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APPA
LEADERSHIP IN EDUCATIONAL FACILITIES

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FROM THE COAUTHOR OF THE INTERNATIONAL BESTSELLERS
FIRST, BREAK ALL THE RULES AND
NOW, DISCOVER YOUR STRENGTHS

GO
PUT YOUR
STRENGTHS
TO WORK
6 POWERFUL STEPS TO ACHIEVE
OUTSTANDING PERFORMANCE

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MEETING
OPENERS FOR
BUSY MANAGERS
More Than 50 Icebreakers, Energizers, and
Other Creative Activities That Get Results

Brian Cole Miller

The **2009 edition of the** *Higher Education Directory* has recently been released, and it only begins to tell the tale of how the current economic downturn is affecting our educational institutions. In the past year alone, several dozen U.S. institutions have lost their accreditation, merged, changed their names, or simply closed.

The trend promises to continue as the Associated Press recently wrote that a number of small Christian colleges have announced plans to close in the near future. Reports on the huge losses in endowments of Harvard, Princeton, Brown, and many other universities, as well as the *Chronicle of Higher Education*'s survey on high levels of compensation for college presidents, also add to the current nervous environment.

Following are some comments we've heard at the recent APPA regional conferences about the effects of the economy on bond issues for construction. Note that these are anecdotal and represent a variety of institutions and various geographical locations.

- A large public research university in the Midwest experienced a dramatic change in their bond interest rate from 1.9 to 7.9 percent in just a few days.
- Smaller private liberal arts institutions are concerned about their investment portfolios (just as a number of the larger publics are) as many of these support the annual physical infrastructure recapitalization and renewal budgets. We don't know the size of the problem yet, with the dramatic fluctuations of the stock market to date.
- Another colleague said the following: "We're going out for some bonding, so we had some concerns about the difficulty or ease of getting some projects bonded. Our bond counsel said that instead of the 'normal' $6 billion per week of bonding, the market is down to about $1 billion. However, while there are fewer seeking to borrow, there are still folks out there looking to lend their cash to a qualified borrower. As a public institution, with the 'full faith and credit' of the state backing up our bonds (which is why we have to receive legislative approval to sell bonds) seems to be keeping us in a favorable situation. All that said, we haven't completed the bonding yet and don't know what interest rate we'll be paying. That may be the true answer to the question that is being asked."

The situation changes daily. Changes in the stock market, fluctuating fuel costs, rising unemployment rates, frozen or eliminated positions, and increased costs of virtually everything will continue to challenge us to use our resources as effectively and efficiently as possible.

Regardless of what you must do, always consider your decision-making process and ask whether you're making a short-term change that supports the long-term mission and goals of your institution.

> ASK WHETHER YOU'RE MAKING A SHORT-TERM CHANGE THAT SUPPORTS THE LONG-TERM MISSION AND GOALS OF YOUR INSTITUTION.

Coming in **January/ February 2009**

- Planning for Campus Safety and Security
- The National Campus Safety and Security Initiative
- IACLEA Panel Report on Campus Safety
- 2008 APPA Regional Conferences Report
- APPA 2009 Preview

facilities digest

facebook

APPA Creates a Facebook Presence

APPA has a new presence and it's on Facebook.com! Facebook is a social network that connects individuals with others who study, work, and live around them. This online community fosters communication between friends and coworkers, posting of an unlimited number of photos, shared links and videos, and much more. Anyone with a valid e-mail address can join Facebook by going to *http://www.facebook.com/*. Once you are part of this online community, spread the word to fellow professionals and students, find and join the *APPA Group*, then experience communication in a new light! Through Facebook.com APPA will engage and build a bridge between seasoned and rising professionals, thus elevating the industry.

Our first Facebook activity was the *Show APPA Your Campus Colors* contest. Students were encouraged to present the positive aspects of their campus through pictures (the contest deadline was November 15, and voting on the winning entries is going on now!). These photos will be posted on the APPA Fan Page *(see APPA's Student Membership Page for a link to the APPA Fan Page)*. The four categories were Rockin' Landscape, Student Hangout (student union), Characteristic Architecture, and Our House (stadium).

This contest was limited to full- or part-time students only. The facilities management department of the winning school in each category will receive $2,000 from APPA, will be featured in the next issue of APPA's *Facilities Manager* magazine, and highlighted at APPA's 2009 annual conference. The winning student in each category will also receive a $500 Visa Gift Card.

APPA Publishes Virtual Membership Directory

APPA is pleased to announce that the 2008-2009 APPA Membership Directory has been produced in an entirely virtual format. The new APPA directory is Web-based and allows members to easily search for other members, to find and link to Business Partner members, and to print out pages as needed. The format allows users to read single pages or two-page spreads, and to turn pages as easily as if they were holding the directory in their hands.

Instead of a printed directory that is outdated the moment it is released, this directory will be updated with new membership additions, and reinforces APPA's commitment to sustainability and environmental stewardship.

You can find the 2008-09 APPA Membership Directory at *http://www.appa.org/memdir.cfm*

2008–2009
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directory

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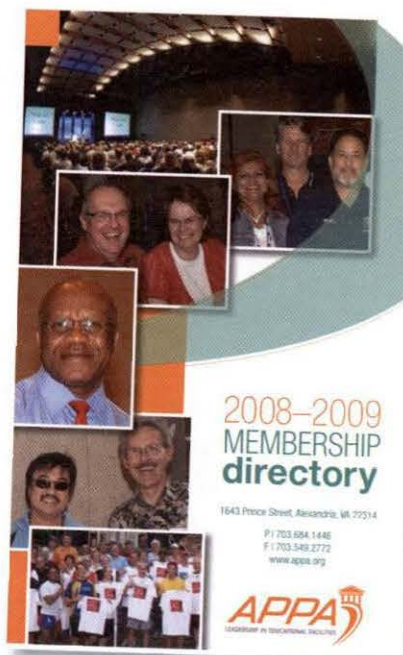
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Free Access to FPI Report for APPA Members

APPA now offers free access to FPI Reports and Dashboard Indicators for all APPA member institutions participating in the FPI survey data collection process for 2007-08.

Participating in APPA's Facilities Performance Indicators (FPI) survey will help you:

· Track your institution's vital signs
· Make the business case for your facilities needs
· Create a balanced scorecard of data around your institutional vision and mission

Go to *www.appa.org/research/fpi* for more information, or contact Christina Hills to arrange your data collection assistance. She can be reached at *christina@appa.org* or 703-684-1446 ext. 244.

The deadline for survey completion is Monday, December 1, 2008.

In Memoriam

Charles C. Braswell, APPA President in 1983-84, died on August 26 at age 82. Braswell served as President of SRAPPA twice before serving as APPA President. He received APPA's Meritorious Service Award in 1981. During his year as President, he oversaw the purchase of APPA's first headquarters building in Alexandria, Virginia.

Braswell graduated as a mechanical engineer from Duke University. He worked as the director of physical plant at Appalachian State University before moving to the same position at North Carolina State University, where he retired in 1988. Memorial gifts may be directed to the Methodist Home for Children, 1041 Washington Street, Raleigh, NC 27605.

APPA Accepting Candidates for the 2009 Election

The APPA Nominations Committee is currently accepting candidates for the following elected officer positions:

- **President Elect** (Term 3 years)
- **Secretary-Treasurer & Chair, Membership Committee** (Term 2 years)
- **Vice President, Professional Affairs & Chair, Awards & Recognition Committee** (Term 2 years)

Please consider becoming a candidate, or nominating someone else, for an elected office in APPA.

Your future contributions will be an invaluable benefit for our members and ensure APPA is the "association of choice" for educational facilities professionals. And remember, that as an elected officer, not only will you give back to the association and the facilities profession it serves, but you will gain enormous leadership skills, and develop yourself professionally in very meaningful ways.

The candidate information packet and nomination application are available at *http://www.appa.org/board/electedofficers. cfm*. The deadline for submitting nomination materials is **December 15, 2008**. Please submit them electronically to *nominations@appa.org*

On behalf of the APPA Board, we thank you for your time and consideration of this important leadership opportunity. Your nomination is truly encouraged.

Nominate Someone Today!

2009 Award Nominations Open

Nominations are now being taken for the following APPA 2009 institutional and individual awards:

- **Award for Excellence:** Recognizes and advances excellence in the field of educational facilities.
- **Effective and Innovative Practices Award:** Recognizes programs and processes that enhance service delivery, lower costs, increase productivity, improve customer service, generate revenue, or otherwise benefit the educational institution.
- **APPA Fellow:** Recognizes specific accomplishments to date and expectations for continued involvement in APPAs leadership program through research and mentoring.
- **Meritorious Service Award:** Recognizes significant, lifelong contributions to the profession of education facilities management.
- **Pacesetter Award:** Encourages further participation in APPA among those who have already made significant contributions at the regional or chapter level.

The deadline for consideration for the 2009 awards is **January 30, 2009**. However, award submissions are accepted year-round.

Awards submitted after January 30, 2009 will be held and considered in the 2010 award cycle. Visit *http://www.appa.org/ recognition* for award details, and to submit for the awards.

APPA EVENTS – 2009

Jan 5-9 SRAPPA: APPA's Supervisor's Toolkit *New Orleans, LA*

Jan 18-22 Institute for Facilities Management *Tampa, FL*

Jan 18-22 Supervisor's Toolkit *Tampa, FL*

Jan 23 EFP Prep Course, EFP Examination and CEFP Examination *Tampa, FL*

Jan 24 EFP Examination *Tampa, FL*

Apr (dates TBD) Leadership Academy *Fort Lauderdale, FL*

Apr (dates TBD) Supervisor's Toolkit *Fort Lauderdale, FL*

Apr 5-7 Smart and Sustainable Campuses Conference *College Park, MD*

Apr 6-7 SFO Summit *Asheville, NC*

Jul 8-10 APPA 2009: Focusing on the Critical Few *Vancouver, BC, Canada*

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

Jul 12 EFP Examination *Vancouver, BC, Canada*

Sep 6-10 Institute for Facilities Management *Hilton Head, SC*

Sep 6-10 Supervisor's Toolkit *Hilton Head, SC*

Sep 11 EFP Prep Course, EFP Examination and CEFP Examination *Hilton Head, SC*

Sep 12 EFP Examination *Hilton Head, SC*

Sep 20-23 RMA Regional Meeting *Tucson, AZ*

Sep 26-30 CAPPA Regional Meeting *Grand Forks, ND*

Sep 27-30 MAPPA Regional Meeting *Iowa City, IA*

OTHER EVENTS – 2009

Jan 7-9 Texas College and University Facilities Conference *San Marcos, TX*. www.vpfss.txstate.edu/ tcuf/default.htm

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

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Institute for Facilities Management

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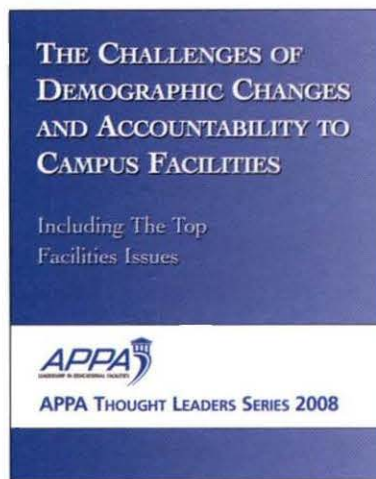
APPA's 2008 Thought Leaders Report:

The Challenges of Demographic Changes and Accountability to Campus Facilties

By E. Lander Medlin

At this writing the global economic situation looks grim. Although education will be a critical driver of success for our economy, I doubt any of us will escape this economic downturn's broad-sweeping impact. Budget reductions are imminent. Only time will tell how wide and how deep they will be. Nonetheless, we must endeavor to maintain a stable, safe, and stimulating environment so students can learn, teachers can teach, and researchers can innovate. No matter what, we will always need a skilled, creative, and innovative workforce. Education is in a pivotal position to help solve our most vexing problems. Education needs your best efforts, your best thinking, and your entrepreneurial spirit! This is where the work stemming from APPA's Thought Leaders series is critical as we lead our institutions through and out of this monumental crisis.

A HISTORY OF THE SYMPOSIUMS

In the spring of 2006, APPA established the annual Thought Leaders Symposium to spark the progressive discussion and distillation of major issues impacting college and university facilities and create a forum to disseminate information on alternative ways to approach these pressing problems and

THE CHALLENGES OF DEMOGRAPHIC CHANGES AND ACCOUNTABILITY TO CAMPUS FACILITIES

Including The Top Facilities Issues

APPA

APPA THOUGHT LEADERS SERIES 2008

concerns. These types of discussions are critical to our industry because the challenges of change remain, and the myriad pressures of accessibility, affordability, and accountability are ever-present. However, to effectively manage an entire campus's physical assets in an environment of scarce resources, the educational facilities professional must understand all aspects of their facility as well as their impact on the complex mission of the institution. They must connect the goals of their operation with the educational outcomes of the institution.

The work of the 2006 Thought Leaders Symposium resulted in the distribution of the white paper titled *University Facilities Respond to the Changing Landscape of Higher Education*, which focused on the trends affecting higher education's future, and related these trends to the top 10 issues affecting facilities professionals. The 2007 Thought Leaders Symposium considered, in greater depth, three major challenges confronting higher education as a whole: evolving technology, changing stakeholder expectations, and the impact of competition on both these drivers of change. They also developed a list of the top 10 critical facilities issues. The central message they found is that broad collaboration is the

neon sign for success. They also reminded us that technology is just a tool to create and develop community. Ultimately, it is about leadership – creating connections, enhancing the channels of communication, and ensuring broad collaboration. Yes, it's the human networks that really count.

2008 THOUGHT LEADERS SYMPOSIUM

The focus of this year's 2008 Thought Leaders Symposium was on the challenges of changing demographics, accountability, and the impact of institutional resistance to change on both these drivers. By taking an in-depth look at these drivers of change, the participants were able to identify major patterns and themes, significant challenges, relevant strategies, strengths, and potential obstacles to success for the educational facilities professional and their institution. As in the past two years, the facilities professionals in attendance identified the top critical facilities issues and formulated specific questions to engage senior institutional officers and facilities professionals in further dialogue at their individual institutions, thereby helping to improve performance, and better prepare for the future.

Clearly, demographic shifts are occurring rapidly in both the student population and the workforce. We must respond with flexibility and by carefully fostering diversity. It will be critical for facilities professionals to work with their human resource professionals to ensure outdated hiring practices and salary scales are changed as quickly as possible to enhance staff recruitment and retention efforts in the near term. The challenges of accountability are as varied as institutional size and type. However, our collective response will need to include effective strategic planning, setting institutional priorities, and establishing corresponding performance measures to demonstrate a culture of evidence and fact-based decision making. Facilities professionals have much to offer given their

stewardship focus, ability to create a sense of place, and to effectively support the learning environment for the institution. Unfortunately, both trends are burdened with heavy and competing demands amidst enormous financial constraints.

On the second day, our facilities experts considered these trends and issues, yet expanded their focus to encompass the following critical facilities issues for 2008-2009:

- Improving accountability
- Planning for workforce changes
- Becoming the workforce of choice
- Integrating sustainability into total operations
- Implementing Total Cost of Ownership (TCO) practices
- Making facilities a strategic partner with university leadership
- Leading change

As well as discussing each of these critical facilities issues, the paper delves further by proposing several questions that facilities professionals can use to help understand how their organization is positioned for the future and to develop strategies for improvement.

2008 SUMMARY REPORT

The summary report, available free through our bookstore, provides the detailed background and explanation for each of these issues along with a series of discussion questions you should use to begin a meaningful dialogue and search for solutions at your respective institution. We believe the Thought Leaders Symposium report gives you the information you need to address these vexing problems, and to do so collaboratively at the highest levels in the institution.

As the Thought Leaders Symposium rounds its third year, it remains clear that the need expressed at the first symposium for dialogue between educational facilities professionals and the rest of the academy has not diminished. If anything, its importance has grown. Interestingly enough, Thomas Hesburgh said, "To have a leader in any organization, you have to have a person with vision that can clearly articulate that vision; but you must

also have a team that can achieve that vision through effective implementation."

As education facilities professionals you have a unique role, one that ensures the vision and direction of your department is in alignment with the vision, mission, and strategy of your institution. Equally important, you must lead your department in the effective execution and implementation of that direction on behalf of the institution. In the difficult times that lie ahead, your leadership will be even more critical. Knowing many of you as I do, I know you are up to the task. ⑤

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

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Vision Project Management Approach

By Tommy H. Moss

At the APPA 2007 annual meeting in Baltimore, I attended a session where data collected by Brigham Young University students was presented with regard to contracting processes, including types of contracts and when different contracts should be utilized. There was no consensus on the type of contract that should be used, since some people like one type over another. It made me stop and think about what makes a successful project. In my 36 years of construction I have been involved with thousands of projects, each with a different type of contracting process including straight bid, design-build, construction management/general contractor, negotiated, and everything in between. I have discovered that the type of contracting process does not determine the success of the project, it only aids in schedule control, cost control, and quality control.

So what will make a successful project? First, the project must be defined. Second, the available funds must match the defined scope of the project. Last, and most importantly, there must be a project manager or owner representative who leads the process.

What are the attributes of a project manager or owner representative who leads? I use the word **VISION** to describe leadership qualities of a project manager or owner representative.

V – Visualization – the act or process of interpreting in visual terms

I – Intertwine – to become mutually involved

S – Strategist – the art of devising or employing plans toward a goal

I – Ignition – the act of motivating/exciting the team

O – Originality – freshness of aspect, design, and/or style

N – Knowledge – the fact or condition of knowing something with a familiarity gained through experience or association

VISUALIZATION

Before the project manager secures the designer or contractor, the manager should visualize what he or she wants out of the project. Examples: no value engineering, fast track or not, happy client, cohesive team, LEED gold, or doing a great job.

Visualization helps the project manager (you) think through issues that are most important to the clients, the owners, the team, and you. If you can visualize it, you can make it happen because you have a map to follow. Stop and visualize your dream vehicle. Do you see it? Can you use it for work? Does it fit the family's needs? Is it good for long trips? How is the gas mileage? Is it in line with your budget? How will all of these questions and factors assist in your visualization?

Visualization helps define the different parameters of how your map has various routes to reach your vision, plus it may give you a different outcome. The other key in visualization is seeing what success is. If you can see success, you can define it. A simple example is when you want a green and sustainable building: you can use LEED standards to determine the level of certification. [The Leadership in Energy and Environmental Design standards are developed by the U.S. Green Building Council (*www.usgbc.org*).] Time of completion can be determined, and then you can guide everyone to that date. You need to define the user-level expectations with each building. You need to define the parameters up front that will determine the final outcome of your project.

Example from the Diagnostic Medicine Center Project:

- Conducted meetings with the owner, architect, and contractor before there was a true design.
- Used the concept of team work to define quality, cost, and size of a building in the beginning of project meetings on the scope, instead of waiting until the conclusion of schematic design to determine if we had a project we could build.
- Subcontractors were brought in early to gain their input and advice on systems.
- As a team, we developed Cost Study Reports on building finish systems, electrical/mechanical approaches, and different structure approaches.
- Using the parameters set in the early stages of the project, design development should be within budget as this phase begins.
- I'm glad I am not doing major value engineering or redesign because it will delay the project, although these processes can also help build team relationships.

INTERTWINE

To intertwine all the individuals to a project is tough due to different views, desires, and requirements. I have learned to "sell" the big picture – not just the pieces – to all interested parties of a project. I know that no matter the amount of funds or the quality, it is not enough for some people. In my many years I have not had unlimited budgets. You need to first believe in the vision yourself. Have you ever seen a salesperson who does not believe in the product? Did you buy the product? I don't think so! To intertwine a group I try to lead them to be completely enthusiastic about the "vision." Remember, you must sell the overall vision.

One area of concern that usually must be addressed is between contractors and the design team. Most contracting processes set them up in a check-and-balance system that can become an adversarial relationship. You, the owner representative or project manager, will have work to build mutual respect and trust between the two. It takes meetings and your guidance to make it happen. Never let them force you to choose a side; in front of the user or client you must be a team. Again, you are selling the *project* vision and not an individual's vision.

My latest project was the Diagnostic Medicine Center for the College of Veterinary Medicine and Biomedical Sciences at Colorado State University. The overall vision for this specific project was to become the number one veterinary program in the country. I was able to successfully create a primary vision for individuals on this project (becoming number one) and to look at their specific areas as secondary. We were not building a Diagnostic Medicine Center, but a stepping stone to becoming the number one veterinary program in the country. This approach allows you to ask the interested parties if they would like to help the team accomplish the vision.

STRATEGIST

If you are an owner representative or project manager you are already a strategist: good, bad, or otherwise. You decide on how to manage the project. The project will be built, but there are ways to become more efficient and "artful." Don't let the process drive your project. Defining your goals will define your success. You also must continue looking ahead to avoid issues. For example, your project gets caught by bad weather: Did you look ahead and have a contingency plan for bad weather, or are you telling

everyone you have to delay the project for a month? If you know you are building over the winter, did the architect put in winterization requirements for you? Do you watch the contractor pay applications for the amount of work completed?

You can compare amount of work completed to the contractor's cashflow chart (which you should have requested at the beginning of the project). This is a simple chart that tells you if the contractor has spent adequate funds to cover the staffing needs of the project. A key strategy should be to have measurable goals that determine success along the way (outside of finishing the project.) At the end of the project you should check these goals to determine if you were successful with the project.

IGNITION

You are the ignition on the project. Without you nothing happens. Let's go back to the vehicle you were dreaming about earlier. What makes it go? The ignition. There is a great deal of power in the engine, but it takes a small piece of equipment to ignite the engine. You must lead the way. You must keep the team excited. You must make it fun for you and the team of architects, engineers, landscape architects, contractors, clients, and users. You are the person that will help the team stay focused on the vision of the project, so that goals are set and met.

ORIGINALITY

To be able to keep projects moving and going you need originality in your thinking. As an owner representative or project manager you need to think outside the box. You need to look at new approaches that may be suggested. You are the one leading the charge on a new path.

When I started using these rather unusual processes on this project I had a lot of doubters. Today I have everyone asking what we are doing different because we are so successful with the architects

and contractor. I dare you to take a risk and think beyond the process.

KNOWLEDGE

Your knowledge will equip you to select the right process, make decisions on strategies, team members, contractors, designers, and goals. Years of experience will add to your knowledge. Use your education and daily experiences to help you. Find a mentor you can learn from by talking to them about situations/issues and using their knowledge to help you decide what to do. Leverage the knowledge of all members of the team in decision making.

One early lesson I learned in my life was from the dad of a friend I worked for. I was framing up walls and we had just finished nailing down a sheet of plywood to the frame. The dad came over and used a square at the corner. Of course it wasn't square! He made us take every nail out and do it right. I

asked him after we were done why we had to redo the job. He said, "You need to think about what you are doing, and I want you to do it right the first time. I know you won't ever forget it because you just pulled 300 nails out, which is no easy task." So, to this day, I stop and think before I start whatever I do because it is a lot harder to change afterwards. Knowledge comes to you from many directions. Apply what you have to your project.

Do you have the VISION to lead the design and construction process for your college, university, or institution? enVISION yourself doing it! ⑨

Tommy Moss is president of THM Consulting LLC, Windsor, CO; he previously worked in facilities management at Colorado State University and served as an APPA Board member. He can be reached at *thmconsulting@comcast.net*.

GEOTH
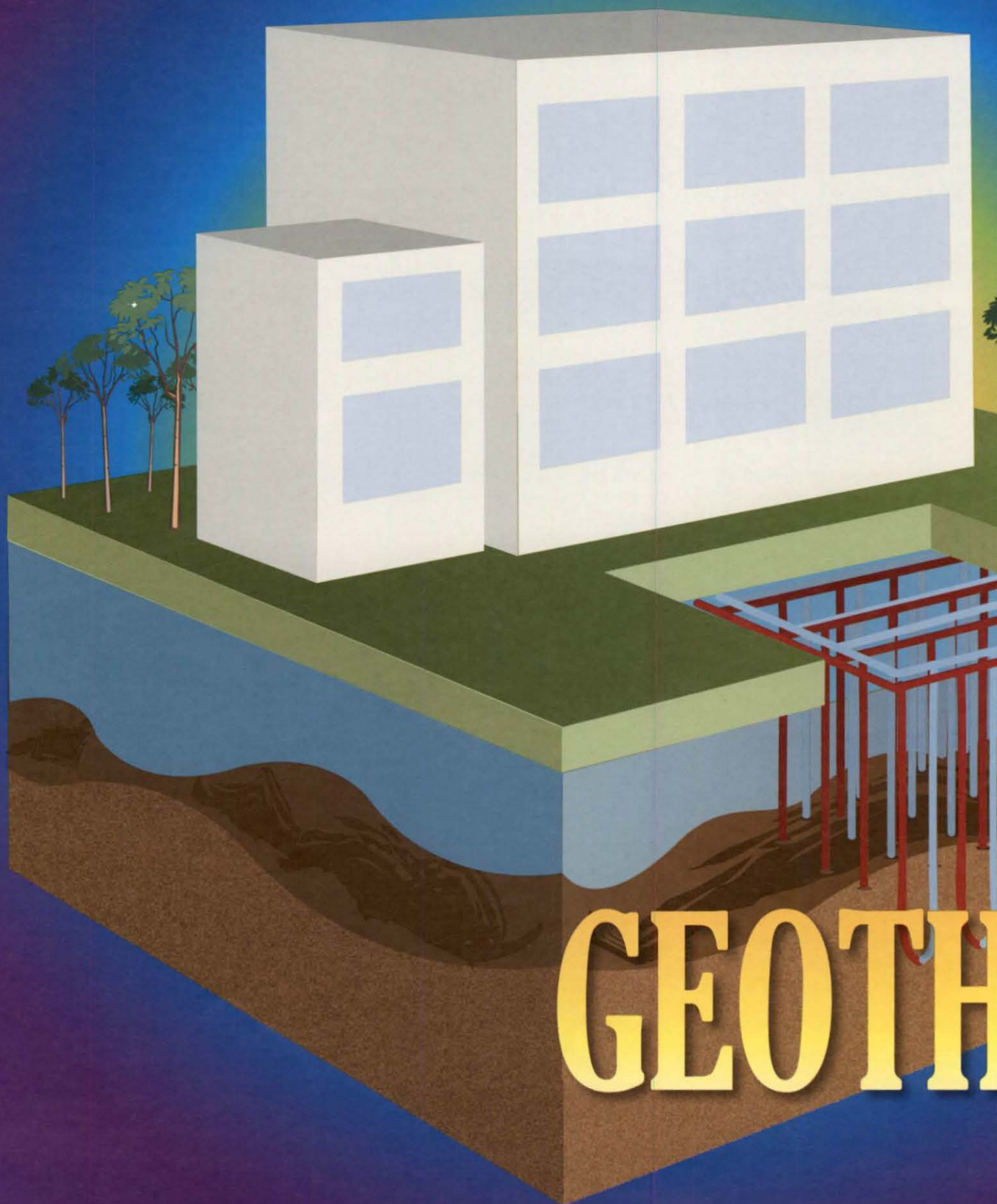
Your institution has signed the American College & University Presidents Climate Commitment, or the school has otherwise mandated greenhouse gas reduction goals. Plus, the rising cost of energy has your institution focused on improving energy efficiency on campus. Now it's up to you and your fellow campus facility managers to create mitigation strategies. One such strategy might be right there under your feet.

Ground source geothermal energy enables us to tap into the earth's stored renewable energy for heating and cooling facilities. Proper application of ground-source geothermal technology can have a dramatic impact on the efficiency and financial performance of building energy utilization (30%+). At the same time, using this alternative energy resource can provide significant contributions to an institution's carbon reduction goals.

How can you take advantage of this potential energy source to meet campus carbon footprint reduction goals, capital budgets, and return on investment?

This article reviews the state-of-the-practice and the kinds of engineering and programmatic expertise that are required to properly scale geothermal applications up to the institutional level and provide optimized benefits. Some pitfalls of poorly-designed systems are described, and approaches to avoid these are presented. But first, the big picture on geothermal systems.

TAPPING THE POTENTIAL

...ERMAL ENERGY

BY BILL JOHNSON

WHAT ARE OPEN AND CLOSED GEOTHERMAL SYSTEMS?

Both open and closed systems have their place in the geothermal universe of applications. Open geothermal systems use groundwater directly. These include withdraw/recharge systems, which cycle water from one or more withdrawal wells and return the water to one or more recharge wells; and standing column systems, which circulate the water to and from the same well. Closed systems are geothermal systems that cycle fluids through closed loops installed in the ground and do not directly use groundwater.

Where bedrock is closer to the surface and there is limited space for well fields, an open system may be the optimal choice. Where applicable, these systems can provide heating and cooling capacity that is several orders of magnitude greater than that of a closed system. A closed system, which relies on conductive heat transfer properties, may be the best system alternative where there is sufficient space, bedrock is very deep (200 ft+), and/or where there may be contamination or water resource issues. Geology and the site have a significant amount to "say" about the type of system and the applicability of geothermal, so evaluating them thoroughly at the beginning of the process is a key step.

STATE-OF-THE-PRACTICE

At this writing, the majority of the geothermal applications in the United States are residential systems. Heat pump technology suppliers and water well installers have been primarily responsible for the growth of this industry; and the equipment, design, and installation procedures are scaled for residential applications. Most of these systems are closed loop designs and have been used in the Midwest and Mid-Atlantic where the geologic conditions and available space accommodate vast closed loop fields. Rules-of-thumb based on small-scale, closed loop system experience have been the primary design criteria.

Recently, demand for geothermal systems has increased and larger suppliers, including energy service companies, have been moving to serve the educational facilities market. However, the state-of-practice shows high geothermal system failure rates, particularly in large-scale applications. This is especially true for open or standing column well designs, which require specialized geologic and hydrogeologic expertise.

A PHASED APPROACH TO ACHIEVE SUPERIOR RESULTS

With the pace of the geothermal energy industry quickening in response to increased demand, a higher level of responsibil-

ity and performance is expected in the marketplace. Current system failure rates and a state-of-practice based on rules-of-thumb are unacceptable by today's standards and limit the potential for campuses to integrate ground source geothermal systems into their energy master plans.

The following overview presents a phased approach that, in our experience, has led to sound financial and programmatic results. This approach uses existing information at the earliest stages and integrates it into the decision-making process. Further information is added at key decision points throughout to assist the institution and design team in making the most effective use of financial resources to achieve project goals. Due to the complexity of the geothermal development process, and its impact on many phases of planning, design, and construction, we recommend engaging a geothermal engineering professional early in the process.
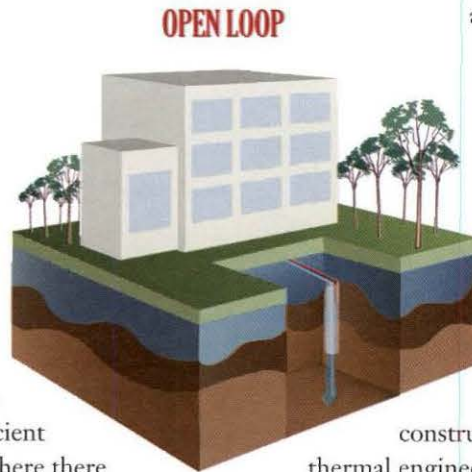
PHASE 1: THE PRELIMINARY STUDY

The purpose of the preliminary study is to collect, organize, digest, and provide financial performance data with which the design team can make informed decisions regarding the use of the potential geothermal resource. The preliminary study is guided by the financial (return on investment) and programmatic (greenhouse gas reduction, energy efficiency, reduced central plant demand) goals of the institution, and keeps these as line-of-sight goals as the process proceeds.

Technical information collected during Phase 1 encompasses site conditions, geologic, hydrogeologic and environmental data, permitting and regulatory issues, campus master plans, utility master plans, water well information, geotechnical records from previous projects, and USGS (U.S. Geological Survey) and other governmental research commonly available.

Also part of this phase, preliminary building(s) HVAC load performance and site footprint data is collected to integrate with the geothermal well data. We have found that, by integrating geothermal and building performance data into energy modeling software, the ability to compare a variety of system configuration options with resulting benefits is vastly improved.

Once the existing data have been assembled and analyzed, this information can be incorporated into the appropriate financial model for the institution. Institution-specific
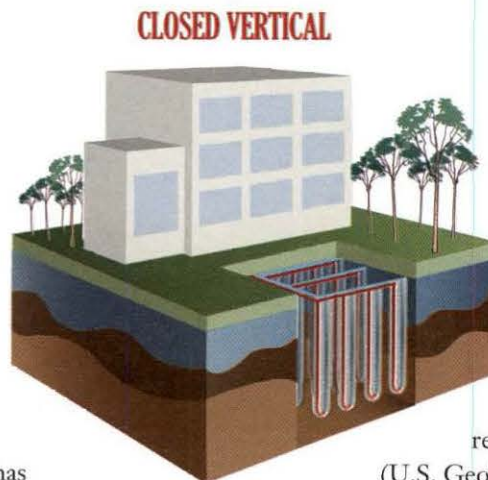
escalation rates, energy cost data and greenhouse gas emission targets and investment goals are critical elements to this analysis. We recommend using life-cycle cost analysis to inform long-range financial performance, compare options, and make final decisions.

If, at the end of this phase, an institution decides to move forward, its project team can choose a preliminary geothermal system and layout, and can identify the location for the first test or production well.

During Phase 1, all permitting implications are evaluated and applications for any early items that need permits can be completed.

PHASE 2: THERMAL RESPONSE TESTING AND MODELING

Phase 2 calls for installation of a full-scale test well for thermal response testing, which will eventually be reused as a production well for the chosen project. The thermal response test will artificially load the well while monitoring temperature gradients, water quality, flow rates, and heat inputs. This full-scale test well will provide critical data that is necessary to accurately determine the number and depth of the wells and layout of the well field. This information will enable a refined decision-making process yielding superior financial and engineering performance.

Your geothermal engineer (staff or consultant) uses the thermal response test results to develop long-term data and applies advanced modeling in order to provide the building mechanical engineer with hour-by-hour load profiles of the well system. This information is important in order for the geothermal engineering professional and the building mechanical engineer to properly size and integrate the well system, heat exchangers, and ground source heat pump equipment into a fully functioning, seamless HVAC system. Omitting the modeling step can lead to oversizing or undersizing system components resulting in wasted time, money, and resources.

The thermal response test data inform the well field layout and provide thermal balancing information. These tests also provide information on the sequence of operation for the combined systems. The sequence of operation of these systems is an often overlooked component. If this sequence is improperly developed, implemented, and not combined with the appropriate training of operational personnel, it can result in poor system and financial performance. There have been instances in which incorrect sequence of operations, combined with valving and pressure control problems, resulted in major flow imbalances in well fields.

The outcomes of Phase 2 are a well field design, heat exchanger specifications, and an optimal sequence of operation with simultaneous completion of the building mechanical engineering design.
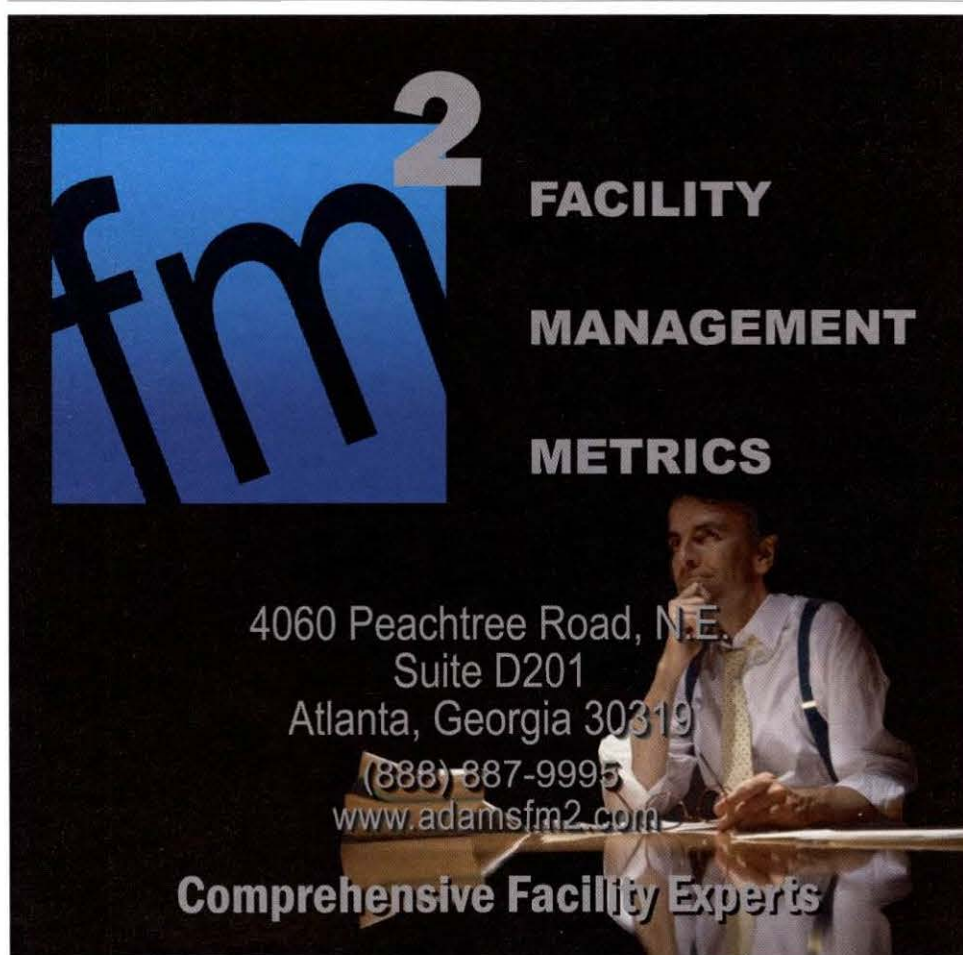
During Phase 2, all withdrawal, recharge, state department of environmental protection, and local water district permitting for the well fields can be completed.

PHASE 3: CONSTRUCTION AND COMMISSIONING

By this point in using the phased approach, the design and construction team is generally "on the same page" with respect to the scope and execution of Phase 3. This phase calls for engineering oversight of the installation of the well field, associated pumps and piping, controls and wiring, and all structures. These are expensive installations and must be right the first time, so we recommend that well installation procedures be monitored by trained geotechnical engineering field technicians.

GEOTHERMAL PITFALLS AND WHY THESE HAPPEN

If you've "inherited" a geothermal system that functions less than optimally or suffers from programmatic failure, you're

familiar with some of the technical and financial problems that can result from improperly designed, installed, and operated systems. The following summary may help in understanding existing system problems.

Problem: Well field thermal imbalance where temperatures and/or flow rates do not meet or are moving out of specification. Possible causes are:

- Ground and soil characteristics coupled with changing hydrogeologic and water quality conditions
- Incomplete understanding of site conditions, adjacent environmental conditions, soil types, rock structure, fracture zones, rock types, and water chemistry and turbidity
- Lack of geologic/hydrogeologic expertise applied early in the process
- Original geothermal well system was designed using rules-of-thumb, ignoring site-specific geologic conditions
- Original decision to go with the existing, inadequate geothermal system was based on randomly applied well testing
- Fragmented decision making, particularly at the intersection of well field and building envelope modeling.

Problem: Improperly sized, installed, and operated well fields leads to the owner's decision to "bleed" the system to improve thermal performance. Possible results are:

- Bleeding the aquifer leads to water table depression with subsequent impacts on adjacent foundation support performance, environmental contamination transport zones, and long-term well performance degradation
- Bleeding triggers permitting and regulatory requirements and raises the possibility of well failure
- With excessive bleed or increases in well pumping flows, the cone of depression drops below the pump's return line level and exposes the return water to air entrainment causing excessive bacteriological growth, system fouling, strainer plugging, and well failure. This cone of depression can also lead to exposure of the well pump and potentially result in cavitation and failure.

Problem: Geothermal system doesn't meet the institution's risk tolerance, financial, and programmatic goals. Possible causes are:

- The geothermal engineering professional is too far removed from the project owner and the decision-making process
- The geothermal provider is an equipment vendor and/or well driller whose primary interest is in providing a particular piece of equipment and/or style of well.

CONCLUSION

Proper application of ground source geothermal technology can dramatically impact the efficiency and financial performance of energy utilization (30%+) in a building or on a campus. At the same time, this alternative energy resource can significantly contribute to the institution's carbon reduction goals. Geothermal applications also offer the possibility of aesthetic and noise abatement benefits (eliminating cooling towers and dry coolers in sensitive locations or on historic structures) and, when combined with "green" or lower cost, on-site electrical power, the benefits are many.

An efficient, optimally functioning geothermal system can contribute to building and campus carbon footprint reduction goals. Colleges and universities are in a unique position to be able to educate the next generation about the possibilities available to solve some of the toughest issues of our time, and to use innovative technology on their campuses as a powerful teaching tool. ⑤
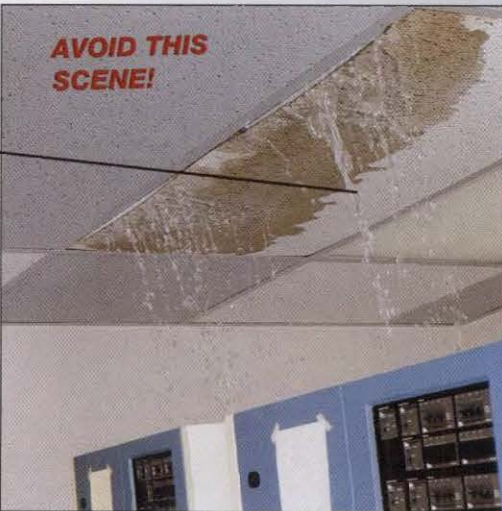
Bill Johnson is a vice president at Haley & Aldrich, Inc., a Manchester, NH-based consulting firm that focuses on strategic environmental, engineering, and management challenges. He moderated the recent APPA webinar, "Reducing Greenhouse Gases & Achieving Climate Neutrality" and is a recipient of the APPA 2008 Rising Star Award. Johnson can be reached at wjohnson@haleyaldrich.com. This is his first article for *Facilities Manager*.

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Integrity–Ba

By Frank Kaleba
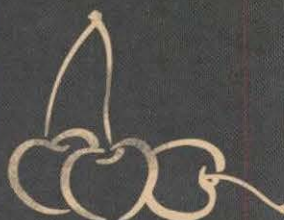
sed Budgeting

$$\frac{\text{Cost Factor} \times \text{Inventory} \times \text{Area Cost factor} \times \text{Inflation Factor} =}{\text{Sustainment Requirement}}$$

The central problem for the facility manager of large portfolios is not the accuracy of data, but rather data integrity. Data integrity, for the purpose of this discussion, means that it's

- acceptable to the users,
- based upon an objective source,
- reproducible, and
- internally consistent.

Manns and Katsinas, in their January/February 2006 *Facilities Manager* article "Capital Budgeting Practices in Higher Education," pointed out two major failings in capital budgeting practices for higher education: states (large portfolio managers) lack comparative data, and formulae are not used by state higher education agencies (large portfolio managers) to request funds from their legislatures.

The lack of comparative data can be said to reflect the failure of data acceptability; and formulae are founded upon objectivity, reproducibility, and internal consistency.

One of the largest facilities portfolios in the country if not the world is that of the U.S. Department of Defense with over 800,000 facilities. Nearly a decade ago, it faced problems similar to those highlighted by Manns and Katsinas: there was no comparative data between the individual military departments (Army, Navy, Air Force, Marine Corps, and Defense agencies such as the Defense Logistics Agency), and no formula was used to request funds from the U.S. Congress. This led the Congressional committees with oversight and funding responsibilities to question the "integrity" of the data.

SOLUTION APPROACH

The solution developed by the Defense Department was to create a system acceptable to the Congress, using objective sources that could be audited and was reproducible from year to year and reproducible by others, and exhibited internal consistency – that is, similar facilities had similar requirements, and variations in local prices would be accounted for and visible.

Three important issues were critical to the evolution of a solution. First, what degree of accuracy was affordable? Second, with over 800,000 properties, how could this number be distilled to make a solution understandable to the user and still retain meaningfulness? And third, how would facilities requirements be defined?

Resolution of the first issue involved the use of the data, implementation, and cycle time. There were to be two primary uses of the data. First, the need to present to the Congressional appropriations committees a budget that was rational. Through federal fiscal year 2000, each of the Services had presented its own facilities budget, based upon four different metrics. Thus, there was no rational response to the question: why are maintenance costs for dormitories different for the Army, Navy, and Air Force? Responses were based upon historical actual costs plus inflation, a percentage of replacement value or engineering estimates with inexplicable "unplanned" maintenance factors. This led the Department to seek a single, rational system for all.

This large-scale scope of the requirement was balanced by the primary use of the data as high-level, programmatic information for the Congress. Thus, while the number of facilities was significant, the degree of detail needed was not. The Congress was not interested in examining the maintenance budget for dormitory X at installation Y – it was interested in providing sufficient funds for all the facilities needed by a Service.

The other parameter was bounded by the federal budget process. Every two years a new biennial budget was submitted and in the "off" years, adjustments were submitted. Thus, fresh data would have to be prepared at least every two years. This necessarily meant that no detailed field inspections could be made as the cost would be prohibitive.

Taken together, these two factors meant that a high-level, credible system, with a refresh rate of not more than 24 months was required. Further, the degree of affordability was limited by the potential funding for this process. Previous efforts within the Services, focused on improving the accuracy of estimates, had generally failed due to cost. For a system that would include all the Services, the potential for an expensive system costing tens of millions was high. A determined effort was made to keep this "overhead" cost to less than $1 million for development and implementation.

The second critical issue – how could an inventory of 800,000 properties be distilled to an understandable but meaningful number – was resolved by developing a hierarchical taxonomy grouped by facilities use. This hierarchy grouped all real property into nine facility categories (for example, operation and training; medical) and a level called "facility analysis category" or FAC. The FAC represents a group of facilities with common use, common construction features, and therefore common cost drivers.

The final critical issue was the definition of facilities requirements. Through a collaborative process involving Defense Headquarters and the Services, definitions were developed for three aspects of portfolio management: sustainment, restoration, and modernization – now known throughout the federal government as SRM.

Sustainment includes those actions necessary to keep a good facility in good condition, extracting full use over the design life of the building. This includes regularly scheduled inspections, preventive maintenance, emergency response, and major repairs or replacements that are expected to occur periodically over the design life – for example, regular roof replacement, refinishing wall surfaces, replacing carpeting, replacing air conditioning units.

Restoration is the correction of damage due to failure caused by inadequate sustainment, excessive age, natural disaster, fire or occupant-caused damage over fair wear and tear.

Modernization describes those actions taken to implement new or higher standards, accommodate code changes, new functions, or to replace components that typically last longer than the expected service life of the facility – for example, foundations or structural members.

MODEL AND COST FACTOR DEVELOPMENT

Making all this work was somewhat like the famous Monty Python sketch teaching children how to play the flute on the children's show, *Blue Peter*. The sketch taught the flute by saying you simply blow through here and move your fingers up and down, and "that's how to play the flute." While clearly an over-simplification, the next step for SRM was to build cost models for each of the FACs – these included sustainment (what should be spent), modernization (what should be designated for facilities renewal), and most recently operations models for each, covering utilities, fire and emergency services, pest control, pavement clearance,

9 Facility Classes

423 Category Groups

167 Basic Categories

447 Facility Analysis Categories (FAC)

research reports, and state/local governments. The second source category is defined as costs obtained from DoD sources. The third source, representing only 3 percent of the total requirement, is developed by analogy to other FACs of similar complexity and durability. This category represents those very few unique facilities that typically only the military owns – for example, missile shelters or gunnery ranges.

Unit costs for each FAC are published as Unified Facilities Criteria (UFC) 3-701-(current year), and are available on the Web at *www.wbdg.org/ccb*. Updates are published annually.

The basic formula for using the cost factors is simple:

and similar facilities operations functions.

The most mature of the models is the sustainment group, with a separate cost factor for each of 440

$$\text{COST FACTOR}_{FACI} \times \text{INVENTORY}_{FACI} \times \text{AREA COST FACTOR} \times \text{INFLATION FACTOR}_{YEAR\ OF\ INTEREST}$$
$$= \text{SUSTAINMENT REQUIREMENT}_{FACI}$$

FACs. Overall, facilities sustainment represents an $11 billion requirement for Defense. The sustainment cost factor for each FAC is obtained from three source categories; the most valued source is based upon commercial or non-DoD sources. This includes about 200 parametric models built at the component level with the R.S. Means CostWorks© product. Other significant sources in this category include commercial quotations, trade association data,

Summing for each of 440 FACs, and for each site, the total is the sustainment requirement for the Service, or for the entire Department of Defense. The models in which these cost factors are used allow for costs to be segregated in a number of ways. The costs for each funding organization or fund source can be identified – for example, the Naval Reserve (organization) is funding a requirement using its "operations and maintenance" (fund source) account.

APPLICATIONS FOR EDUCATIONAL FACILITIES

The use of a similar approach in an academic environment could directly solve the shortcomings Manns and Katsinas described. The meta-system used by the DoD and being adapted by other federal agencies allows for a single, formula-based method of estimating requirements, performing comparisons, and objectively allocating resources. At the state or local school system level, a similar methodology could allow sustainment requirements to be quickly and inexpensively estimated, and allow available funding to be applied where needed.

For example, in a multi-institution system, requirements would be determined by the facilities components (use, roof type, mechanical system complexity) and allocated based on objective, modeled requirements. Boards or legislative bodies could rely upon the objectivity of the requirements. Needless to say, this approach works only for sustainment, while restoration – that is, repair work carried out because of the lack of sustainment or damage – would be separately estimated through inspection.

To adapt such an approach, the system would first either make use of the cost factors in the Unified Facilities Criteria, or develop specific new cost factors for its facilities. In the federal system, the use of a single average cost factor for a group of buildings is workable because there are a sufficient number of each kind of facility to allow a major cost in one year for one building to be balanced by lower costs for other buildings. For example, a significant peak cost occurring in the 20th year of a instructional building, (say, the replacement of its air conditioning plant) is smoothed (averaged) by other, similar buildings requiring the air condition plant replacement in different years.

With a sufficient number of similar buildings (the facility asset category or FAC mentioned earlier), each with a different in-service date, peak requirements are spread over multiple years. The larger the number of buildings, the smoother the annual average. This reliance upon the "law of large numbers" becomes less robust as the number decreases. But, for small numbers of facilities, for example, a local school system with only 10 or 20 school buildings, it becomes economical to construct individual cost models for each building.

RESULTS

Engaging as this process may be, it is the results that count. And the results have been significant for the Services. Interestingly, the results closely parallel the recommendations of Manns and Katsinas. The tangible results have been:

- Recognition by the Congressional budget committees of a reasonable and consistent method of *justifying* requirements. This has, in turn led to a remarkably easy approval process for facilities budget requests within the Congress.
- Within each Service, retention of facilities funds for facilities requirements and a decrease in the tendency to migrate resources out of facilities. In large part, this has been the result of Congressional language requiring the Services to report reductions in the appropriations for facilities sustainment.
- Creation of a means to benchmark facilities requirements across Services and within each Service among installations (campuses). This has proven useful in the resource allocation process by providing an independent and objective means to allocate, rather than relying upon subjective methods.

A 2008 U.S. Government Accountability Office (GAO) audit lauded this approach and its cost factor methodology, while suggesting improvements and additional funding be applied to hone the cost factors for a small group of factors representing about 3 percent of the total sustainment requirement.

Additional models have been developed for modernization and operations costs, such as utilities, facilities management and engineering, pavement clearance, and custodial. Overall, the methodology has proven itself as a robust means of determining long-range requirements and garnering the support needed to ensure those resources are available. ⑤

Frank Kaleba, P.E., is a senior engineer with R&K Engineering, Roanoke and Alexandria, Virginia. He can be reached at *fkaleba@rkeng. com*. This is his first article for *Facilities Manager*.

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PREVIEW APPA 2009

FOCUSING ON THE CRITICAL FEW

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Ben Elisondo is manager, operations/safety training, at California State University-Northridge, and a member of APPA's Professional Development Committee. He can be reached at *ben.elisondo@ csun.edu*; this is his first article for *Facilities Manager*. David Gray is assistant vice president for facilities at Middle Tennessee State University, Murfreesboro, TN. He serves as APPA's vice president for professional development and can be reached at *dgray@mtsu.edu*.

By Ben Elisondo & David Gray

FROM
HERE
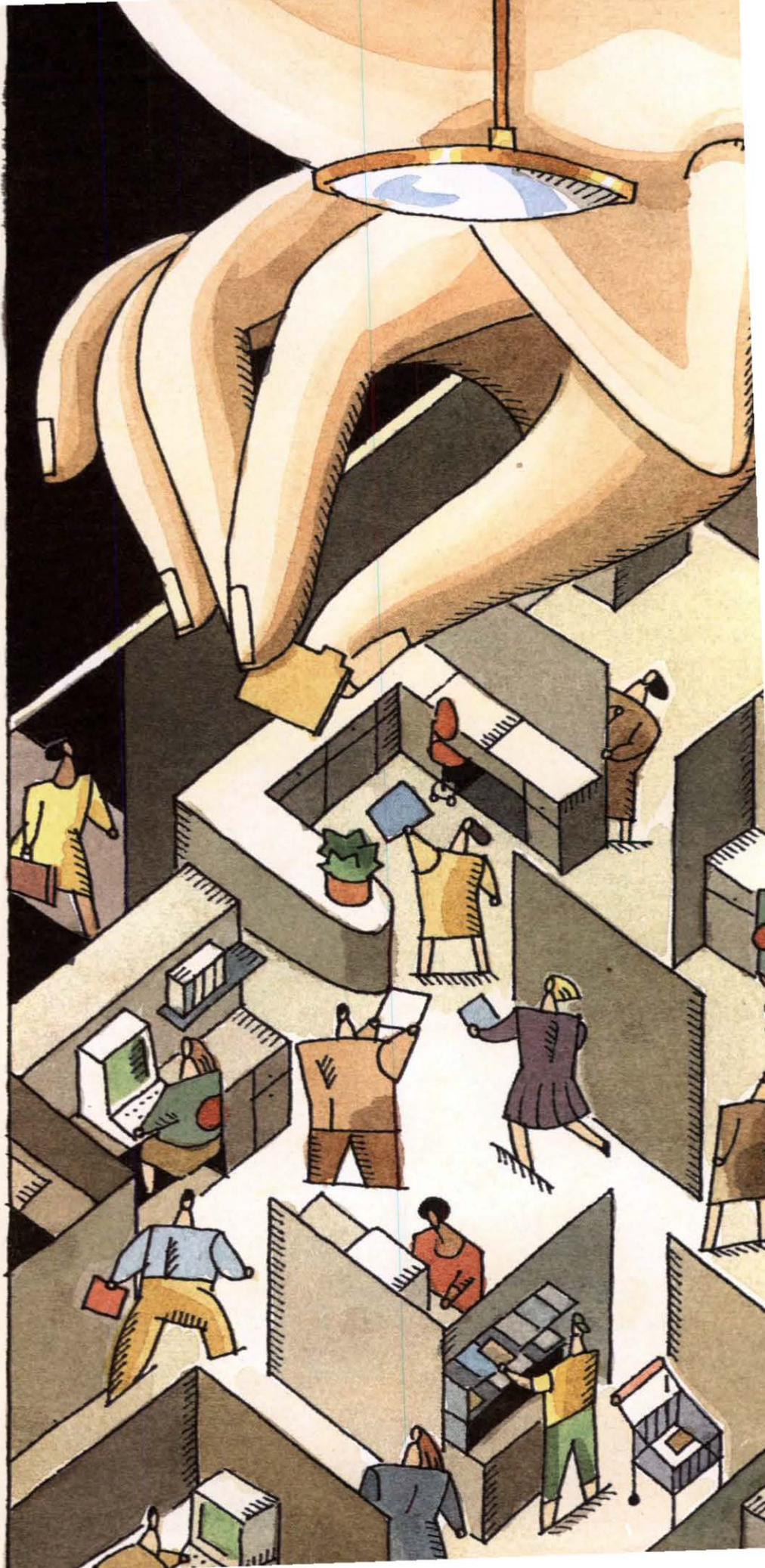
TO THERE

Effectively Managing Organizational Change

BY CASEY J. WICK

T hroughout organizational history it has been witnessed and written of time and again just how difficult initiating and leading change, as it relates to human behavior, can be. As early as the fourteenth century, statesman and writer Niccolo Machiavelli recognized the individual and group perceptions of change: "There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things...This arises partly from the incredulity of mankind who do not truly believe in anything new until they have actual experience of it."[1] Although Machiavelli is known for what are generally viewed as unethical tactics such as deception and force (in modern management texts these are termed "Machiavellian Tactics"), his perception of human resistance to change is nonetheless insightful.

Ask any manager to recount a time when significant changes to their organization were required, and the response will more than likely be a woeful tale of suspicion, resistance, and eventually reluctant acceptance. Initiating and implementing organizational change can be, and very often is, a journey characterized by periods of temporary progress followed by slow regression back to old habits and operating practices. Countless challenges and barriers rooted in individual and group perceptions lay around each and every bend in the road to effective and lasting changes. More importantly, the journey of organizational change is one in which the pressure influencing change can shift rapidly and without warning making the destination seem unattainable. Fortunately, with firm commitment and thorough planning, the initiation and implementation of pressure-driven changes can be successfully made within an organizational setting.

THE PRESSURE TO CHANGE

Successful agents of change, whether internal or external, understand it is paramount for environmental changes to be matched by organizational change if the organization is to remain effective.[2] When working to implement organizational changes, it is crucial to understand the critical elements including; the forces causing the pressure to change, the process by which change occurs, the causes and nature behind the resistance to change, and finally strategies for overcoming such resistance.

All organizations face two basic sources of pressure to change, external and internal pressures.[3] Because these two distinctions often share common traits, such as communication channels, organizational policies and individual/group perceptions, the differences may be perceived as arbitrary. However, in order to accurately evaluate the forces creating pressure to change such a separation will facilitate a clearer understanding and an effective change process.

Organizations are often driven into change action by a solid jolt from forces outside its own boundaries where no immediate control is exercised. These external forces include regulatory, social, technological, or political pressures triggering the organization to respond. Whatever the cause, change driven by external forces is generally of a proactive nature. That is the need for change is a result of foreseeable situations coming in the future. Regulatory requirements and technology are two good examples of foreseeable forces.

Generally speaking, most new, or changes to existing, regulatory requirements are announced in bulletins published by the authority having jurisdiction. Knowing of these new or changed regulations gives the organization an opportunity to be proactive and begin the necessary changes to be compliant before the new regulations become law. Likewise, advances in technology occur rapidly but not without a certain period of advance notice. Upgrades to software, innovations in energy management/building automation systems and advances in equipment are all preceded by vendor demos and product specific training.

Successful organizational change driven by external pressures requires the capacity to effectively receive, filter, and accurately interpret inflows of information from various external channels. Once the information is processed action must be taken in innovative and creative ways leading to a predetermined and desired organizational position.

Internal sources of pressure are of a different nature yet no less influential or critical. Internal sources of change can often be traced to process, procedural, or behavioral issues within the organization itself.[4] Shortcomings within the organization that often create internal pressures include: high absenteeism and turnover, low productivity, frequent grievances, and even conflict and sabotage. For example, a sudden and dramatic exodus due to a newly offered retirement option could cause a string of promotions and lateral moves.

Because of the rapid nature of the staff movements, many may be made without adequate preparation. The result will be redundant, misinterpreted, or inadequate communications leading to systemic breakdowns within and between divisions, departments, and offices. Periodic internal assessments can be effective in identifying symptoms of internal situations that may result in the need for change.

However, most often internal change is reactive and is driven by pressures which appear with little or no advance warning. Organizations are forced to take rapid corrective action with little time to prepare an adequate plan for change. In such circumstances organizations must take an approach which will stabilize the internal environment for a period long enough to identify the true cause of the pressure, establish a clear vision of the necessary improvements, and initiate the change process toward the desired outcomes.

CHARACTERISTICS OF CHANGE

Appropriate and realistic change is characterized by several key elements including; expected outcomes, schedule and progress expectation, individual and group responsibilities and control mechanism necessary to track progress toward newly established organizational goals. Such changes essentially come about through a sequence of organizational events or a psychological process that occurs over time.[5] Modern organizational behavior theorists agree that organizational change occurs through what is generally viewed as a three-step process.

The first step, *unfreezing*, is the result of a recognition that the current organizational status is inappropriate or inadequate. Unfreezing involves moving individuals and groups out of old mindsets and habits. Change leaders, participants, and stakeholders must arrive at a shared and agreed upon vision in order for organizational change to be effective and lasting. Elements such as progress and schedules must be universally understood and accepted in order for backward slides to be avoided.

Once the unfreezing has occurred, the *change*, or *moving*, stage of the process begins. Individuals and groups begin to exhibit the new behaviors and practices identified as desirable outcomes. New policies and procedures are initiated and change leaders work to motivate the organization to pick up momentum toward the desired position. At this point interested parties often assume there will be an immediate and positive result from the changes in policies, processes, or behaviors. However, there is more often than not a drop in performance or productivity immediately after such adjustments are initiated due to the learning curve associated with the transitions. This performance gap must be identified and accounted for in the progress and schedule as defined in the change plan.

> PROGRESS AND SCHEDULES MUST BE UNIVERSALLY UNDERSTOOD AND ACCEPTED IN ORDER FOR BACKWARD SLIDES TO BE AVOIDED.

Once the desired changes begin to take hold, *refreezing* must occur to ensure the attitudes, behaviors, and processes become part of the new organizational culture. Refreezing strengthens and reinforces the changes and diffuses them through the organization for assimilation. During the refreezing period it is critical to safeguard against the new habits and behaviors from becoming too rigid. Flexibility is important to controlling the change process and allowing for appropriate adjustments when necessary. The main focus of refreezing must be to build and foster fluid adaptability, regular and continuing internal assessment, and continuous improvement.

While there are countless individual reasons for resistance to change, surprise initiation, misunderstanding of the need for change, lack of trust, fear of failure, poor timing, and competing demands are most often the primary culprits. Directly relative to the significance of the cause of the change there will be relative and escalating levels of fear and anxiety by those affected. For example, in the case of policy change, the individual may not understand the reason for the policy change and fear getting disciplined for failing to adhere to the new policy. This may cause a certain amount of short-term stress and anxiety until the new policy takes hold and the individual or group becomes comfortable with the change.

In a more serious event, such as a catastrophic fire or major organizational restructuring, individuals will experience a much greater level of fear and anxiety possibly leading to debilitating physical or emotional manifestations. In both cases there is a common thread that makes them similar—the fear of the unknown. It is fear of the unknown that causes individuals and groups to be so resistant to change. In the realm of the unknown there is always the possibility of failure and loss of security which is the driving force behind resistance to change.

EFFECTIVE STRATEGIES

Effective strategies for reducing or eliminating resistance are essential to the process of implementing lasting and effective organizational change. While there are several strategies generally accepted as effective, they all have certain traits in common and are most effective when used in combination. Developing a positive climate for change is at the top of the list. The beliefs employees hold about the organization will affect their responses during times of change. Effective, honest, and transparent communication with employees will help to build a positive belief about the change leaders and in turn will facilitate dissipa-
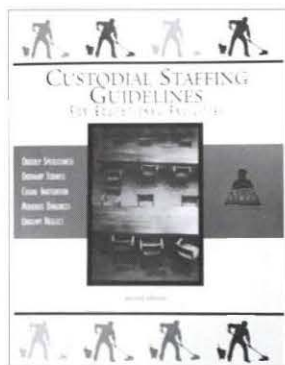
tion of the related anxiety within the organization. Encouraging an interest in improvement will have a profound effect on individuals and groups involved in the change process. Here one must be conscious of the perils of the "Do as I say and not as I do" perception. If employees are being encouraged to accept change and improvement yet the leadership does not participate in improvement programs a conflicting message will be sent.

Education is universally accepted as the foundation of effective strategies because of its proactive nature. Education focuses on accurately and clearly informing employees of the driving forces behind the need for change, developing the necessary skills and knowledge and supporting individual and group development. With few drawbacks, education is clearly one of the most desirable strategies. However, regardless of the format in which it is delivered, education can be time consuming and costly.

Participation is another strategy change leaders frequently rely on. Acting as a substantial contributor will instill a genuine sense of ownership within the participants and stakeholders alike. By being participants in the planning, implementation, and follow-up phases of the change process employees are more likely to give full commitment.

Facilitation is yet another highly effective change strategy and is essential in situations where individual stress, anxiety and

adjustment difficulties underlie the resistance. In such situations efforts such as work stress counseling, scheduling flexibility, and specialized training in time management, adaptation, and group interaction may dissipate employee fear.

Several other strategies are defined and characterized within the process of overcoming resistance. Other strategies identified include manipulation, co-optation, and explicit/implicate coercion. While these strategies are defined and accepted, they are not considered desired or even ethical. Most often these tactic lead to rapid inappropriate changes that are short lived. Additionally, these strategies certainly leave participants feeling as though they have been deceived and taken advantage of. Such emotions will only serve to diminish individual and group trust which is extremely destructive to an organization.

As with any effort which includes swaying the perceptions of individuals and groups, building employee trust and buy-in can be a daunting process. Identifying and understanding the real forces causing the pressure to change is critical to developing a plan of action. Likewise, knowing the fundamentals of the change process will allow change leaders to establish, implement and control the rate and progress of the change efforts.

Change leaders must use the right combination of strategies to influence the employees to accept and work toward a clearly defined and common goal. Dealing with individual perceptions can be an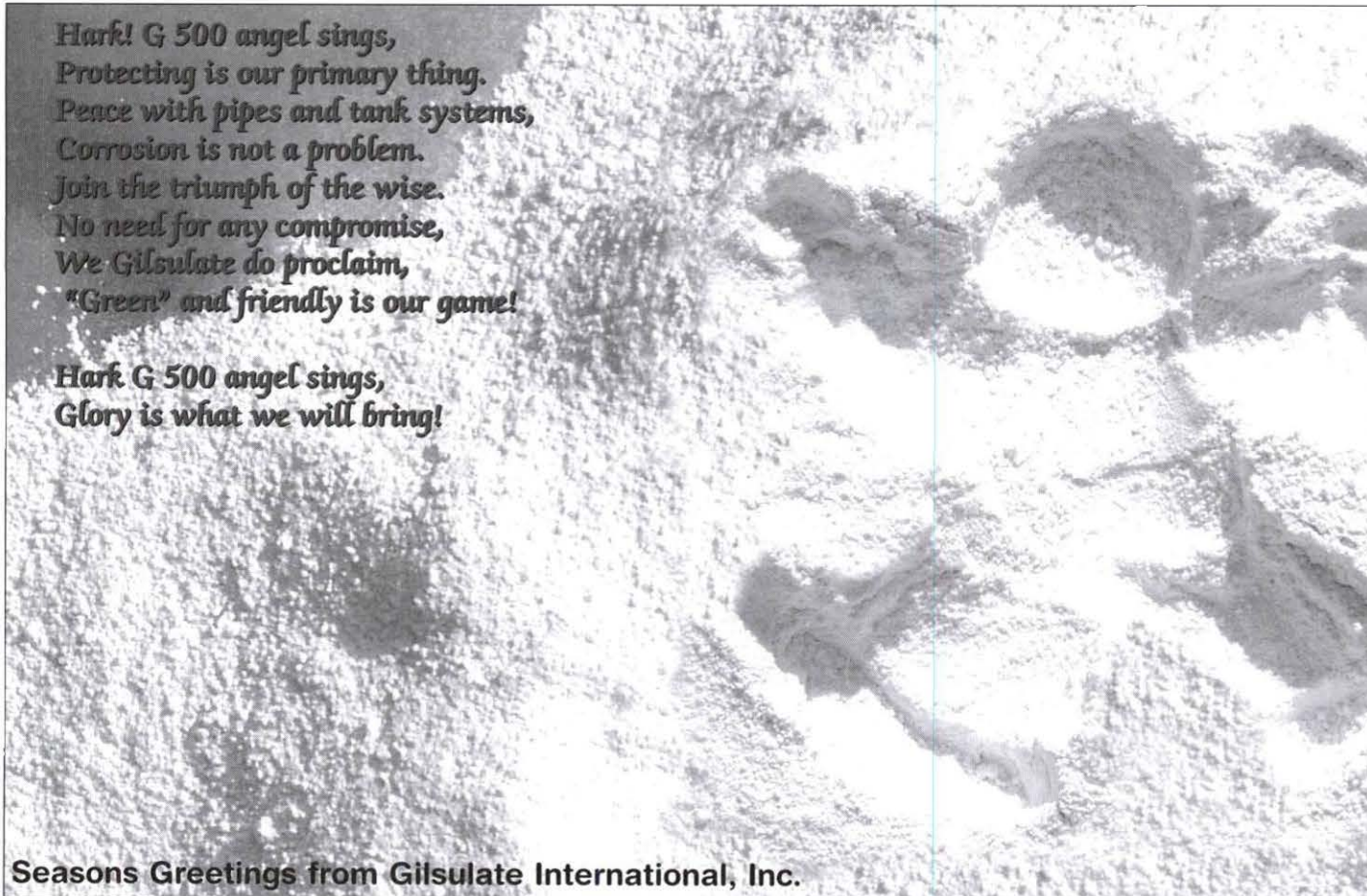 extremely difficult and time consuming task. How-ever, by utilizing tools such as training and education, open, accurate, and transparent communication, employee participation, and facilitation organizations can ensure positive and lasting changes leading to organizational efficiency and success.

Initiating and implementing positive and lasting organizational change truly boils down to sound leadership. As Jack Work wrote, "Leaders are those who in their inimitable ways, inspire confidence, undermine despair, fight fear, initiate positive and productive actions, define goals, and paint a brighter tomorrow."[6] 🦶

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W hen October 2007 dawned, the only thing that Catherine Anne Bentley, Shae Kiernan, and Ashton Bonds had in common was that they were in the process of winding their way through various stages of their educations. Catherine was a 4-year-old from Salisbury, New Hampshire, who was beginning her educational journey as a member of the pre-school class at Boscawen Elementary School. Shae was an 11-year-old sixth-grader from Vancleave, Mississippi. Ashton was a 17-year-old from Bedford, Virginia, who was in the midst of his senior year at Staunton River High School.

By October 15, Catherine, Shae, and Ashton had something else in common: all three had lost their lives as a result of contracting Methicillin-Resistant Staphylococcus aureus (MRSA), an extremely virulent strain of staph infection that does not respond well to antibiotics like methicillin. Catherine passed away after developing pneumonia as a result of her MRSA infection, while Ashton—who had originally complained of a pain in his side that doctors thought at first might have been appendicitis—succumbed when the MRSA infection had spread to his kidneys, liver, lungs, and heart. Shae was diagnosed with MRSA on October 12, 2007 after she had initially developed a fever, and she died three days later.

Unfortunately, the deaths of Catherine, Shae, and Ashton were just the most tragic examples in 2007 in what was a landmark year for MRSA and its affect on educational communities. According to a *New York Times* report, elementary and secondary schools from Connecticut to Mississippi, New Hampshire to California, and North Carolina to Washington had to be closed at some point during the school year as cleaning crews disinfected buses, lockers, restrooms, and classrooms in the response to the threat of a MRSA outbreak.

BY CHRIS TORRY

Prot
Fac
Infect

MULTI-TASKING:

ecting Your
ilities From
ious Diseases

THE CHALLENGES

According to a study commissioned by the U.S. Centers for Disease Control and Prevention (CDC), and reported by The *Journal of the American Medical Association* in its—ironically—October 2007 issue, hospital visits for staph infections rose by 62 percent between 1999 and 2005. When considering cases of MRSA, CDC research has shown that in 1974 MRSA infections accounted for only 2 percent of the total number of staph infections that were reported. That number increased to 22 percent in 1995 and, by 2004, was up to 63 percent.

In the 2007 report that appeared in *JAMA*, the CDC estimates that 94,360 people in the United States developed a serious invasive (those that enter the bloodstream or destroy flesh) MRSA infection in 2005 and, of that number, 18,650 died during a hospital stay, more than are killed by AIDS every year in this country. This equates to a rate of 31.8 per 100,000 residents who developed invasive MRSA infections in 2005. While the word most closely associated with staph infections 60 years ago was "eradication" as the use of antibiotics like penicil-

lin became more widespread, many in the medical community are now fearful that another "E" word—epidemic—may most accurately describe the current state of staph infections, if not right now, then in the near future.

"This is an alarming number of infections and a very significant number of deaths," said R. Monina Klevens, an epidemiologist for the CDC and a lead researcher on the study. "This is really a call to action for the healthcare facilities to do a better job of preventing MRSA."

It's no surprise that the safety of the student body is a top priority at every educational institution—from The Happy Camper Pre-School to The Ohio State University—meaning that these high-profile MRSA-related deaths and outbreaks have drawn much-needed attention to the cleanliness of school facilities as well as the hygiene of the student body.

Hand in (properly cleaned) hand with this increased attention on MRSA and its potentially deadly affects comes the results of a study undertaken by APPA's Center for Facilities Research (CFaR). Cosponsored by APPA, the leading association for educational facilities professionals, and ISSA, the worldwide cleaning industry association, the *Cleanliness and Learning in Higher Education* study surveyed college students from five U.S. institutions of higher learning and came to the conclusion that there is a correlation between the cleanliness of a school's facilities and the academic achievement of its students. These results confirmed the findings in a series of studies between 1993 and 2002 that showed that student achievement in primary and secondary educational settings is also linked to the physical condition of buildings and learning areas, i.e., the better the condition, the higher the achievement.

Headed by Dr. Jeffrey L. Campbell, chair of the undergraduate Facilities Management Program at Brigham Young University, with investigative assistance from Alan S. Bigger, director of facilities at Earlham College and a past APPA President, the survey was answered by nearly 1,500 students attending Brigham Young, Provo, Utah; Earlham, Richmond, Indiana; Troy University, Troy, Alabama; Truman State University, Kirksville, Missouri; and the University of New Hampshire, Durham, New Hampshire.

The students were asked to rate the cleanliness of their learning facilities based on the APPA's Five Levels of Cleanliness, published in Custodial Staffing Guidelines for Educational Facilities:

- **Level 1—Orderly Spotlessness:** Surfaces are clean, orderly, and dust-free in appearance.
- **Level 2—Ordinary Tidiness:** Surfaces have light dust, smudges, and fingerprints, but are otherwise orderly and clean.
- **Level 3—Casual Inattention:** Surfaces have obvious dust, dirt, smudges, and fingerprints.
- **Level 4—Moderate Dinginess:** Surfaces have heavy dust, dirt, smudges, fingerprints, stains, and some trash and odors.
- **Level 5—Unkempt Neglect:** Surfaces have major accumulations of dust, dirt, smudges, fingerprints, and excessive trash and odors.

The Kentucky Cabinet for Health and Family Services recently produced a list of measures that should be taken in the battle to control or prevent staph infections:

- Keep wounds covered with clean, dry bandages
- Wash hands after touching infected skin or bandages. Put disposable wastes (dressings, bandages, etc.) in a separate trash bag and close the bag tightly before throwing it out with regular garbage.
- Advise family and other close contacts to wash their hands frequently. Caregivers should use gloves and wash hands afterward if they change your bandages or touch an infected wound or other objects that have been in contact with the wound or wound drainage.
- Do not share personal items (towels, wash cloths, soap, razors, clothing, uniforms, etc.) or other items that may have had contact with an infected wound or wound drainage
- Disinfect all non-clothing (and non-disposable) items that come in contact with an infected wound with a solution of one tablespoon household bleach mixed in one quart of water (must be prepared fresh each day) or a store-bought cleaning product that contains phenol, which is a mildly acidic and toxic coal byproduct used as a disinfectant
- Wash linens and clothes that become soiled with hot water and laundry detergent. Drying clothes in a hot dryer, rather than air-drying, also helps kill bacteria in clothes.
- Wash utensils and dishes in the usual manner with soap and hot water or use a standard home dishwasher
- Avoid participating in contact sports or in other skin-to-skin contact until an infected wound has completely healed

Of the students polled, 88 percent reported that the lack of cleanliness becomes a distraction at Level 3 and Level 4. Eighty-four percent reported that they need Level 1 or Level 2 cleanliness to create a positive learning environment. Nearly 80 percent responded that a lack of cleanliness has an impact on their health and that this lack of cleanliness can also affect allergies, spread germs, increase bug and rodent infestations, and promote higher stress levels.

"These findings provide a vital tool for facility service providers to reinforce the benefits of cleaning; there's also a great deal of public-relations power in that message if an institution can use its cleaning program to inform students and their families what it is doing to protect the well-being of its population," said ISSA Executive Director John Garfinkel on the ISSA website (*www.issa.com*). The full report is available at no charge to APPA and ISSA members at *www.appa.org/bookstore/product_browse. cfm?itemnumber=438*.

THE SOLUTION

Sounds like common sense, doesn't it? Keep educational facilities as clean as possible and the outbreak of potentially deadly MRSA incidents will be curbed, while students will also experience higher classroom achievement. It's in the process of determining the best way to clean an educational facility where the fly enters the ointment.

Through the years, traditional methods of sanitation—especially in restrooms—have involved often-unpleasant "hands on" cleaning, where the cleaning staff has to get down on its hands and knees and scrub floors, partitions, and the underside of counters and fixtures with a wide variety of hand-applied cleaning chemicals, which then had to be wiped off or swabbed up with a mop that oftentimes went back-and-forth into a bucket containing dirty water. This method of cleaning not only brings the cleaning staff into close contact with any germs or bacteria that might be present, but with its repetitive stooping, bending, and scrubbing, also takes a physical toll.

Therefore, this type of cleaning regimen can often lead to lowered employee morale, increased employee turnover, higher associated training costs, and—most

important to the public—ineffective cleaning practices.

To do away with this method of cleaning and sanitation, strides have been made in the development and implementation of automatic/touch-free cleaning systems for daily cleaning applications. The machines that are setting the standard in this growing market are affordable, battery-powered, self-contained portable-cleaning systems that use correctly dosed cleaning chemicals that are applied by spray nozzle using low-flow/low-pressure technology. With these

Educational
WRAP-UP

AUSTIN INSTITUTE & TOOLKIT –
ANOTHER GREAT SET OF OFFERINGS

September 2008 marked another successful APPA professional development programmatic offering with the Institute for Facilities Management and the Supervisor's Toolkit in Austin, Texas. The week was marked with outstanding course offerings and numerous opportunities for networking among facilities professionals from all over the world.

The Institute continues to offer top-notch content in the core areas of general administration, maintenance & operations, energy & utilities and planning, design and construction. The dedication of the Deans—**Mary Vosevich**, General Administration, **Jay Klingel**, Operations &Maintenance, **Lynne Finn**, Energy & Utilities, and **Don Guckert**, Planning, Design and Construction—once again showed through with the variety of course offerings that provided broad range of topical material for the facilities professional. Students had the opportunity of interactions with experts who brought not only their knowledge but their experiences from vast backgrounds that provided a rich environment.

While our Institute faculty were submerged with their students, our Supervisor's Toolkit trainers, **Carol Trexler** and **Michelle Estep-Frederick**, were teaching the newest techniques to the front-line supervisors who joined us for the week. This group spent an intense week learning how to operate in their new role as supervisors or honing their skills as they are advancing through the facility organizations they support. The Toolkit participants benefitted tremendously from this tailored program designed for facilities professionals by facilities professionals.

The week concluded with graduation of 81 members of the Class of September 2008. Celebration of graduation was also joined with those who completed various core areas of the Institute program and the Supervisor's Toolkit. Sharing the achievement with old friends and new colleagues made for a great evening.

Please visit *www.appa.org* for more information and registration dates. We hope to see you soon! ⑤

Institute Graduates

Toolkit Participants

September 2008 Institute Graduates

Christian Aaroe, University of North Carolina/Greensboro
Lisa Adair, University of Colorado
Ramiro Arocha, University of Miami/Coral Gables
Frank Baker, Salt Lake Community College
Pete Beaulieu, Illinois State University/Normal
Cindy Bell, University of Nebraska/Lincoln
Cheryl Bennett, University of New Haven
Mark Bevington, University of Michigan/Ann Arbor
Mark Boyette, Baldwin-Wallace College
Tom Calvert, University of Rochester
Judith Clay, University of Rochester
Thomas Conlon, Phillips Academy
Kyle Cooper, University of Texas/Austin
Michael DeBerger, University of Rochester
Ken Doiron, University of Maine/Orono
Hollis Dyer, Texas Christian University
William Elvey, University of Texas/Dallas
Gregory Foster, Woodward Academy
Leonard Friesenhah, University of Texas/Austin
Cynthia Garcia, University of Utah
David Hawley, Capstone Management
Abraham Hernandez, University of Texas/Brownsville
Billy Hromas, University of New Mexico
Perry Hull, University of Utah
Douglas Hurd, University of Virginia

Jerman Johnson, University of Miami/Coral Gables
Tammy Johnson, Cornell University/Ithaca
Ralph Jones, University of Texas/Austin
William Kerbusch, Baldwin-Wallace College
Thomas Knowles, University of South Carolina
Howard Larosee, Massachusetts College of Art
Rich Le Moal, Old Dominion University
Hal Lusk, Purdue University/Calumet
Lawrence Maginnis, University of Texas/Austin
Steven Mast, University of Illinois/Urbana-Champaign
Joseph McDonald, Olin College of Engineering
Matthew McKinnon, Dalhousie University
Ellen Newell, Arizona State University
Steve Peary, University of Maine/Orono
Shirley Pinkett, Spelman College
David Ramirez, Saint Mary's University/Texas
Jamieson Riggi, University of Rochester/Hospital
Joseph Rink, University of Rochester
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Albert Scott, North Carolina State University
Victor Silverman, UCLA
Todd Smith, Lane Community College
Brion Stewart, Michigan State University
Randy Stitt, Woodward Academy
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Brian Ward, Northern Arizona University
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Nancy Webb, University of South Florida

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Mitchell Carlson, University of Texas/El Paso
Laura Clay, Winona State University
Paul Cole, West Virginia University
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Newman Forrester, University of Colorado/Denver
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Manuel Granillo Jr., Skyline College
Karl Greis, Colorado College
Jim Gummoe, Colorado School of Mines
Kathy Hill, Baylor University
Robert Lawrence, Claremont McKenna College

John Lawson, West Virginia University
Gary Morgan, Kansas State University
Nancy Nelton, Winona State University
Harold Ostler, Brigham Young University/Utah
Ashraph Pahalwan, College of Science Tech & Applied Arts Trinidad & Tobago
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Special Considerations for Multiple Fire Alarm Systems in Educational Facilities

By Michael A. Anthony, P.E., and Rodger Reiswig, S.E.T.

"*R*unaway reset*" in fire alarm systems in large evolving educational buildings with multiple fire alarm control units can elevate risk to occupants, security personnel, and technicians. Fortunately, the fix is easy.*

THE PROBLEM

Buildings with multiple fire alarm control units (FACUs) come into being because facility professionals have enough budget to install a new FACU for a limited part of a building, but not enough money to bring the entire existing system onto a single addressable platform. As life safety infrastructure evolves in a building, the FACU inter-face evolves into something that was not the intention of the original design when only one FACU was required.

For example, assume a single FACU was installed that conformed to the Fire Alarm Code in effect at the time. When a new wing, or a new addition, is constructed ten years later, the fire alarm system is treated as a new project. The infrastructure systems are developed as separate systems. If each succeeding FACU were hardwired to reset the other in a peer-to-peer fashion you may end up with "runaway reset" or silence function as each panel is trying to reset or silence the other continually. [See Figure 1] When this happens, the fire alarm control units will function properly during the first activation but typically not for additional activations. This is often the single most common nuisance problem that occurs when multiple control units are interconnected with relays.

The absence of an effective system that ties all the FACUs leads to cognitive problems. When multiple FACUs are not completely interconnected, there are operational costs – and elevated risk levels – associated with operator and occupant confusion. In recent years, there has been much debate over the cognitive aspects of notification devices – most notably annunciation devices that will wake up sleeping occupants. The cognitive problems associated with FACUs that cannot be reset after an alarm or trouble condition is less well known.

Figure 1. Runaway Reset

Consider two different FACUs: Zone System A built by Manufacturer A in 1978 and Addressable System B, built by Manufacturer B in 2008. The newer System B permits reset at any annunciation panel. System A requires reset at the FACU only.

Because the FACUs are installed at two different locations it takes two technicians – typically communicating by radio – to perform the procedure: (Silence A+ Silence B+ Reset A+ Reset B). Without the ability to reset the interconnected fire alarm system from a single location, both systems enter an alarm condition again (re-ring), usually within seconds.

Risk is increased when security officers, who are not trained technicians, have to deal with the re-ring condition. Multiple reset locations create hazards because if there is only a single security officer available, a multi-FACU installation cannot be reset.


Figure 2. NFPA 72-2007 Section 6.8.2.1

Fire alarm systems shall be permitted to be either integrated systems combining all detection, notification, and auxiliary functions in a single system or a combination of component subsystems. Fire alarm system components shall be permitted to share control equipment or shall be able to operate as stand-alone subsystems, but, in any case, they shall be arranged to function as a single system.

The language in NFPA 72 that seems to address this condition appears in Figure 2; language that has existed in NFPA since 1999. A careful reading of 6.8.2.1 reveals some ambiguity, however. It starts out reading like permissive language but ends with a phrase that sounds prescriptive – and mandatory. The difficulty in

Figure 3.

Upper Diagram shows three FACUs in different locations, all interconnected, without single reset. Lower Diagram: The same three FACUs with a single reset.
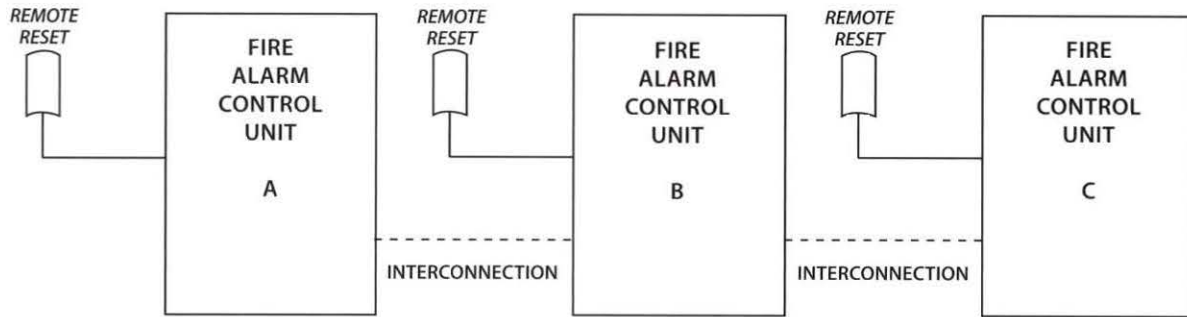
MULTIPLE RESET FIRE ALARM SYSTEM CONFIGURATION WHICH CAN CONFUSE OCCUPANTS, TECHNICIANS AND SECURITY PERSONNEL WHEN THE FACU'S ARE WIDELY SEPARATED AND ARE A MIX OF NEW AND LEGACY TECHNOLOGIES FROM DIFFERENT MANUFACTURERS
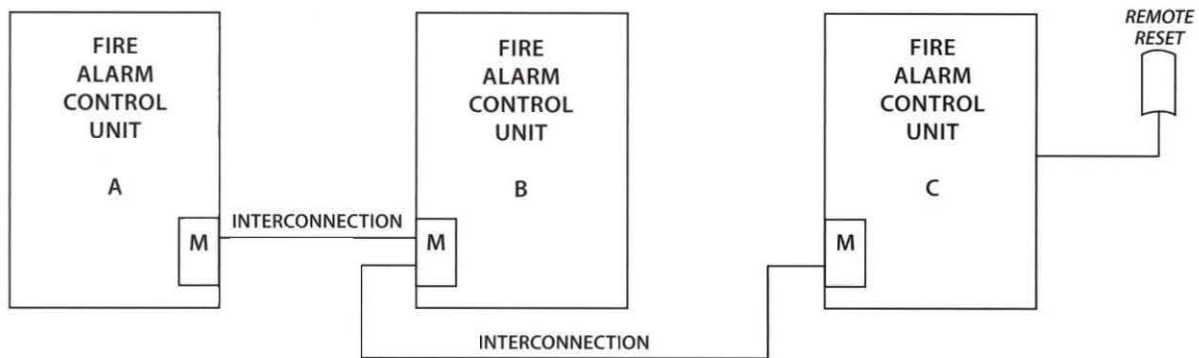
SINGLE RESET CONFIGURATION ADDRESSED BY NFPA 72-2007, SECTION 6.8.2.1

Drawing by John Birkle & Ted Nicholson, University of Michigan Fire Alarm Shop

According to Dan Decker at Fire Safety Systems (*www.safetysystemsinc.net*), $250 for each FACU would cover the cost of providing components, related programming, and commissioning for the addressable modules (shown as Ms in this figure). The cost of running signaling conduit and wiring would have to be added to this cost. The entire installation would obviously vary depending on the specific locations of the circuits and panels involved.

the interpretation 6.8.2.1, as well as its position in the NFPA 72 text, may explain why it is easy for fire alarm designers to overlook its implications.

THE SOLUTION

When two addressable systems are linked together to function as a single system, resetting the panel that is the source of the alarm should stop the alarm signals from sounding on the interconnected panel. You only need to install non-latching monitor modules to monitor the status of the alarm contacts on a panel, and utilize resettable addressable output relays for alarm trigger and alarm reset functions. (See Figure 3) When your technicians do this they will want to define which control unit will be the primary FACU and which

FACU will be the secondary. This will cause the FACU to function properly during the first activation but not cause nuisance activation of the secondary FACU.

APPA's Code Advisory Task force submitted a proposal to amend the 2011 Fire Alarm Code in order to put this issue in front of the country's top fire alarm experts. At the very least, we have started a discussion on an issue that is rather common in our industry, and may become more common as facility executives struggle try to squeeze the most functionality from existing legacy life safety infrastructure. ⑤

Michael A. Anthony, project engineer at the University of Michigan, is a member of APPA's Code Advisory Task Force and a

member of Code-Making Panel-1 of the on the National Electric Code. He may be reached at *maanthon@umich.edu*.

Rodger Reiswig, S.E.T, is director of industry relations at SimplexGrinnell, Boca Raton, FL, and a member of two technical committees on the National Fire Alarm Code. He is an advisor to the NFPA on many life safety committees. He may be reached at *rreiswig@simplexgrinnell.com*. This is his first article for *Facilities Manager*.

Additional contributors included: Dan Decker, president and COO of Safety Systems, Inc., Jackson, MI.; John Birkle, foreman of the University of Michigan Fire Alarm Shop; and Ted Nicholson, technician in the University of Michigan Fire Alarm Shop.

Maintenance is More Than "Maintenance"

By Matt Adams, P.E.

Now that budgets will be scrutinized with an ever sharper pencil due to current economic conditions, the maintenance budget will get its usual "second look" from administration. Capital budgets, operation budgets, training budgets, and every other budget will get a haircut this time. We have been through this before and will make do and continue to serve the mission of our institutions. However, it's been a few years since we had a major downturn in the economy, and this time there is some new thinking about the services we provide.

DEFERRED MAINTENANCE VS. DEFERRED RENOVATIONS

We have learned during recent years that there is a distinct difference between deferred maintenance and deferred renovations. New industry best practices have also taught us that planned maintenance includes many sub tasks and that even preventive maintenance can be further broken down into more definitive levels. Even with the increased rationalization of maintenance services there is still the overriding desire to convert what is commonly referred to as UPM (or unplanned maintenance) into planned maintenance.

This has always been the "holy grail" of maintenance planning and budgeting efforts. Prevailing wisdom suggests that there are a number of strategies that will help transition a plant maintenance department from reactive to planned mode. Most if not all of these strategies rely on the ideal that there are two primary services that the maintenance department provides: planned maintenance and unplanned maintenance. In fact, we now know that these services are only two slices of a total budget resource pie that includes as many as seven other pieces, all relevant.

In New York City, Bob Gavlik, director of operations, City Zoos and New York Aquarium, is keenly aware of the other non-maintenance, maintenance services. At any one of the parks operated by the Wildlife Conservations Society (The Bronx Zoo, Prospect Park Zoo, Central Park Zoo, Queens Zoo, and the New York Aquarium), there is an overriding priority to keep the animals safe and healthy and the guests happy. Does this sound familiar to what some of the auxiliary enterprises operating within our educational institutions have proclaimed for years? Resident Life departments have always focused on students and customer satisfaction as priorities.

For Gavlik, unplanned maintenance is a reality, and while it can be managed, it will never go away. Furthermore, based on the mission of the parks, he is most often judged by the effectiveness of the staff to unplanned failures and emergencies and other non-planned maintenance services. "Given this defined service priority and limited staff, putting out fires becomes the specialty." First of all, the budget is affected by the priority of keeping the parks going. Given budget shortfalls, the other items of planned maintenance will by default take a second seat at the table. Furthermore, it's hard to mix a quick reaction team mentality with a long-term planned maintenance mentality. We have all seen this in the trades.

There will never be enough money to provide all of the services that our stakeholders desire. As budgets shrink, we will be able to provide less and less. Given this, managers can either spread limited (staff) resources thinner and thinner, or prioritize services. Unfortunately, for many cultural and political reasons, many of our peers continue to spread their departments thinner and thinner. Stepping back, it's easy to see that over time, this is a losing plan. It's like the saying goes, "One size fits none."

DEFINING OUR SERVICES

New self-analysis has taught us to further delineate and define the distinct services we provide. For example, the cost in terms of trade staff hours required for the following activities are rarely tracked or budgeted, but they should be:

- Moves and set-ups
- Special events like fund drives
- Meetings or graduation
- Support for sporting events
- Escort of contractors
- Summer camps
- Daily goodwill services to customers
- Off-hours coverage by staff
- Required annual testing
- Clean-up of contractor work

It is revealing to create a list of all "non-maintenance" maintenance services and estimate the workload associated with each. At some places, like the Zoos in New York, substantial time is spent on a number of activities associated with external contractors. In fact, the converted labor cost is always substantial enough that it must also be included in any make vs. buy analysis of outsourced trade activities.

Given that that there will be a need to reduce cost in the next year or two, it must be made clear what services are "must-haves" and what are "nice-to-haves." In other words, based on the mission of your institution, what are the priorities assigned to the maintenance and non-maintenance activities newly delineated? It might be that given a transparent breakdown of staff hour requirements for each current service, the budget office or senior administration might have to make the choice of reducing the department's workload by service type, or at least reduce service levels in lower-priority functions. As Bob Gavlik interprets this reality, "It might not be in the best interest of the maintenance staff to take on the responsibility of planned maintenance if they are charged to prioritize emergency response. Perhaps contractors or another unit should be created to serve this need with a different budget."

Clearly in the absence of clearly defined current service types, institutional priorities, and reduced budgets, no one will be happy with services during the coming years of budget downturns. However, those proactive managers that recognize the need to ungroup and rationalize the difference between maintenance and non-maintenance services will succeed. ⑤

Matt Adams is president of FM² , Atlanta, GA. He can be reached at *matt@adams fm2.com*.

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

My thanks once again

to Suzanne Drew, the University of Nebraska's Facility Management and Planning director of training and staff development. She has reviewed a book made available *FREE* to APPA 2008 Conference attendees by the speaker and author, Marcus Buckingham; and a book for those dealing with large group meetings. I heard Mr. Buckingham speak and bought additional copies of his book for my staff; the review indicates the value of my decision.

As we come to the close of the calendar year I'll wish you good health and success in your job and personal life in the coming year. Peace! — TW.

Reviewed by Suzanne Drew
GO PUT YOUR STRENGTHS TO WORK: 6 POWERFUL STEPS TO ACHIEVE OUTSTANDING PERFORMANCE
By Marcus Buckingham, Free Press, a Division of Simon & Schuster, Inc., New York, 266 pages hardcover, $30

Millions of people have completed Gallup's online personality profile to help them describe their innate abilities and interests. Millions of others have completed other assessments to explain why they are drawn to and naturally skilled at various tasks, behaviors, and situations both at work and in life. Unfortunately, while they may be accurate and descriptive, few of these insights also come with explicit direction or prescription as to what to do with this information. With *Go Put Your Strengths to Work*, Marcus Buckingham offers a simple and effective process to use this knowledge to increase individual and group performance, productivity, and job engagement.

First, he recommends you identify a few specific activities at which you are truly strong: to which you are drawn, at which you are consistently successful, that you feel good doing, and satisfied when done. After considering exactly how, when, and why you find these activities so fulfilling, the next step is to evaluate how this strength or talent helps you contribute in your current role and how you might be able to build upon it to you and your organization's shared benefit.

Next, Buckingham suggests that you identify a few specific activities which require you to play to some of your innate weaknesses; activities that leave you drained and searching for a way to avoid it. After considering exactly how, why, and when these activities sap your energy and momentum, evaluate what options exist to either do less of this activity, do it differently or at least think about it differently.

Finally, the author provides guidance on how to both manage your time and talk to others about these strengths and weaknesses to enlist their support in making the best use of your talents and accommodating your weak spots.

*Go Put Your Strengths To Work* is writ-ten as a six-week, six-step, quick-read workbook to help you and your team members increase performance, productivity, and engagement. The recommended steps are simple and practical. The advice on how to discuss personal strengths and weaknesses with others is sensible and pragmatic. The support materials are engaging and useful. The examples are interesting and instructive. And, best of all, the possible benefits of implementation are enormous.

Reviewed by Suzanne Drew
QUICK MEETING OPENERS FOR BUSY MANAGERS
By Brian Cole Miller, AMACOM, New York, 168 pages, softcover, $17.96 (also available for Kindle, $9.99)

I hate hand-written name tags. For that matter, I also try to avoid meetings that involve preprinted name tags. It isn't really the nametags that I dislike; it's the probability that I may be involved in some sort of "get-to-know-you" exercise with other people wearing name tags.
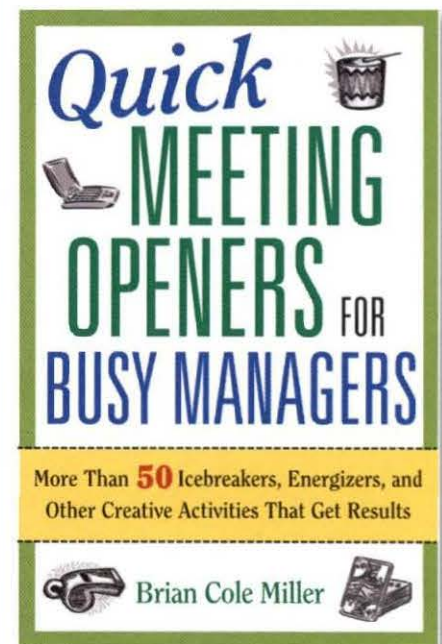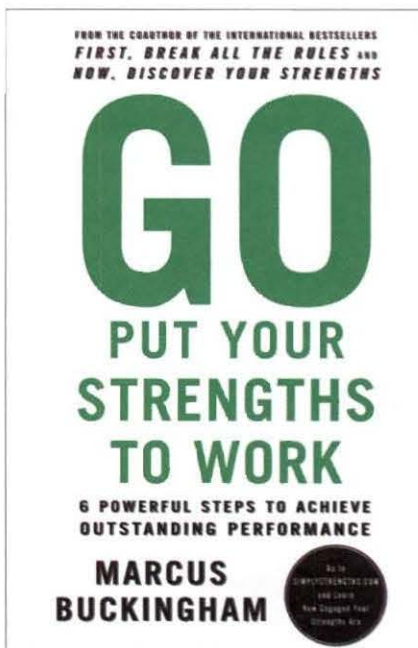
That said, I acknowledge that these exercises can be fairly useful and surprisingly productive in providing people with a shared experience, for starting conversations, and for jump-starting networking connections and relationships. The creation of a new work group or a newly convened project task force may well benefit from a group exercise that forces people to introduce themselves and allow them to start to get a read on each other. Grudgingly, I have to also admit that I have even seen preexisting groups and coworkers establish new dynamics and forge new relationships as a result of this type of group exercise.

Quick Meeting Openers for Busy Managers, by Brian Cole Miller, is a collection of quick and easy ideas to get groups talking, moving, and interacting with each other. The book is organized by purpose of activity and size of group: activities to foster introductions, playful exercises to divide large groups into smaller ones, conversation starters and games to get people moving, talking, and interacting.

Some suggestions focus on the purpose and process of the meeting at hand. For example, everyone write down and post one thing they hope to contribute or learn from the session. Other suggestions are designed to get people thinking positively or creatively. Others just get people moving, talking, and maybe laughing.

If you find yourself in a situation where you need to arrange some sort of group interaction, either to get the meeting started, to break up a long day or break up into smaller groups, to wrap things up on a high note or get people interacting in new ways, *Quick Meeting Openers* can be a great resource. It has lots of ideas, it is very easy to read, and includes useful descriptions and practical tips and applications for each of its simple and

usually no-cost exercises. Name tags not included. ⑤

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facilities management & planning at the university of Nebraska–Lincoln; he can be reached at *tweidner2@ unlnotes.unl.edu*.

systems, the chemicals do the cleaning, not high pressure. This low-pressure cleaning protects fixtures and grout from water damage and eliminates the spray-back of bacteria-contaminated water, all of which may occur with high-pressure (500+ psi) cleaning systems. Their design and operation also supports ongoing efforts to eliminate from public restrooms the bacteria that cause staph infections. *ISSA 447 Cleaning Times* shows that the use of touchless cleaning technology can reduce fixture-cleaning time by as much as 67 percent. In addition, touch-free cleaning systems are kind to the environment, with less water and chemicals used when compared with traditional cleaning methods.

Forest Hills School District is a unit school district located southeast of Cincinnati with 7,750 total students who attend six elementary schools, one middle school, and two high schools. Of the district's nine facilities, the flagship building is Wilson Elementary, which opened in 1959 and has been expanded twice in the ensuing five decades.

Kevin Reid, assistant head of maintenance and district supervisor of the custodial staff for Forest Hills School District, had employed traditional cleaning techniques in order to get the building ready for the daily onslaught of students, PTA meetings, and other extracurricular and community activities that make up the daily life of an elementary school these days. In March 2007, his custodial staff began using an automatic/touch-free cleaning system for daily cleaning applications. Positive results were noted almost immediately.

"The guys at Wilson love it. It really helps them a lot. It's kind of neat that this is an older building, but it has a professional, friendly, and caring staff that provides the students a clean, nice environment that helps them produce good test scores," said Reid. "That is the case at all of our schools, and we take a lot of pride in that."

CONCLUSION

The level of personal hygiene will always be at the whim of the individual, but when it comes to facilities, operators and managers have no recourse but to provide the most hygienic surroundings possible for their patrons. While the rate of reported MRSA outbreaks continues to grow alarmingly, the high-profile events of 2007 have shed some much-needed light on the importance of cleanliness in educational facilities. And now, along with this disease prevention, come the results of the APPA study that indicates that cleaner educational settings also lead to higher academic achievement.

With this added emphasis on cleanliness, new technologies and revamped custodial processes provide the perfect solution to the cleaning needs of all manner of educational facilities. The desired results include eliminating the physical hardship on the custodial staff and helping provide not only a disease-free learning environment, but one that maximizes the abilities of the students who inhabit it. ⑤

Chris Torry is ICS sales manager of Hydro Systems Co., Cincinnati, OH; he can be reached at *ctorry@hydrosystemsco.com*. This is his first article for *Facilities Manager*.

Compiled by Gerry Van Treeck

EnvirOx, LLC offers Scrub Buddy™ which combines a powerful, convenient scrub action with a one-touch, on-board dispensing system designed for applying environmentally preferred cleaning products by EnvirOx. Use it on both floors and walls, as it weighs just 4.5 pounds. A changeable scrub head simultaneously cleans floor and baseboard. It maneuvers easily into the tightest areas with a scrub head size of 7.5 inches. Battery-powered for complete portability. Perfect for baseboards, restrooms, stairs, and high traffic areas. For more information visit EnvirOx, LLC at *www.EnvirOxLLC.com*.

Metabo Corporation announces that its new P'7911 multihammer, which was developed in conjunction with the Porsche Design Group, is now available in North America. The Porsche Design P'7911 combines all the essential functions of a drill with the power of a pneumatic hammer and drills into concrete, stone, wood, and steel, with just one switch for convenient alternating between any of the tool's five different functions. The tool's unique housing, made of carbon fiber and aluminium, provides great rigidity and strength. With the handle mounted on top of the housing, the P'7911 is easy to operate because the forces acting are almost perfectly balanced, both in the patented "on top" handle position and when drilling above shoulder height. For additional information visit Metabo Corporation at *www.metabousa.com*.

Component Hardware Group is utilizing SANIGUARD® antimicrobial treatment to keep their customized water features free of bacteria, molds and viruses. SANIGUARD is a proven, cost-effective, inorganic antimicrobial treatment that utilizes a silver ion-based technology to retard the growth of bacteria, molds and some viruses on treated surfaces such as water tanks, faucet handles, door knobs, flush handles, and other touch points for the life of the product. The proprietary coating is currently the only antimicrobial treatment to meet National Sanitation Foundation (NSF) Protocol P345 for antimicrobial efficacy. For more information about Component Hardware Group visit *www.componenthardware.com*.

Powers Fasteners, Inc. has introduced the Power-Stud™+SD2 carbon steel bolt as one of the industry's first mechanical anchors to meet the new more stringent International Building Code (IBC). The Power-Stud+SD2 is a one-piece fully threaded, wedge anchor that is designed for concrete and other masonry applications. Because of its new one-piece stainless steel clip design, the anchor has more holding power than the company's existing Power-Stud. The bolt is available in 3/8" diameters (3", 3¾" and 5" lengths); ½" diameters (3¾", 4½", 5½", 7" and 8½" lengths); 5/8" diameters (4¾", 5", 6" 7" and 8½" lengths); and ¾" diameters (5½", 6¼" 7" and 8½" lengths). For additional details visit Powers Fasteners, Inc. at *www.powers.com*.

Cat Lift Trucks introduces the P17500 – P36000 series diesel pneumatic tire lift truck which features a new turbocharged engine, hydraulic fingertip control system, and ergonomic styling. With six different capacities ranging from 17,500 to 36,000 lbs., these trucks are ready to tackle the most demanding customer applications. For optimal performance, the P17500 – P36000 relies on the turbocharged diesel engine equipped with a common rail fuel delivery system that assures even and high-pressure fuel delivery to all six cylinders allowing for swift acceleration, low noise, and reliable performance. The P36000 also features standard oil cooled wet disc brakes. For further information visit Cat Lift Trucks at *www.cat-lift.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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