having many arms with many flowers. This is no mean feat, as seemingly only one seed out of a hundreds germinates. The saguaro cannot become complacent and rest on the fact that it is the largest cactus in North America; it cannot afford to become complacent. If it becomes complacent—does not grow enough arms to disseminate seeds through its flowers—the saguaros will not survive.

This lesson is an important one as the saguaro is teaching us *to avoid complacency and to continue to grow*. The survival of the saguaro, and of you and I, depends on continued growth so that we avoid becoming complacent. In an article titled "Don't get too comfy," Robert McGarvey encourages readers to "Stretch beyond your comfort zone—before turbulent times force you to." (*America Way*, May 15, 2002, p. 58). The saguaro has to constantly stretch itself to grow new flowers and arms to survive.

Do all saguaros survive? Certainly not! They are subject to the effects of drought, cold, pestilences, and diseases much as the human organism is. A saguaro often has upwards of 50 holes made by the Gila woodpeckers, and oftentimes seems to have as many holes as a Swiss cheese. What happens to the hundreds of gallons in the saguaro, does it leak out? Does the saguaro give up just because of these difficulties? Certainly not! If the skin splits from drought or the pecking of a bird, the saguaro's natural defense mechanism seals off the edges of the damaged area so that valuable sap and juices do not leak out. With so many holes in it, it would seem that the saguaro would just give up, but it doesn't.

Like the title of Willey Jolley's book, *A Setback is a Setup for a Comeback*, the saguaro takes these setbacks in its stride and seeks to turn the setback of the woodpeckers and other predators into setup for a comeback, for it is the same predators that spread the seeds of the cactus so that saguaros will continue to thrive for all to see. The saguaro teaches us that *whatever may come our way, no matter how bad things may become, the challenges of the past prepare us for the possibilities of the future!*

The final lesson from the saguaro attests to its incredible tenacity in struggling to survive during the good times as well as the bad. Susan Hazen-Hammond wrote, "... the average life



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In order to survive, to grow, and to have a future, the saguaro must work at it. Likewise, *in order for individual and personal growth to occur we must work at it.*

APPLYING THE LESSONS OF THE SAGUARO

The saguaro was declared a national treasure with the opening in Arizona of the Saguaro National Park in 1933. Due to that effort and the incredible survivability of the saguaro, we will be able to enjoy the beauty and the lessons of the saguaro for many years to come. How do the lessons of the saguaro apply to our individual and professional lives on a daily basis?

- **Plan during good times for bad times.** From saving resources for the future to educating and reeducating ourselves on a daily basis we can prepare for the future. Work hard now and plan for the future and one of the best investments is to educate and reeducate oneself to prepare for ever-changing employment and market conditions.
- **Develop networks of friends and professionals in the field.** Take time to develop personal and professional friendships that will stand the test of time. There is probably nothing better than personal friendships and professional networking to help one survive these trying times. Much can be learned from others. Personal friendships

expectancy of a seedling is under six weeks, and fewer than one seedling in a hundred reaches its first birthday. At this point, one million seeds have produced only 51 established plants." She indicates that the chances of survival for the saguaro are slender. But does the saguaro give up? Does it just run into hiding (which is hard for something over 50 feet to do)? No, it grows more arms, more flowers, more fruit, and this increases the probability of survival.

To survive, the saguaro must *work* at surviving, spread out its roots, grow arms, and spread its seeds. Likewise in life, growth both individually and professionally does not occur without work. J.W. Marriott, in his book *The Spirit to Serve*, uses a formula to illustrate the need for hard work to survive:

"No grunt work = no growth. No growth = no future."



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can help you bear the burdens of life whereas professional friendships can help you find the possibilities in the future.

- **Be flexible.** Our jobs are changing, computers are here to stay, robots are becoming commonplace, and technological developments are increasing at a faster and faster pace. It seems that as soon as we learn a program or process, they change! Likewise in life and in business, the only certainty is change. By being flexible, like the ridges of the saguaro, we will be able to survive the changes and conditions.
- **Whatever challenges we may face are just preparing us for the possibilities of the future.** The key is to learn from the challenges that we go through and to apply the lessons in future situations. The burdens of today can become the blessings of tomorrow.
- **For individual or personal growth to occur, we must work at it.** The challenges that we face may require that we apply and extend ourselves. For instance, some persons may wish to get ahead or get a promotion, and may moan if they miss being selected due to the fact that they do not have a professional certification or a degree. Do not let this setback hold you back forever. Plan now and work now to receive that professional certification or a degree. It may be a lot of work now, but it will be the only way that you may

be able to get ahead in the future. Moaning about it will do nothing – working towards the goal and accomplishing the goal will help one prepare for and survive into the future.

As the visitor's stay in the desert began to wind down, he noticed that the weather did not seem as hot as when he arrived, but it was. He was walking around more with less effort than when he had arrived, and the scenery seemed incredibly beautiful. His body was beginning to adapt to the climate and his eyes were beginning to appreciate the beauty of the desert landscape. Colorful cacti abounded and the various birds sang their songs from dawn to dusk.

It was with sadness in his heart that he had to leave the beauty of the desert behind, but the lessons of the saguaro will last this Irishman a lifetime and will enable him and hopefully others to survive the prickles of life and the inevitable tough times that will cross our paths. ⑨

Alan Bigger is director of facilities at Earlham College, Richmond, IN, and a Past APPA President. He can be reached at biggeral@earlham.edu. Linda Bigger is a freelance editor based in Richmond, IN; she can be reached at frugalperson@comcast.net. This is a reworking of a previously published version of this article.



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Listen

A Sampling from the APPAinfo Discussion List

Compiled by Steve Glazner

For nearly 15 years, APPA has provided a valuable and much-used networking service to its members and others in the business of educational facilities. The APPAinfo discussion list is a simple and effective information and communication tool that connects 1,050 facilities professionals from colleges, universities, public schools, private preparatory schools, museums, municipal and state offices, federal agencies, and business partners and consultants.

Following are just a few of the many topics that are discussed by the active, knowledgeable, and generous subscribers to the APPAinfo list. The queries and responses below have been edited from their original postings for space and consistency purposes.

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ART FACILITIES OPERATIONAL HOURS

INITIAL QUERY:

We have just finished a new visual arts facility. Now that the building is done, one problematic area involves the security aspects. Essentially, the dean and faculty want the building to be open 7/24/365 because "you never know when the artistic urge will hit, and you might have a masterpiece in the works." However, they do not provide monitors for every lab space for the hours they want the building to be open.

Additionally, we only put hard-wired exterior card readers on three main entrances (as specified by the dean...at the time of design, that is); now they want *every* exterior door on card access for "convenience." Of course, security, safety, and convenience are on an opposite sliding scale. So, we are trying to convince them, along with Public Safety, that this is *not* the way to go.

What I am wondering is how any of the rest of you with dedicated VPA buildings operate the building. Is there a college or university policy, procedure, or process that you could share that would outline how and when building can be open and if monitors need to be present, etc.? *Anything* you can share would be good. I am very concerned about risk management for the university.

—R. Jeff Grimm, P.E., Kutztown University of Pennsylvania

Response #1:

Glad you bring this up because it makes me realize that we *may* not have thought this through, with regard to monitoring of the labs. To answer your question directly, no, we have no policy. That said, I believe the chair of the Art Department will have a good answer.

I'm working on renovation of the building here in which Theatre has been operating for many years. We are plan-scrambling and adding on; the end product will bring Theatre and Dance and Art together. Just entered Final Design phase.

We have learned over time that any impulse to save by limiting the card readers is bound to fail. We now take the opposite tack—we make sure the faculty understand what a card reader can do for their peace of mind, convenience, and control, while also pointing out that every nickel spent on these expensive features is a nickel that can't be spent on other stuff they want. We have card readers at any lab with equipment that might walk, at all labs or studios in which students need to work into the late evening, and at a few other spaces where particular circumstances suggested we add them.

—Hal Deam, ALA, LEED, West Chester University



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Response #2:

We have installed access (not security) to every building with general purpose classrooms (and have several like your VPA) similarly equipped. The one and only door is the one and only door accessible. Convenience is in the eyes of the beholder (or in our case, who pays). If the dean isn't willing to pay for additional card access doors then it's convenient for him to use the doors that have been specified. Alternatively, the dean can pay for custodial, O&M, or the campus cops to be available to unlock doors whenever the creative muse strikes.

—Ted Weidner, Ph.D., P.E., AIA,
University of Nebraska – Lincoln

Response #3:

We went through a similar experience in 2004 when we opened our LEED-certified building in downtown Fargo about a mile and half from the main campus. This is the new home for our visual arts and two- and three-year architectural programs. With these two academic groups, it was very challenging just to pick paint colors. However, it has been an operational success.

The facility is 24/7/365 with card access on the two main doors. There is card access in various rooms identified as critical by the departments. We have about 32 surveillance cameras both inside and outside. We have a third-shift security firm present to help provide a comfort level for the students.

—Bruce Frantz, North Dakota State University



CAMPUS TEMPERATURE STANDARDS

INITIAL QUERY:

We are considering establishing campus-wide temperature standards, one for summer and another for the heating season. Want to know about others' successful implementation, experiences, pitfalls, policies, exceptions, etc.

—Tony Yamada, East Carolina University

Response #1:

We have just gotten through doing this ourselves, and it's been mostly successful. The biggest issue we've dealt with is people with special circumstances, either medical or equipment/

research-related. You can view the policy and exemption form that we're currently using at: www.pp.utk.edu/policies/Energy%20Conservation%20Policy.pdf.

—Alexandra (Ali) Virtanen, University of Tennessee, Knoxville

Response #2:

In the CSU System we do not heat above 68 degrees F or cool below 78 degrees F. Domestic hot water will not be set above 115 degree F. See our policy at: <http://calstate.edu/EO/EO-917.pdf>.

—Tony Simpson, California State University – San Bernardino

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Response #3:

We informally use ASHRAE Standard 55. This standard avoids the pitfalls associated with a locally developed standard. We still work to make reasonable adjustments within work spaces to meet individual preferences, but the standard eliminates the urgency of calling in a technician on overtime to address conditions that are within the standard.

—Wayne M. Robinson, Central Wyoming College

Response #4:

I would have health concerns about legionella bacteria with hot water temps set [as low as those set by the California State University System].

—Carol J. Dollard, P.E., LEED AP, Colorado State University

Response #5:

68 degrees for heating, 78 degrees for cooling.

—Harry Sparrow, St. Mary's College of Maryland

Response #6:

SCU runs a range of 68 degrees to 73 degrees, though I've heard rumors we will be increasing it in an attempt to save energy and dollars.

—Stacy Connolly, Santa Clara University

BAMBOO FLOORING

INITIAL QUERY:

Our architect has specified solid bamboo flooring for a community meeting and multipurpose room in a new building that will be built on our campus. The room will be used for community events and for dining. I am interested in hearing comments that anyone has about bamboo flooring in a busy public space.

—Wayne M. Robinson, Central Wyoming College

Response #1:

I've experienced bamboo flooring at two institutions and both were not good. It does indeed scratch easily! Having students pushing chairs together to study or congregate caused daily heat break for the diligent custodian. Too much liquid from spills or the not-so-diligent custodian caused heart-break for the carpenter trying to figure out how they get the cupping. Architects love the stuff because it really bumps the LEED factor.

—Rick Becker, Milton Hershey School

Response #2:

I performed impact and scratch durability tests on bamboo flooring compared to traditional oak and maple hardwood flooring. I tested horizontal grain, vertical grain, and strand woven bamboo flooring, in solid and "engineered" versions. In spite of manufacturers' claims, all brands of horizontal and vertical grained bamboo flooring proved to be more easily dented and scratched than white oak, red oak, or maple hardwood flooring. One brand of strand woven solid bamboo flooring proved to be as scratch resistant and more dent and impact resistant than the oak or maple hardwood flooring; other brands of strand woven bamboo flooring were of inferior quality.

—Tim Baker, Truman State University

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CAT POPULATIONS

ON CAMPUS

INITIAL QUERY:

Here at Arizona State University in Tempe we are dealing with large numbers of feral and abandoned pet cats. We have a Mild Cats organization that feed, spay/neuter, vaccinate, and trap cats for adoption, but they are overwhelmed by the numbers. Has anyone else faced this, and how have you handled it?

—Ellen Newell, Arizona State University

(continued on page 54)

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Weathering the Storm

Proactive Building Envelope Management in a Tough Economy

By Dave Hasse, RRC

In today's tough economic times, the effects on every part of our lives, individually and within our organizations, has been swift and direct. As budgets are being cut, the practical needs of our roofs, walls, and windows will continue. Simply deferring maintenance can have a catastrophic effect that includes an overall reduction in the predictable performance as well as an impact on building system life expectancy.

It is a simple and practical truth that building envelope components that are not maintained will experience more direct problems that affect the building occupants and will have a shorter useful life. As my grandfather used to say to me in my youth, "Waste not, want not." More than ever our focus will need to be on maximizing the useful life of our existing building envelope systems.

An important aspect of maximizing useful life in a building envelope system is how a problem is addressed upon discovery. When a need arises to address an issue with a building envelope, whether it is because of reported water entry into a building interior or a condition discovered during an inspection, it is important to consider the different elements to proactive and effective building envelope remediation.

It may seem overly simple and lack eloquence, but *know what you are fixing!* Always avoid the temptation to invest in premature remediation attempts. There have been multiple occasions when a building owner or facilities manager says, "We had this leak, so we replaced the roof, and it still leaks in the same location. Why is this happening?" Further investigation of the water entry shows

that the leak may be from an adjacent through-wall flashing, window, or cladding system. An investment was made in the replacement of a building envelope system that may have been performing just fine. The lesson of this story is that it is important to properly investigate and establish the cause of problems before remediation is undertaken.

One of the great tools that Mother Nature provides for us is the ability to replicate the condition in many cases through the use of targeted and methodical water application. In the previous example, had the cause of the water entry been verified with a proper replication effort, it would have established the cause of the problem and prevented the unnecessary replacement of the roof system. Whether a standardized effort using the appropriate ASTM or AAMA standard is engaged

Figure 1.

Example of a Single-Ply Roof System Renovation Value Comparison

Current Age:	18 Years Old
Current Useful Life:	2 Years
Replacement Value:	\$250,000
New System Life Expectancy:	20 Years
Proposed Renovation:	Complete Base Flashing Replacement will extend the useful life to 5 years at a cost of \$12,000.
Value Comparison:	
Renovation Cost/Extension of Useful Life	= \$12,000/3 years = \$4,000/year
Replacement Cost/System Life Expectancy	= \$250,000/20 years = \$12,500/year

or a more informal approach simply utilizing a single spray application or the distributed application of a multi-nozzle spray bar, water application can be a powerful tool in many efforts to investigate building envelope problems. Once the root cause of the issue is established, the appropriate range of options for remediation can be evaluated.

When considering building envelope remediation, the different courses of action can be classified into one of three distinct possibilities: repair, renovation, or replacement. A definition and discussion regarding each follows.

Repair. Repair is an investment in remediation related to an existing building envelope component that addresses a specific discontinuity in performance but does not extend the useful life of the building envelope component beyond its current condition. An example of this would be a simple repair to a field split in a built-up roof system. This would repair a definite isolated discontinuity in the roof membrane, but the overall condition of the roof system has not been enhanced. When investing in this type of remediation, it is important to limit the investment in the repair to the current expected life cycle in the building envelope component. Simply put, you should do a five-year repair if you estimate the current useful life of the system as a whole is three to five years, not a repair that will last for 10 to 15 years. That could be described as good money after bad.

This guideline compares the cost of the renovation and the anticipated extension of useful life with the system replacement value and the anticipated life-cycle of a new system. If the cost per year of the life cycle extension related to the renovation is less than the cost per year of a new building envelope system, the renovation is a good value. An example of a guideline analysis of a single-ply roof system base flashing replacement can be seen in Figure 1.

Replacement. Replacement is quite obviously an investment in remediation that consists of replacing an existing building envelope component with a new building envelope component. This option is typically recommended when investment in

repair or renovation no longer makes economic sense or will not assure predictable performance. ①

Dave Hasse is a registered roof consultant and project manager with SRI Consultants, Inc., Milwaukee, WI. This is his first article for *Facilities Manager*, and he can be reached at dhasse@sri-engineering.com.



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What Happens When the Right People Are in the Wrong Places?

By Matt Adams, P.E.

One of the many benefits of working for a nonprofit institution like a university or school district is the feeling of security. Most institutions will honor their commitment to the staff in virtually all financial circumstances. This makes working for nonprofit institutions very attractive. However, this benefit creates an organizational challenge to the management of the facilities departments.

Over time, the makeup of the staff and the head count within each of the service centers changes. Sometimes one person retires and the next year we lose ten. In economic boom years we lose staff to local businesses. There are a variety of reasons why the roles change. Couple this reality with the fact that our physical plants and service responsibilities change simultaneously.

Finally, there is the issue of recruit-

ment and hiring of new staff. For some institutions it can take months. The result is that at any given time we find ourselves with a great pool of plant staff members, but not necessarily in the right positions. What can we do about a circumstance that all of our peers find themselves in from time to time?

SEEING THE BIG PICTURE

Upon review of the makeup of the plant management department changes are often required. For example, the department might be staffed with four electricians and one painter. However, the workload for the plant clearly requires at least four painters and only two electricians. While the staff is qualified and devoted to the institution, the makeup of these two departments is incorrect.

At this point the workload and the staff makeup are not compatible and one department is likely to be underutilized while the other is deferring work. Without change, this mismatch will affect the department in a variety of negative ways and more importantly, the plant will not be maintained properly.

In some institutions the fear of labor disputes or morale damage freezes management, preventing them from finding a remedy to the problem. In fact, there are two issues:

- 1) how to change the makeup of the mismatched service centers, and
- 2) how to execute the workload of the two departments during a reallocation process.

Given the potential sensitivity of such issues, the manager of this reallocation is required to provide as much transparency as possible. In addition, there cannot be too much communication of every form with the affected staff and the department during such a process. There must be a start and end to this change, and that is the best place to

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start. A clear and concise project definition is published that states the current makeup, and desired makeup, and the straightforward and factual reason for the change. This same document must clearly delineate a set of business rules that will guide the process, and that process cannot be deviated from.

In addition to the acknowledgment that the service centers should have the number of positions changed from x to y, there should be the most emphatic announcement of business rule # 1: "Nobody is going to get hurt." This is the first fear of many, and it is best dealt with up front. The leadership of the department cannot over-communicate this point and must stick to it from beginning to end. In fact, since we know what the service centers look like now, and how they need to look in the future, a variety of actions can be taken to effect the required change and not hurt the

A CLEAR AND CONCISE PROJECT DEFINITION IS PUBLISHED THAT STATES THE CURRENT MAKEUP, AND DESIRED MAKEUP, AND THE STRAIGHTFORWARD AND FACTUAL REASON FOR THE CHANGE.

existing staff. Given this opportunity to achieve the goal and not traumatize the staff, why not communicate the facts openly and frequently?

THE SHORT-TERM FIX

The immediate goal is to prevent the deferral of maintenance work due to any shortages of staff for one or more service centers. Hopefully, the work is generally planned and scheduled. From this defined workload the short department can be augmented with helpers. Virtually all plant staff is able to make up some work backlog with an assistant while waiting for a normal skilled staff member. And

any time spent by the helpers in the service center is valuable training for them as well. In addition, the use of outside contractors is a possibility.

Given the sensitivity of using contractors to make up work from short staff, the contractors should work at the discretion of the short department. In addition, the workload and duration should be clearly defined so as not to create the fear that the contractors are permanent replacements. These tactics will not make up for a short-staffed department and, as always, there may not be enough funds for much discretionary contracted work. However, with

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prioritization of the "must complete" maintenance activities, a compelling case can be made to provide budget for this transitional resource.


LONG-TERM TRANSITIONS

The longer term transition plan requires some basic planning, reasonable assumptions, and implementation

of the predefined business rules. The whole process may take up to five years, perhaps more. Given our commitment not to traumatize our staff or the department, we will need time to correct what might have taken 20 years to create. The change management planning process is not unlike other basic project management techniques.

Taking a five-year planning template the department can plot the estimated roles of the department based on averages for basic human resource occurrences. No names are used, and the assumptions always have an accuracy defined by plus or minus, in month or years. This same process is ideal for future planning to prevent the mismatches of the present. So as one likely retirement in one department is anticipated, this position is transferred to the short department.

Given historical records, we can expect one person to leave for personal reasons each year at a rate of 1 per 30 employees. These facts are all plugged into our plan and the resulting roles for the service centers are the yearly baseline. Taking advantage of any luck that may help deficits, the remaining shortages are gradually offset using employee-friendly strategies. These include: financial incentives for retraining; early retirement buyouts; creation of or acceleration of an apprenticeship program; cross-training; and redefinition of position descriptions.

Some tactics are viewed as implausible for many institutions. For example, "early buyout" of an employment contract is often viewed as taboo by many. However, if a department is overstaffed or another is desperately understaffed, a simple mathematical return on investment can often justify a transfer of one position between service centers. In other words, if 30 percent of the work in the paint shop is being deferred while we have an extra position in another shop that is underutilized, paying a person a year or more for optional early retirement might be easily justified based on the losses created by the current situation. 

Matt Adams is president of Adams FM², Atlanta, GA. He can be reached at matt@adamsfm2.com.



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APPA Proposes "Educational Facility Standard" to National Fire Protection Association

By Michael A. Anthony, P.E.

APPA's Code Advisory Task Force is working on an initiative to approach the National Fire Protection Association (NFPA) about developing a national safety standard for our industry. The objective is to create a framework for leading safety practices in educational facility management.

Educational facility safety infrastructure is growing at an accelerating rate across multiple dimensions of people, processes, and technology. This infrastructure needs an industry-specific document that would have the following benefits:

- Provide a compilation of existing NFPA codes and standards and fill

gaps that are not now covered by any document.

- Function as a best practice document for cost and benefit benchmarks.
- Provide a framework for the evolution of leading safety practices in much the same way that NFPA-99, Standard for Health Care Facilities, has provided a living document that is widely used in the healthcare industry.

If the initiative is successful, the educational facility standard will be approved by the American National Standards Institute (ANSI), adoptable in whole or in part by any public or private organization. The degree to which a living document for the educational facilities industry becomes a tool of col-

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laboration will be reflected in effective risk characterization and budgeting.

Managing large, complex, capital-intensive educational facility infrastructure assets with unique architectural and social identities is different from managing other asset classes. Differences in everything from department culture to annual facility use patterns mean that facility managers cannot implement the same safety approaches in all buildings. Approaches must be scaled to the occupancy type and informed by the interconnectedness and the specifics of a given facility. One of the desired outcomes of this initiative would be to provide coherence to the broad subject of educational facility safety infrastructure that is unique to multi-building campuses with a variety of risk aggregations.


NFPA is an accredited standards-developing organization by ANSI with a 113-year history of working with a variety of organizations and entities in developing best practice documents such as the National Electric Code®, the Life Safety Code®, the Building Energy Code®, and the Building Construction and Safety Code®. In addition to being the largest and most widely accepted codes and standards developing organization in the world, the NFPA offers the most transparent and affordable platform for an industry to develop an ANSI-approved best-practice document.

This initiative is an example of how the National Technology Transfer Act of 1996 (Public Law 104-113) can be put in service for our industry. This law promotes the development of new industrial and technology standards by requiring that all federal agencies use privately developed standards. APPA's Code Advisory Task Force anticipates that this standard would be a document that would be used by the U.S. Department of Education, individual state education agencies, and thousands of local school districts.

Exceptional enterprises know they must seek partnerships in order to accelerate the growth and enhance the competitiveness of its members. The initiative by the Code Advisory Task Force will help all stakeholders in the education facilities industry to seek value in existing leading practices, to inspire questions and answers, and to

create receptivity to new ideas about the future. 

Mike Anthony is a senior electrical engineer at the University of Michigan and APPA's representative on the National Electric Code. He may be reached at maanthon@umich.edu.



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(continued from page 44)

Response #1:

We have a similar problem. There are local residents who feed, spay/neuter, and so on. We tried to work with local humane organizations, the city, and the county to be able to turn in the cats. This backfired on us, and we received complaints from all sides plus got caught up in bureaucratic red tape. There are those who complain the cats are a nuisance and public health threat; people are letting them into the buildings and they are causing flea problems, not to mention hissing at students and creating more unwanted cats. Then there are those who complain about us removing the cats; they don't want them destroyed.

It has been a lose-lose situation for us, and we tread with caution. It has gone so far as someone complaining to our EOP office about this, and I had to provide copies of the ordinances showing the legal rights and implications the university assumes regarding this issue. We have yet to find a solution that works for us.

—Laura Pergolizzi, University of South Carolina

Response #2:

I ran into this at an Army post I used to run in California. Locals would drop off unwanted cats. Other locals would feed them (sometimes), but that was about it. I think there is ample literature

to suggest that life on the wild (read feral) side is not a good one for the cats. In fact it's cruel. Far better to trap them and turn in to the humane society where they may stand a chance for a better life. Bottom line: You have to build a detailed case for why whatever you do with the cats is better than the situation they are in.

—Mark C. Nelson, Office of Facility Maintenance, Division of Capital Asset Management, State of Massachusetts

Response #3:

We are dealing with the many deer that come to campus for the green grass and tasty flowers. When you come up with the cat solution, let's work on a deer solution as well. Yes, we have students who are hunters, but that is not an option.

—Alan Cisneros, Chadron State College

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Steve Glazner is APPA's director of knowledge management, editor of *Facilities Manager*, and APPAinfo's list manager. He can be reached at steve@appa.org.

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

There's nothing like 'book-ending' an issue. Since our jobs cannot be done without people, enjoy the insightful analysis of Suzanne Drew and her assessment of two books about managing people. As you take advantage of summer conferences or a vacation, or as you prepare for the return to students to your campus in the fall, these books will teach you a little more about managing people – *TW*

Reviewed by Suzanne Drew

WORKING LONGER: NEW STRATEGIES FOR MANAGING, TRAINING, AND RETAINING OLDER EMPLOYEES

By William J. Rothwell, Ph.D., Harvey L. Sterns, Ph.D., Diane Spokus, Ph.D., Joel M. Reaser, Ph.D. Published by AMACOM, New York, 2008. 244 pages, softcover, \$29.95.

At the University of Nebraska–Lincoln, a quick demographic review of our nearly 450 full-time facilities employees shows that nearly 75 percent are at least 40 years of age, and nearly 50 percent have already celebrated their 50th birthdays. Assuming our workforce is fairly representative of many other higher education facilities groups across the country, it seems likely that the aging of the baby boomer generation, while having a material impact across all sectors and industries, may be having a disproportionate effect on facilities-related professions and jobs. Interestingly, not only are our current, long-term employees becoming "older workers" but many of our new hires fall into this category as well. The same quick analysis shows that 40 percent of our employees aged 60 to 69, and 33 percent of our employees aged 50 to 59, were hired within the last five years. Given the economy and other factors, it appears a safe bet



that the average age of our workforces and applicant pools will continue to climb into the future.

These workforce changes provide the context for *Working Longer*. The authors present research and information on adult development and the effect aging has on an individual's ability to learn, change, innovate, and work; they provide research-based, practical recommendations to accommodate these changes, and ways to take advantage of them.

For example, the authors point out that if you control for disease, aging has little effect on physical, intellectual, and mental abilities as they come into play in the workplace (with the exception of the most physically strenuous and demanding jobs). It is true that eyesight and hearing fade, but that can be accommodated with good lighting, contrasting print, larger fonts, and looking at people when you speak to them. Some older workers may process new information slower than they once did and may benefit from a greater emphasis during the learning process on application and

how it relates to things they already know well, but once the knowledge or skill is learned, their accuracy and reliability in applying it is often higher than that of their younger colleagues.

The greatest challenge, conclude the authors – to both older workers and employers – is the erroneous common knowledge that one can be "too old" to learn and change, especially when it comes to new technologies and skills. When working under this mistaken belief, employers can often fail to train and engage their older workers, and older workers themselves may limit their ambitions, their willingness to grow and take on new challenges, and often, their willingness to continue working.

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Older workers, the authors tell us, want to work to earn money, retain benefits, to make meaningful contributions, do interesting work, and maintain meaningful social contacts. Employers of older workers benefit from fewer voluntary absences, less turnover, fewer accidents, higher productivity rates, and years of expertise and knowledge. Given the very real changing demographics of our workforce and the potential benefits to all in the very practical and accessible recommendations set forth, the concepts and ideas presented in *Working Longer* are sure to spark some interesting and valuable organizational conversations.

Reviewed by Suzanne Drew

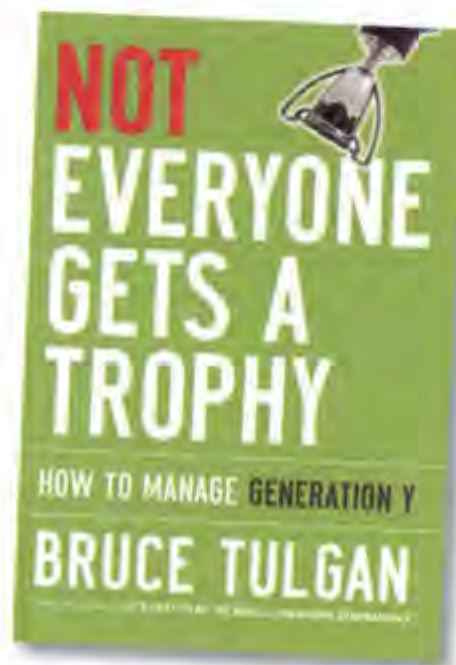
NOT EVERYONE GETS A TROPHY: HOW TO MANAGE GENERATION Y

By Bruce Tulgan, Published by Jossey-Bass, New York, 2009. 182 pages, hardcover, \$24.95.

While reading *Not Everyone Wins a Trophy*, I kept thinking of the famous optical illusion that appears to be a picture of a vase, until you just slightly shift your focus, and the picture clearly becomes two people looking nose-to-nose. Bruce Tulgan begins by acknowledging some of the commonly held, and not necessarily complimentary, perceptions of members of the Y Generation, those born between 1978 and 1990.

Among them: they won't do grunt work and want the top job day one; they need work to be fun; they don't respect their elders or authority; they don't care about climbing the proverbial career ladder; and they will never make good managers because they are so self-focused. While acknowledging that many Gen Y behaviors can be perceived that way, he shifts the focus to show how these very traits and characteristics, with the right management and support, can also make this generation of workers one of the most productive and committed.

This generation, he points out, was reared during the self-esteem-based Decade of the Child. They were given options and a voice since early childhood and taught to be proud of their differences and uniqueness. They were born to the Internet and take for granted the ability to research and become "expert" on any subject at any time. They have had the greatest buying power at a younger age than any generation before them, and have come to demand good customer service in



pretty much all of their interactions. Because they have seen so much change in their lifetimes, they don't find it at all threatening and have developed an expectation for short-term and direct returns on investments of their time, attentions, and energies. Unlike many generations before them, because of their histories, they view authority figures, such as parents, teachers, and eventually employers, not as audiences to please, fear, or rebel against, but as equals with slightly different perspectives who have a responsibility to and an interest in helping them succeed.

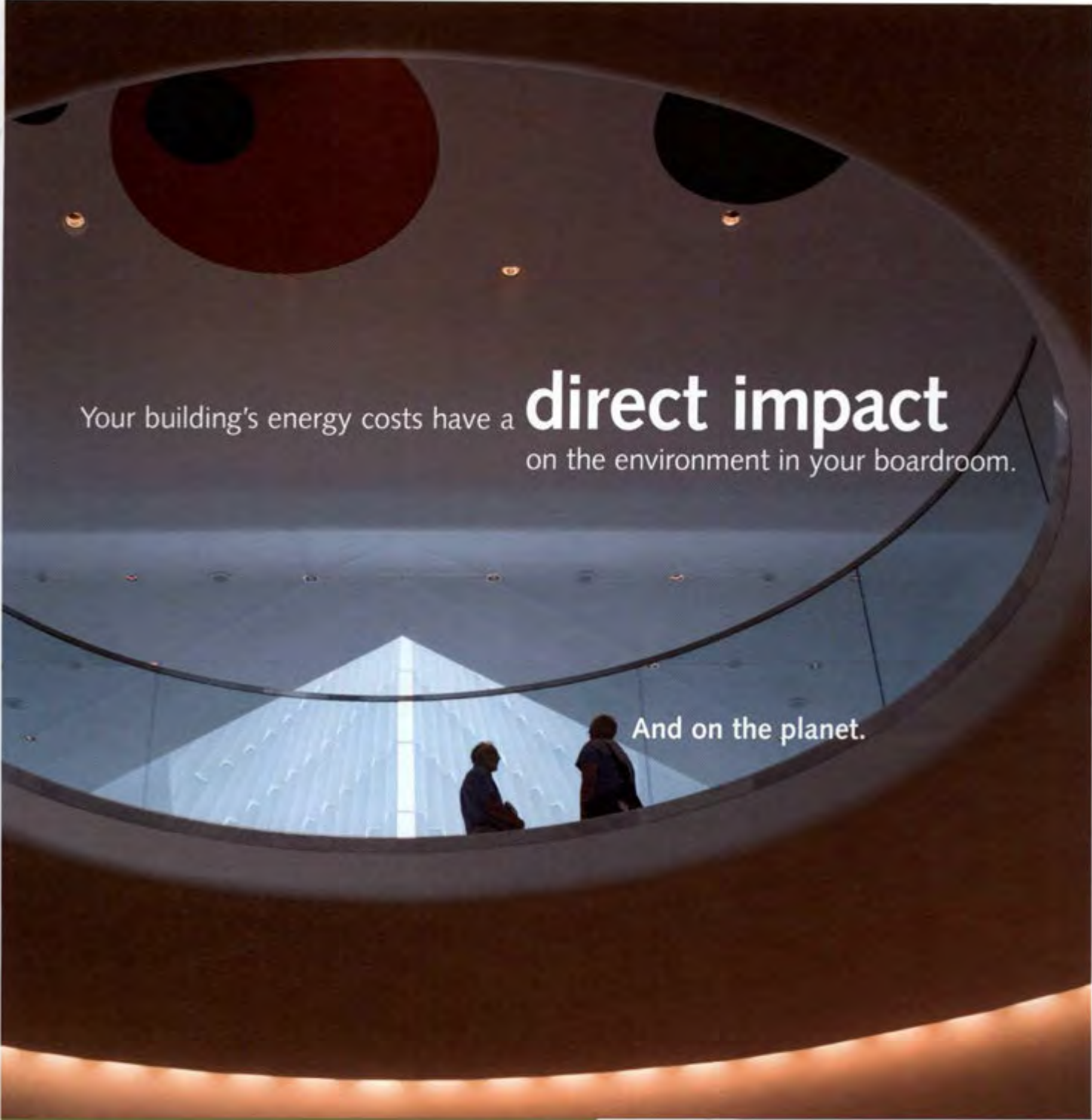
Tulgan presents a series of specific and usable recommendations to recruit, select, manage, train, develop, correct,

reward, motivate, and engage these employees. Best of all however, his recommendations to get the most out of these employees are likely to get the best out of any employees regardless of age. For decades, management literature has preached that to get the most commitment and creativity out of a workforce, management should provide clear expectations on work performance, work habits and work culture. They should provide ongoing and accessible support and feedback. They should provide employees both with the context of their work and managements decisions, as well as opportunities for meaningful input, contribution, growth, and development of skills and abilities.

It turns out, that while these "high maintenance" management strategies have traditionally been considered an option for organizations seeking increased creativity, productivity, and engagement, this new generation considers them basic expectations...at least if you want them to stick around for a while.

Because Tulgan's practical and accessible recommendations run the gamut from recruiting and selection, to preparing new employees for success, to how to give effective feedback, to how to motivate and build commitment and engagement, *Not Everyone Gets a Trophy* is a good and usable management book regardless of the age of workforce. The book is an easy and fun read, provides truly good and useful information for any workforce – and Tulgan's many anecdotes will either make you laugh or shudder, depending on when your birthday is. **D**

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day and alerts you via e-mail. This keeps you and your students and staff safe and reduces energy costs. The Sentry Alert 2100 can also monitor three temperature inputs to detect heating and cooling failures. Patent protected, FCC, DLS/CSA, and OSHA certified with low cost and quick and easy installation. For additional details about Sign Sentry LLC visit www.signsentry.com.



Onity and StarRez have partnered to develop an interface solution that enables StarRez's housing system to seamlessly integrate with Onity's popular

Integra electronic locking solution. The new interface will exchange key housing information to and from the StarRez system and Onity's Integra system, saving time for system administrators, students, and staff, while integrating key components of a college or university's backend infrastructures. StarRez includes

a comprehensive solution for student self-service, including applications for housing, room selection, roommate search, along with staff administrative tools for room assignments, billing, communications such as e-mail, SMS, mail merge, and built-in reporting. For more information, visit Onity at www.onity.com and StarRez at www.starrez.com.

Component Hardware Group recently introduced its Sani-



Grasp antimicrobial door pull for use on public restroom doors, effectively eliminating the need for restroom users to touch dirty door knobs after hand washing. SaniGrasp is a patented stainless steel door pull that permits the use of the forearm instead of hands to open the door, thus minimizing the chance for cross-contamination of potentially harmful bacteria. To further inhibit the growth of microorganisms, SaniGrasp has been treated with SANIGUARD, an inorganic, silver-ion antimicrobial treatment. SaniGrasp can withstand everyday abuse and its hole pattern is designed to retrofit to most existing door pull plates on the market today. The SaniGrasp also features engraved door opening instructions on the back plate to ensure proper use and comes complete with mounting hardware. SaniGrasp is compliant with both the Americans with Disabilities Act (ADA) of 1990 and the Architectural Barriers Act (ABA) of 1968. For more information about Component Hardware Group visit www.chgusa.com.

Gateway Safety announces Wheelz™ safety eyewear. Part safety glasses and part safety goggle, Wheelz eyewear combines popular sport styling with the maximum splash and impact protection of a goggle. Unlike traditional goggles that can be big and bulky, Wheelz eyewear has a compact, lightweight frame made of a soft, flexible material for all-day comfort. An elastic head strap easily adjusts to ensure a safe, snug fit. To help maintain clear vision, Wheelz goggles feature the patented Whirlwind™ ventilation system, which minimizes fogging by circulating air through the optical chamber. Ten unique conical air chambers line the frame's brow area. Secondary air enters the goggle through ten additional ventilation ports on the frame's underside, creating a strong "whirlwind" of air that circulates through the inner frame. Better vision increases compliance and helps prevent injuries. For further information visit Gateway Safety at www.gateway-safety.com.





Mitsubishi Electric HVAC Advanced Products Division, has announced the arrival of the AG-150, the newest addition to its CITY MULTI Controls Network (CMCN), the AG-150. Mitsubishi Electric HVAC's CITY MULTI system is an

energy saving simultaneous cooling and heating two-pipe system that allows every individual space to have its own personalized, zoned comfort system. Offering a wide range of energy saving functions such as seasonal scheduling and automatic switchover, the new AG-150 can monitor and control up to 50 indoor units and features a color touch panel display and 9-inch, high-resolution, easy-to-use LCD screen. For more information visit Mitsubishi Electric at www.mehvac.com.

Zoneworks introduces the SCL Series of sliding curtain walls, a highly flexible and adaptable fabric wall system that makes it easy to change the interior space of virtually any industrial or commercial facility – while at the same time – eliminating the need for costly and time-consuming projects involv-

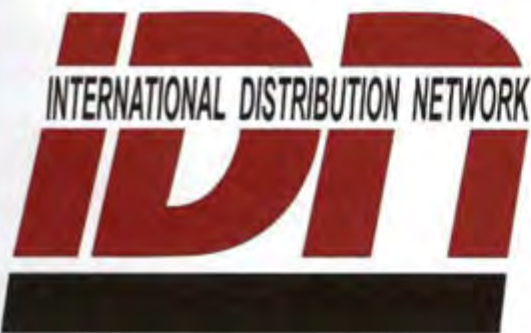
ing permanent walls, or rigid panelized systems. Zoneworks' SCL curtain walls allow users to quickly and easily create new environmental zones and/or alter existing space to better meet the needs of the operation and/or building occupants. The flexible fabric walls are ideal for virtually any application where permanent load-bearing walls are not needed, or cost-prohibitive. Customized to match the unique requirements of each installation, SCL curtain walls save energy, optimize the use of functional areas, control dust or fumes, ensure privacy, and improve aesthetics. For greater detail visit Zoneworks at www.zoneworks.com.



New Products listings are provided by the manufacturers and suppliers and selected by the editors for variety and innovation. For more information or to submit a New Products listing, e-mail Gerry Van Treeck at gvtgvt@earthlink.net.

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