MARCH/APRIL 1997
VOLUME 13
NUMBER 2

Facilities Manager

The official publication of APPA: The Association of Higher Education Facilities Officers

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Facilities Manager

The Official Publication of APPA: The Association of Higher Education Facilities Officers

Volume 13 Number 2 March/April 1997

FEATURES

Departments

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Kristina Dow - Facilities Manager
Trinity College, Hartford, CT

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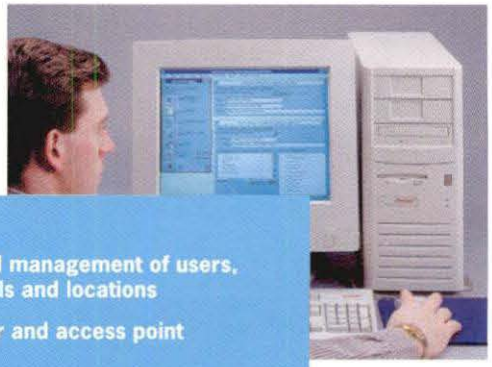

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From The Editor

Steve Glazner

Deferred maintenance has finally been recognized as a problem in our elementary and secondary schools. While colleges and universities continue to wrestle with the issue after years of growing knowledge and concern, a spotlight was aimed at K-12 facilities by President Clinton during his recent State of the Union address. It is true that he did not use the term "deferred maintenance," but the point was crystal clear that the condition of our schools is now a priority in the support of educational advancement in the United States.

The President said, as the seventh of ten major points on education, "We cannot expect our children to raise themselves up in schools that are literally falling down. With the student population at an all-time high, and record numbers of schools buildings falling into disrepair, this has now become a serious national concern. Therefore, my budget includes a new initiative—$5 billion to help communities finance $20 billion in school construction over the next four years."

This issue of *Facilities Manager* suggests a number of ways in which all of our educational facilities organizations—higher education, K-12, and others—can continue to attack deferred maintenance and bring some stability to our stewardship of these most valuable capital assets.

As introduction we include Harvey Kaiser's Executive Summary from *A Foundation to Uphold*, the recently published APPA/NACUBO/Sallie Mae study of the conditions of higher education facilities in the United States. Dr. Kaiser also shares a model for a facilities renewal program that could be adopted and adapted by any facilities department.

You'll also find in this issue Ron Shelton's description of the U.S. Department of Energy's Rebuild America program and how APPA's Opportunity Assessment project melds perfectly with it. Pete van der Have addresses the critical importance of continuous assessment in all aspects of facilities operations, and Matt Adams provides a case study of a deferred maintenance success story at Louisiana State University. Finally, Dr. Jerry Davis, the primary researcher for *A Foundation to Uphold*, shares his findings on the Americans With Disabilities Act's contribution to the level of deferred maintenance on our campuses.

Further discussion of capital renewal and deferred maintenance will occur at APPA's 1997 Educational Conference and 84th Annual Meeting. The conference will be held July 13-15, 1997 at the Disney Dolphin on the property of Walt Disney World in Orlando, Florida. For an advance look at the meeting's activities, see a preview on pages 28–29. The preliminary program will be available within the next few weeks.

APPA News

Bill Whitman Retires

Congratulations go to Bill Whitman, past APPA President and associate vice president for facilities planning and management at Iowa State University, who retired on December 31 after thirty-six years of service.

Whitman began his career at Iowa State in 1960 as an engineer on construction projects. More than two-thirds of the current building space (in gross square footage) on campus has been constructed since Whitman became the head of facilities.

He was elected APPA's Vice President for Special Projects in 1982 and served for two years. From July 1982 to July 1987, Whitman progressively climbed from President-Elect to President to Immediate Past President of APPA.

Whitman has his sights set on a life of semi-leisure during his retirement. He and wife Toni built their house in 1962, and he now admits, "I have a fair amount of deferred maintenance to get after."

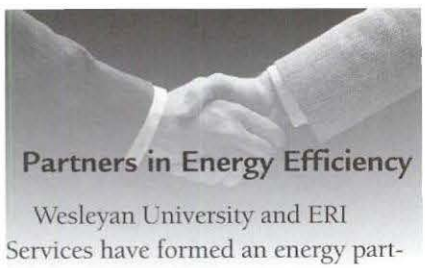
[Adopted from material provided by MAPPA and ISU.]

Sam Brewster Dies at Age 92

Sam Brewster, recipient of APPA's first Meritorious Service Award and APPA President in 1958, died last December in Provo, Utah at the age of 92. The Meritorious Service Award, APPA's highest individual honor, was presented to Brewster in 1958.

Brewster's specialty was landscape architecture, with degrees from Texas A&M University and the University of Massachusetts. He also did special studies in landscape architecture at Harvard University and in England.

Brewster served as Brigham Young University's director of physical plant from 1957 until his retirement in 1974. During his tenure at BYU, he was responsible for the completion of 118 buildings, as well as contributing to the campuses of Ricks College and other LDS church schools in Mexico, Samoa, New Zealand, and Hawaii. Upon his retirement, BYU named its physical plant building after him. In addition, the school awarded him an honorary doctorate in public service.



Partners in Energy Efficiency

Wesleyan University and ERI Services have formed an energy partnership in which ERI Services will manage all of the energy needs of the campus, and upgrade its energy facilities. Wesleyan, a coeducational university, currently has 2,700 students on its 40-acre campus.

As energy manager for Wesleyan, ERI Services will review all energy requirements for the university, establish annual energy budgets and develop future energy related projects. It will upgrade the central chilled water plant, eliminating inefficient and environmentally damaging chlorofluorocarbon electric chillers used for air-conditioning, making the campus virtually chlorofluorocarbon free.

The new system is expected to provide several benefits to the university, including increased reliability of cooling; easier maintenance of the centralized plant; increased operational efficiencies and improved space availability at building locations.

Customers Given "Green" Energy Options

On January 1, Massachusetts Electric Company launched a one-year pilot program entitled "Choice: New England." This pilot, one of the first of its type in the nation, will provide an estimated 10,000 residents and small businesses in Lawrence, Lynn, Northampton, and Worcester, Massachusetts, a choice of energy options and services.

Enova Energy has been chosen to participate in the program and will offer volunteer participants low-cost and "green" energy options that emphasize a number of innovative and environmentally-focused products and services. Their low-cost option features a competitive price significantly lower than customers' existing rates and a monthly newsletter detailing the pilot program's savings along with some energy-saving tips. The "green" option includes monthly newsletters and a special energy/environmental savers-kit. As a special bonus, Enova Energy will automatically enter participants who have stayed in the pilot program for the entire year into a raffle for a high-tech electric car.

Light the Way Cheaply

The U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) are promoting the use of energy-efficient equipment by awarding the ENERGY STAR label to products that save energy, help prevent air pollution, and reduce utility bill costs. Why consider energy-efficient exit signs? There are over 100 million exit signs in buildings throughout the country, operating 24 hours a day, 365 days a year. Each sign consumes between 44 and 350 kilowatt-hours of electricity per year. Cumulatively, we spend about $1 billion annually just to operate all the exit signs in buildings in the U.S.

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NAESCO Challenges Old Energy Ideas

The National Association of Energy Services Companies (NAESCO), co-funded by The Energy Fitness Program of the U.S. Department of Energy, has published a report entitled *The Energy Service Industry: Revolutionizing Energy Use in the United States*. Authored by Jessica Lefevre, legislative counsel to NAESCO, the report challenges the "turn-down-the-thermostat" approach to energy conservation and focuses on projects that improve energy efficiency with current technologies while still maintaining or even improving indoor conditions. Readers are offered several case studies, including many K-12 school districts, which illustrate how schools can optimize their use of local tax revenues or multiply their savings by financing energy efficiency retrofits out of energy savings. Other case studies involving school districts emphasize an Energy Service Company's ability to customize solutions for public and private sector companies.

An Energy Service Company, or ESCO, is a company which develops, installs, and finances comprehensive, performance-based projects. Rather than merely offering advice at no risk to themselves, ESCOs' compensation for a performance-based project, and perhaps even the project's financing itself, are dependent upon the amount of energy actually saved. Core technologies such as high-efficiency lighting, heating and air-conditioning, motors and variable speed drives, and energy management systems often afford ESCOs the opportunity to utilize other, more innovative energy efficiency solutions such as cogeneration or renewable energy technologies.

To obtain a copy of this report or to receive more information about the energy service industry, please contact Mary Lee Berger-Hughes at 202-371-7816 or write the National Association of Energy Service Companies, 1615 M Street, N.W., Suite 800, Washington, DC 20036.

UVA Wins Medal for Energy Efficiency

The Environmental Protection Agency awarded the University of Virginia with a Bronze Medal for being a top pollution preventer in their Green Lights program by upgrading 13 percent of its campuses' reportable 7.9 million net square feet. UVA officials present at the November 26 ceremony included Mark Doherty, director of university housing; Cheryl Gomez, director of utilities; John Griffin, buildings and grounds director for housing; Kenneth Smith, director of facilities planning and construction; Colette Capone, vice president for management and budget; Bob Dillman, chief facilities officer for facilities management; and Gene Shirley, deputy chief facilities officer.

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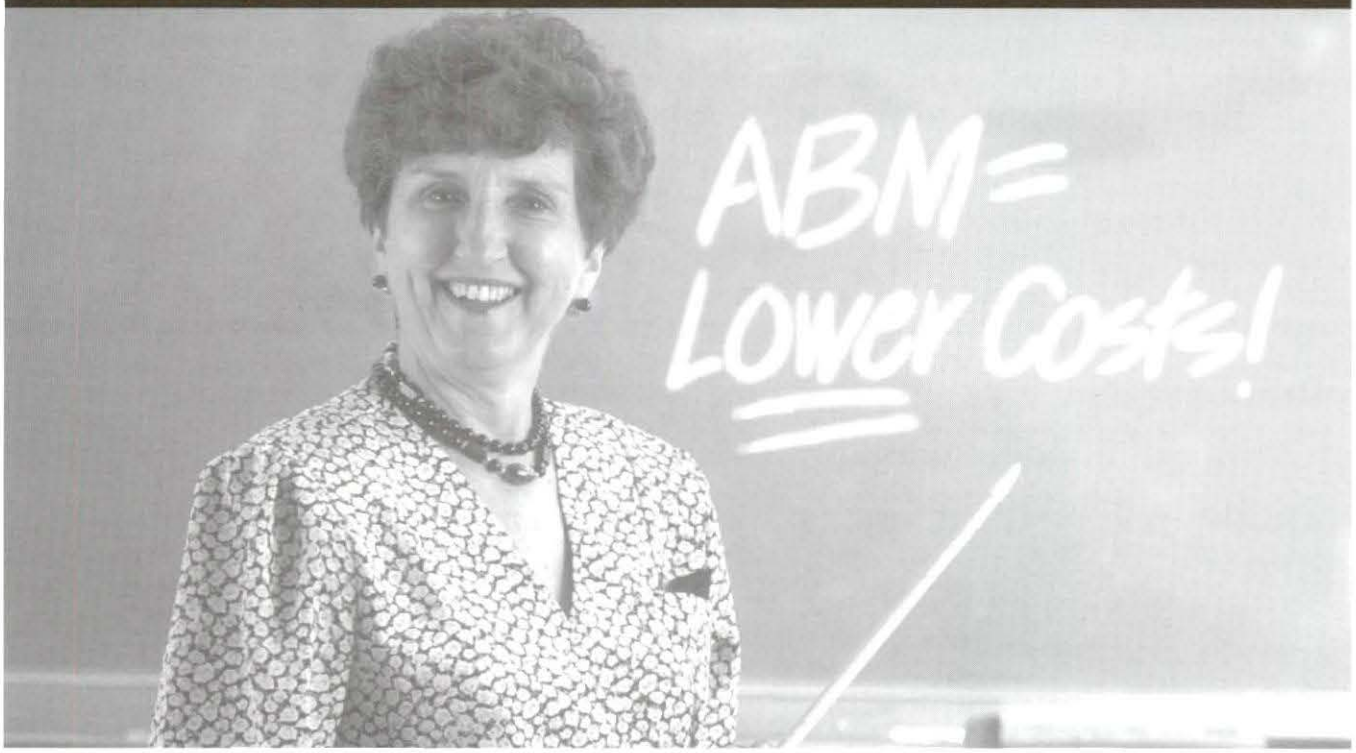

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Executive Summary

Upholding Our Educational Facilitites

by Wayne E. Leroy, CAE

This issue of *Facilities Manager* has a special focus on deferred maintenance and the need for facilities renewal on many college and university campuses. It is indeed an important and timely topic.

In 1988, APPA: The Association of Higher Education Facilities Officers, and NACUBO (National Association of College and University Business Officers), in cooperation with Coopers and Lybrand conducted a study, published in 1989 as *The Decaying American Campus: A Ticking Time Bomb*, to determine the extent of deferred maintenance and need for capital renewal. In summary that study revealed a backlog of $20 billion in accumulated deferred maintenance and a total capital renewal and deferred maintenance need of $60 billion!

It is probably not necessary to remind anyone of the conditions that existed during the last few years of the 1980s and the first half of the 1990s; but some highlights include:

- Reduced or static funding levels at most colleges and universities, especially in the areas of maintenance and operations.
- Additional campus square footage. In 1988 America's campuses had approximately 3 billion square feet of facilities; in 1995 college and university campuses in the United States had grown to 4 billion square feet. A 25 percent increase in space during the last eight years.
- Increased attention and financial resources committed to regulatory compliance areas such as handicapped accessibility, clean air, safe water, hazardous materials, life safety, and more.
- Rapid advances in electronic communication technologies; computers have become common place in the classroom, laboratory, dormitory, office, indeed every learning and workplace on the campus.

Wayne Leroy is APPA's executive vice president. He can be reached at leroy@appa.org.

APPA's recent report, *A Foundation to Uphold*, like any study contains some good news as well as some bad. Yes, the bad news is that accumulated deferred maintenance has increased, up to $26 billion in 1995 as compared to $20 billion in 1988; and the needs have intensified for facilities renewal. However, this is only to be expected with a billion square feet of additional space and funding levels static for maintenance and operations. A brief synopsis of the 1995 survey indicates:

- Fifty percent of the responding institutions in the 1995 survey indicated their deferred maintenance had increased or remained the same since 1988.
- Forty percent of the institutions reported their deferred maintenance had decreased since 1988.
- Ten percent of the campuses could not make a comparison between 1988 and 1995 levels of deferred maintenance.

For the purposes of this column, I want to focus on the 40 percent of the institutions where deferred maintenance decreased between 1988 and 1995 and highlight some of the reasons for the decrease.

1. *Strategic Planning*—For those institutions reporting a decrease in deferred maintenance, by far their most significant reason was institutional strategic planning. This involved raising the awareness of students, faculty, and administrators to the fact that facilities represents the largest capital asset of the institution, currently in the United States a $500 billion investment. This is then

coupled with the fact that facilities touches the lives of 17.5 million students, faculty, and staff on a daily basis. Facilities are important!

2. *Increased Funding Levels*—Very little can be accomplished without adequate financial resources. At institutions where deferred maintenance decreased additional funds were made available. For public institutions this was usually the result of a special legislative appropriation. Private colleges and universities accomplished enhanced funding levels through institutional budget priorities. It is interesting to note that a review of the fifty state legislative outlook for 1997 indicates about 15 percent of the states are requesting some type of special appropriation for deferred maintenance and facilities renewal.

3. *Institutional Priorities*—Due to demands from students, faculty, and the general public for delivering quality educational programs, and realizing quality education cannot be delivered without quality educational facilities, many institutions budget priorities have been favorable to facilities.

So, what are the "lessons learned" from the recent survey as they are applied to current conditions and situations? It is difficult to be a prognosticator, but it seems imminent that at least three conditions will continue to exist as institutions grapple with the issues of deferred maintenance and facilities renewal:

- Probability of scarce financial resources, especially for public institutions, will continue for the next several years. Competition for federal and state financial resources will intensify among groups such as higher education, K-12 education, criminal justice programs, health care, and welfare assistance.
- Increased demand for higher education. Current projections are for student enrollments to increase from the current 14.3 million students to 16.2 million by 2006.
- Public expectations during the next decade for higher education will be to provide greater accountability—accountability for the financial resources being provided and a value-added experience for students. Graduates of higher education institutions will be required to compete in a rapidly changing domestic economy as well as a global marketplace.

I encourage everyone to obtain a copy of *A Foundation to Uphold* as well as the forthcoming companion book of case studies. Use them as a resource and guide for developing appropriate strategies at your institution for resolving some of the issues related to deferred maintenance and facilities renewal. As an old saying goes, "The biggest pile of dirt can be moved, one shovelful at a time." The higher education facilities professional does indeed have a foundation to uphold.

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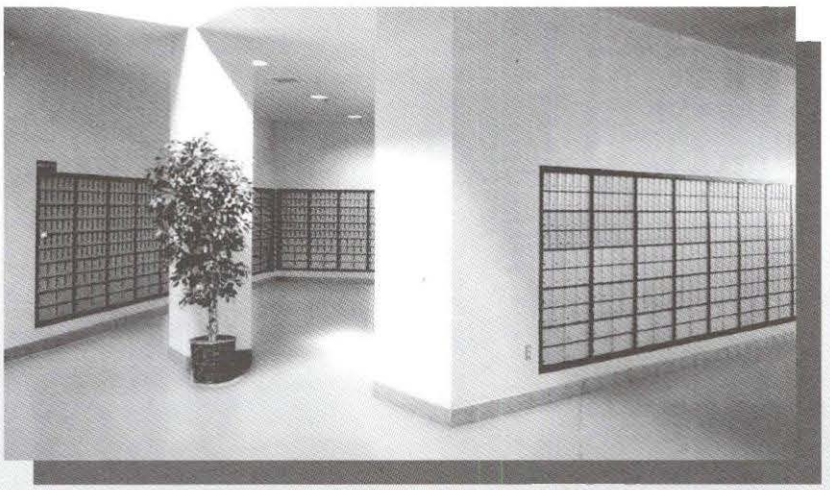

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Focus on Management

Deferred Maintenance: The Disease

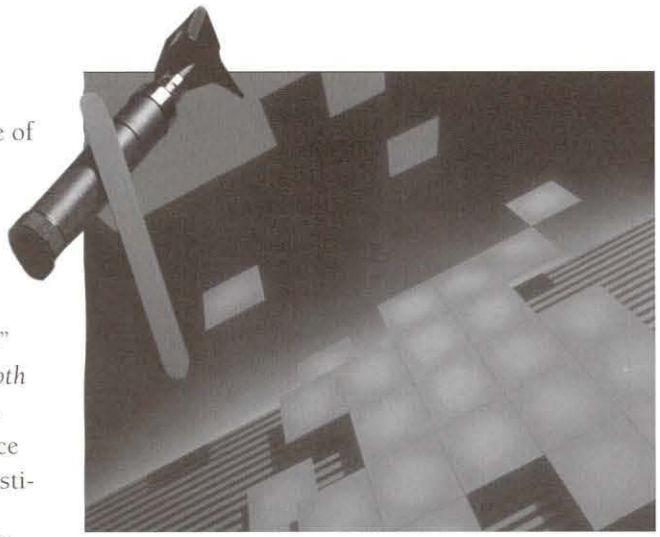
by H. Val Peterson

I HAVE concluded that deferred maintenance is much like a serious disease. It has the same symptoms, the treatment is much the same, and the effects can be just as devastating.

Several years back, APPA published a series of books titled Critical Issues in Facilities Management. In book number 4, *Capital Renewal and Deferred Maintenance*, there appeared a chapter called "Budgeting for Adequate Operation and Maintenance: Treating the Disease." As I read the chapter, I kept waiting for author John Burnett to fulfill my whetted interest and tell me the reason for referring to deferred maintenance as a disease. He never did. And so I was left to ponder the similarities on my own.

The more I thought about the similarities the more I was convinced that deferred maintenance is indeed much like a disease. The similarities are compelling.

- *The seriousness of the disease is sometimes not recognized.* Many times facilities look reasonably good on the exterior, but they are falling apart on the inside.
- *A complete checkup may be needed to determine if the disease exists.* The best way to determine the extent of deferred maintenance is by conducting a facilities audit or building condition survey.
- *Preventive medicine can lessen the chance of getting the disease.* If adequate funds are available to take care of ongoing maintenance needs, deferred maintenance can be avoided. This, however, is a big "if."



- *The disease afflicts both the rich and the poor.* Deferred maintenance has been noted in institutions that are well-endowed as well as those that struggle financially.
- *Once the disease is detected, good advice should be sought; sometimes a second opinion is advisable.* Experts abound in the field of deferred maintenance. It may be a good idea to shop around to find the "right" expert for your situation.
- *It is helpful to read up on the disease.* Much has been written about the subject of deferred maintenance and facilities managers have a wealth of materials available.
- *Consult the best experts available in both the prevention and treatment.* Again, there are professionals that are very knowledgeable about all aspects of deferred maintenance that are available to advise facilities managers.
- *Stress increases the chances of contracting the disease.* If budgets are "stressed" to the point of being inadequate, deferred maintenance will surely grow.
- *No one wants to pay for the cure.* Deferred maintenance does not compete well against other institutional priorities. It's not the type of project that excites governing boards, legislators or donors. No one would enjoy having "it" named after them.

Val Peterson is director of facilities management at Arizona State University, Tempe, Arizona, and a past APPA President. He can be reached at valpeterson@asu.edu.

- *It's like a social disease: it's very hard to eradicate completely and it's likely to crop up again.* Unfortunately, deferred maintenance, to some degree, will always be with us and it takes constant vigilance to keep it under control.
- *No one wants to talk about it.* It is difficult to get decision makers really excited about and willing to discuss deferred maintenance—that is, until the plant is literally falling down around them.
- *A good health maintenance plan can aid in the prevention.* Deferred maintenance does not just happen without a good long-range plan that breaks the problem down into bite-sized increments that are affordable.
- *If untreated, it can shorten the life span.* It is obvious that buildings will reach premature wear out if deferred maintenance is allowed to accumulate unabated.
- *The disease is rarely fatal if caught in time.* If you have a deferred maintenance problem, start working on it before it's too late.
- *The medicine can be bitter and hard to swallow, and it has been known to have harmful side effects.* Sometimes the "fix" for deferred maintenance is quite unpalatable, since other critical needs may have to be put on hold.
- *Proper monitoring and diagnostic procedures can keep rehabilitation on track.* A facilities manager should know the condition of facilities at all times and regular condition assessments are vital to an ongoing program to remedy deferred maintenance problems.
- *There are no "magic pills" and the treatment can be long and drawn out.* There is no "quick fix" to a long-standing deferred maintenance problem. It can only be cured over time with a consistent and ongoing effort.
- *Placebos do no good at all.* A cursory assessment and a less-than-sustained effort to remedy a deferred maintenance backlog will not achieve the desired results.
- *The disease is insidious and can spread throughout the system like a cancer.* If one does not pay proper attention, the gradual and cumulative effects of deferred maintenance may be out of control by the time it is fully evident.
- *Advanced stages can be deadly.* If a facility and its systems are neglected too long, the only option will be demolition.
- *Support groups are helpful.* All facilities managers fight deferred maintenance continually and it is advisable to network with other professionals to share good ideas and solutions.
- *Once cured, it can reoccur unless preventive treatment continues.* Solving deferred maintenance is not a one-time fix. It takes an ongoing effort.
- *Research is currently being conducted on how to fight the disease.* A new study completed by APPA and NACUBO with support from Sallie Mae, *A Foundation to Uphold*, documents that the deferred maintenance problem on U.S. campuses is still growing.

There it is. The similarities are shocking. It's no wonder that facilities managers sometimes get the reputation of being maintenance hypochondriacs. Maybe we will all wake up someday and find out that deferred maintenance is not really a disease—just a recurring bad dream. As it now stands, most of us already have nightmares over the problem. It's too bad that we can't just take a couple aspirin at bedtime and the problem would be gone by morning.

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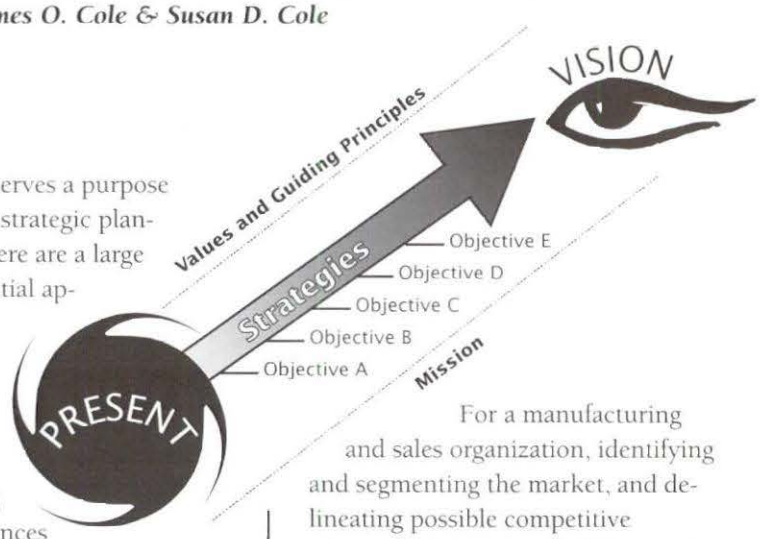
Strategically Planning

Strategic Planning Models

by James O. Cole & Susan D. Cole



IN the first article of this series (January/February issue) we addressed why strategic planning is a valuable and necessary investment of time for any organization. In this issue, we will address the "how to" of strategic planning by first exploring the nature of "models" and some of the factors that deserve consideration in the early stages of the process, and then looking at three of the many strategic planning models that are available.

Models

Models are important because they provide a general framework and a sound foundation from which to begin. From a model, more specific designs can evolve—allowing a model to be customized for the individual organization's needs.

Strategic planning models are similar to models in other aspects of our lives. For example, in the design and construction of buildings, one may utilize a truss system for support of the roof. The "model" for trusses describes, in general, how the weights and stresses of the roof are dispersed through the trusses to the walls. Any one particular building will have its own specific truss system, customized to that building's particular needs. Thus, the customized truss system is simply a specific application of the general model for trusses.

James Cole is the principal consultant to management, and Susan Cole is president, of CommTech Transformations, Inc., based in Fort Collins, Colorado. The authors can be reached at jocole14@aol.com.

This analogy serves a purpose when looking at strategic planning models. There are a large number of potential applications for strategic planning, and a variety of models to choose from, depending on the circumstances and the plan that is desired as the end result. Each of the models provides a general framework that is customized to fit the specific needs of the organization, so that an effective plan can be produced and used to reach an end result. Strategic planning models, like truss models, simply demonstrate and describe how the various components of a system work together.

Factors to Consider in Preparing for Strategic Planning

There are several factors to be considered in both the selection of a strategic planning model and the preparations required to maximize the chances for success of the strategic planning effort.

One primary factor to be considered is the orientation needed during the planning process. *Orientation* refers to the perspective of internal or external emphasis. There are three common orientations:

- An internal focus on the functioning and operational effectiveness of the organization
- An external focus on the products, the market, and the customers
- The entire picture—an integration of both internal and external issues

For a manufacturing and sales organization, identifying and segmenting the market, and delineating possible competitive advantages in order to build a sustainable strategy may be far more important than strictly operational effectiveness. On the other hand, for a facilities management organization, marketing and market strategy considerations might not be a primary concern, because the "market" often is relatively fixed and well defined. Operational effectiveness is a more powerful lever to be manipulated to reach excellence in such circumstances.

Another important factor is the *participation* in the planning process. If a strategic planning process is performed strictly by members from the "operations" side of an organization, it is likely that the plan's perspective will be limited to an internal focus. A plan developed by people predominantly concerned with external issues is likely to focus on market segmentation, products, competitors, and price structures. In contrast, a strategic planning team consisting of a mix of operational, marketing, and sales personnel, is likely to find a balance between the internal and external needs.

Thoroughness is a factor. For organizations seeking clarity on the definition of and approach to their target market, simply the identification of the market segments may be

sufficient to drive action. On the other hand, for an organization in the throes of implementing a culture shift in operational and managerial styles, the success of the plan's implementation could be highly dependent on the tactical detail to which the plan is developed.

The time invested in the planning process is, of course, always a relevant factor. Time requirements vary, along with how time is distributed. It is unwise to select a model and begin the planning process without a realistic view of, and an up-front commitment of support for the amount of time that will be required to execute a quality planning process.

The Classic Strategic Planning Model

Of the three models presented for your consideration, the first is one of the "classic" strategic planning models. It is a highly adaptable approach that has been in use, very successfully, for years. This model can be used to focus on internal or external forces, or a combination of both. The other two models, one from management professor Peter Drucker, and one from strategic planning guru Michael Porter, allow a focus on either external considerations or an effective combination of both internal and external issues.The classic model is depicted in the diagram on page 14. This model essentially seeks to lay out the path through which the organization will move from its present state to a future state (the vision). This transition is made within the boundaries established by the mission of the organization, along with the values and principles on which the organization has chosen to function.

The path is defined by strategies, and then tactics. Tactics are the specific time-phased actions that will be undertaken during the time frame covered by the plan. Execution of the strategies and tactics, both in the short and long term, lead to the achievement of identified objectives. The objectives are the highest priority outcomes. The accomplishment of the objectives induce the changes that allow the vision to become reality for the organization.

The orientation desired from the application of this model is best established by the selection of those who will participate actively in the process.

For example, a facilities management department is likely to assemble the senior management team, or perhaps the entire management cadre, depending on the size of the organization, as the strategic planning team. As a result, the vision, including how the customer is to be served, will most likely emphasize internal changes. To demonstrate the outcome of such an approach, the essential components of a strategic plan developed by the management team of a physical plant department are shown in the sidebar. This generic version of the vision, objectives, and strategies of an actual physical plant department at a state-funded, 20,000-student university will clearly show the internal cultural and operational effectiveness orientation of the plan, which was developed using the classic planning model.

The Vision

People are working as a team toward common goals and a shared picture of the future; we've caught fire. Each person in the organization can share the content and meaning of the mission and the vision with others. People are empowered. They have the capability and information to act; each person truly "owns" their job. Customers are excited by our progress; constituents marvel at our ability to meet their needs.

We have top quality people, each of which is fully trained for their role and educated in many ways that support their role and the role of the organization. The employees are inspired and happy; they like their work and look forward to working each day, and each feels that the financial rewards are fair.

Our organization is the leader in the industry; we serve as the benchmark against which others measure excellence.

Our communications are open and without fear. Everyone believes that their ideas are equally important with all others.

We manage based on a balance between long-term goals and short term needs.

The Objectives

I. The organizational environment expressed in the vision is reality
II. The Facilities Organization has a full understanding of customers' needs
III. An improved state level planning process exists
IV. All employees utilize data-based decision making
V. A formal education and (skills) training program has been established
VI. The Facilities Organization is recognized as a world class organization
VII. The total compensation package is perceived as fair
VIII. A productivity improvement of 30% has been achieved

Strategies

A. Increase knowledge, understanding, and ownership of the facilities organization's vision, mission, and principles throughout the organization
B. Establish processes to build and maintain our knowledge and understanding of customer's needs
C. Cause the state capital project funding process to be improved
D. Establish the processes, training, and support required for continuous improvement

Drucker's "Theory of Business" Model

In contrast to the classic model, Professor Peter Drucker recommends that all organizations must occasionally step back and address the basic assumptions that are in effect regarding the organization, its market, and its customers. This process is an alternative strategic approach for looking at an organization and its situation. The initial orientation for this model tends to be external.

Contemporary news and business literature are laden with stories of companies and organizations that were "superstars" yesterday, but find themselves stagnating, frustrated, and often in a seemingly unmanageable crisis today. Examples are not confined to the United States and this pattern can be observed outside of the profit sector as well.

The fundamental cause of most of these crises is not that things are being done poorly, or even that the wrong things are being done. Studies and experience demonstrate that, in most cases, the right things are being done, but they are being done with futility due to the disparity between the organization's assumptions and existing reality.

Drucker suggests that the problem is because the original assumptions on which the organization has been built, and thus those on which the organization is being run, no longer fit reality. These are the assumptions that shape any organization's behavior, dictate its decisions about what to do and what not to do, and define what the organization considers important results. These assumptions represent the organization's "Theory of the Business," and, if inconsistent or in conflict with reality, can lead to futile, although well intentioned, efforts.

There are three parts to the "Theory of the Business" approach:

- Assumptions about the environment in which the organization exists, about the general and local society and its structures, about the markets and the customers, and finally about how technology is relevant and useful. These assumptions about the environment define what the organization gets "paid" for.
- Assumptions about the specific mission of the organization. These assumptions define what an organization considers to be vital results and how the organization envisions itself making a difference in the economy, the society at large, or the institution of which it is a part.
- Assumptions about the definition of its core competencies. These assumptions define where an organization must excel in order to maintain leadership.

Drucker's "Theory of Business" approach to strategic planning is best utilized when the external conditions must be addressed first, before internal issues are considered. To reach an executable plan, this approach can be used in conjunction with the objective and strategy development portions of the classic model in order to reach an actionable plan.

Porter's Model

Michael Porter's recent article, entitled "What is Strategy?" and published in the *Harvard Business Review*, provides us with another model for strategic planning. In this case, the model is heavily focused on identifying and establishing a "strategic advantage."

Porter suggests that superior operational effectiveness, defined as the internal capability, or the ability to perform specific, relatively common, activities, more effectively than competitors, is a necessary but insufficient component for sustaining a strategic advantage. He suggests that what is necessary and sufficient is to establish a competitive advantage, one based on either performing different activities or performing similar activities in a different way. These differences become a "sustainable" strategic advantage when the effort to duplicate them is either very difficult, costly, or both.

One way to achieve sustainability is to develop an aligned and focused capability with a carefully selected set of activities targeted to a specific market segment, when the industry in general is getting results by serving the entire market. Targeting defined segments with a set of aligned activities requires making choices between tradeoffs. The other sustaining issue is "fit." A fit occurs when there is a consistency between each activity and the overall strategy, and where the individual activities contribute less to results than does the whole they create.

Application of Strategic Planning Models

There is no one right strategic planning model for all organizations or circumstances. There are a variety of models from which to choose, and an almost infinite combination of multiple approaches. Regardless of the choices made, our experience has been that any organization that elects to consider, develop, and execute a strategic plan will gain significantly from the experience.

One thing is certain. It is far more important to begin with a reasonable model and achieve a workable plan, than to have no target and no plan at all.

References:

Drucker, Peter. *Managing in a Time of Great Change*, New York: Truman Talley Books/Dutton, 1995.

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The growth and expansion of higher education in the United States is one of the most durable and impressive success stories in the history of American domestic institutions. Today, colleges and universities claim more students and employ more faculty than ever before. More institutions enjoy well-deserved reputations for educational excellence and community service. The remarkable expansion and growth of higher education is evidence of the wide range of benefits that have popularly been considered to flow from higher education.

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A Foundation to Uphold:

Overview and Policy Implications

by Harvey H. Kaiser

The public sector of governments and the private sector of corporations, foundations, and individuals have provided a foundation for higher education for the benefit of all members of the American society. These sectors have an obligation to continue to uphold colleges and universities at adequate financial levels to assure that all individuals have access to higher education in safe and healthy, functional, and attractive environments. Concerned about campus physical environments, a collaboration of APPA: The Association of Higher Education Facilities Officers (APPA), the National Association of College and University Business Officers (NACUBO), and Sallie Mae led to a 1995 survey of higher education facilities conditions in the United States.

The survey results provide the context for policy guidance for federal, state, and local governments, statewide agencies of higher education, higher education associations, and institutional leaders. The estimated $26 *billion* in total costs to eliminate accumulated deferred maintenance, of which $5.7 *billion* are urgent needs, represent a threat to the capability of higher education facilities to support the missions of their colleges and universities. While many campuses made progress in reducing deferred maintenance, there is an overall increase nationally since the survey's baseline year of 1988, the results of which were published in 1989 in *The Decaying American Campus: A Ticking Time Bomb*. Backlogs of deferred maintenance will continue to grow unless adequate resources are available for capital reinvestment and steps are taken to ensure safe, functional, and well-maintained facilities.

Accumulated Deferred Maintenance

There is a wide range in the costs to eliminate deferred maintenance between public and private sector and college type. Institutions have either very little or very much accumulated deferred maintenance. Public colleges typically have more deferred maintenance than their private counterparts. The percentage of institutions with deferred maintenance reported in the $30 million to $60 million range should cause concern for colleges in all college types and, especially, for those that reported costs to eliminate deferred maintenance exceeding $100 million. Although backlogs of deferred maintenance of $100 million or more would be expected at universities, it is surprising to see that between 3 percent and 7 percent of the HBCUs (historically black colleges and universities), medical colleges, and two-year colleges also exceed $100 million in needs.

The $26 billion may be a conservative estimate. Contributing reasons for this position are the general practices of estimating deferred maintenance needs and the exclusion of infrastructure. Typically, infrastructure deferred maintenance adds 20 to 25 percent to backlogs estimated only for *buildings*. By assuming that infrastructure was not included in the campus provided data, the total cost to eliminate accumulated deferred maintenance can increase to $32.5 billion, and urgent needs to $7.125 billion.

Factors Beneficial to Addressing Deferred Maintenance

The survey identified five possible factors that can cause change and influence treatment of accumulated deferred maintenance. Factors judged beneficial were ranked as follows:

- Priorities of top administrators (80 percent)
- Support of trustees or legislators (73 percent)
- Budgetary and/or financial strategies (59 percent)
- Financial condition of the institution (46 percent)
- State appropriations (24 percent).

The most beneficial situation, deferred maintenance as a high priority for senior administrators, confirms the view that current unsatisfactory facilities conditions will continue to prevail unless campus leadership commits itself to addressing the problem.

Conclusions

The 1995 survey of higher education facilities conditions illustrates that where determined leadership placed deferred maintenance as a priority on their agenda, action followed. However, the survey also shows that there is a growing gap between those institutions with the will and the ability to find the means to reduce deferred maintenance backlogs and those that have taken little or no action. Much more must be done to encourage legislators, statewide system administrators, campus leadership, and supporters of higher education to develop the necessary public policies to address this issue and to allocate resources that will restore facilities to acceptable conditions.

The following policy implications are framed as guides to those persons involved in addressing accumulated deferred maintenance and who will shape the agenda for higher education's facilities and prepare the way for recommendations for action.

1. A Foundation to Uphold

The estimated $26 billion in total costs to eliminate deferred maintenance, of which $5.7 billion is urgent needs, represents a threat for higher education's facilities to support college and university missions. Backlogs of deferred maintenance will continue to grow unless adequate resources are made available for capital reinvestment. Competing demands on institutional resources have caused a fractious approach. Both the public sector of governments and the private sector of corporations, foundations, and individuals should strive to be leaders in the improvement of campus environments that includes establishing policies addressing the condition and adequacy of facilities, assisting campus leadership in meeting its

role of stewardship, and providing necessary resources for reinvestment in capital plant.

2. Sustained Institutional Commitment to Action

Statewide agencies and individual institutions must make difficult choices for allocation of resources to support core missions and to reinvest in facilities. A checklist of institutional strategies should be part of an overall process, including setting of priorities, preparing strategic facilities plans, assessing the short-term and long-term implications of facilities requirements, identifying deferred maintenance and capital renewal and replacement needs, setting goals for reducing accumulated deferred maintenance backlogs, improving maintenance management, and evaluating and improving effectiveness of space utilization. By setting priorities for reducing deferred maintenance backlogs, institutional leadership will express intention of actions and inspire public confidence.

Financial and facilities managers should act in a harmonious manner to achieve objectives for maintaining facilities within the context of overall institutional goals and priorities. Institutional financial and facilities managers should assist institutional decision-makers in considering the broad and long-term consequences of resource allocation that affect facilities. These managers have interrelated responsibilities to collect, analyze, and disseminate information; develop financial and facilities management plans; implement and control those plans; and evaluate plans.

The gap between institutional capacity to fund capital needs for deferred maintenance and annual capital renewal is increasing for many institutions. Colleges and universities with estimated costs to eliminate deferred maintenance that exceed 5 percent of their current replacement value, typically, must find external sources of funding for capital reinvestment. The decline in funding for operations and maintenance should be reversed to prevent future accumulation of deferred maintenance. Funding for deferred maintenance and capital renewal should provide a dependable source and flexibility in institutional management of expenditures and ensure that adequate resources are available to reduce deferred maintenance backlogs to manageable levels.

3. Roles and Responsibilities of the Higher Education Community

Numerous governments, institutions, organizations, and individuals play distinct and important roles in shaping policies and in the decision-making process for college and university facilities improvements. These roles are interdependent. The decision-making process must ensure that all of these roles are preserved and balanced if our pluralistic higher education system is to address unsatisfactory facilities condition in a cost-effective, equitable, and timely manner.

Essential to successfully addressing higher education's deferred maintenance and capital renewal problem is leadership by advocates who recognize the impact of unsatisfactory facilities conditions on the potential achievement of the institution's mission. The associations representing higher education constituencies should take an active leadership role in advocating resource allocation for deferred maintenance and capital renewal.

The identification and characterization of accumulated deferred maintenance and capital renewal are essential parts of shaping national policy and institutional decision-making for facilities-related issues. Future facilities data collection and analysis that build upon the 1995 survey protocol and methodology would create a comprehensive database of benefit to higher education policy-makers and institutional decision-makers.

4. Facilities Prepared for the 21st Century

The uncertainties of the impact of information technology on higher education capital asset management must be approached cautiously to ensure that the prioritization of

facilities needs is made within the context of a strategic facilities plan. There must be dependable and integrated funding sources for capital reinvestment. There must be an understanding of the "learning" environment's affect on the "physical" environment. Critical also is the need to translate accurate data into useful information that in turn generates knowledge.

And, finally, it is necessary to be prepared to meet the demand for electronic delivery systems and information technology. Some specific issues that should be addressed include the overall effect of distance learning on space requirements; adaptability of existing space for new teaching methods; changes in the traditional patterns of daytime classroom and laboratory use; impact on campus attendance as faculty and students increase the use of electronic technology in the learning process; and the impact of non-traditional students on demand for on-campus residence and dining services.

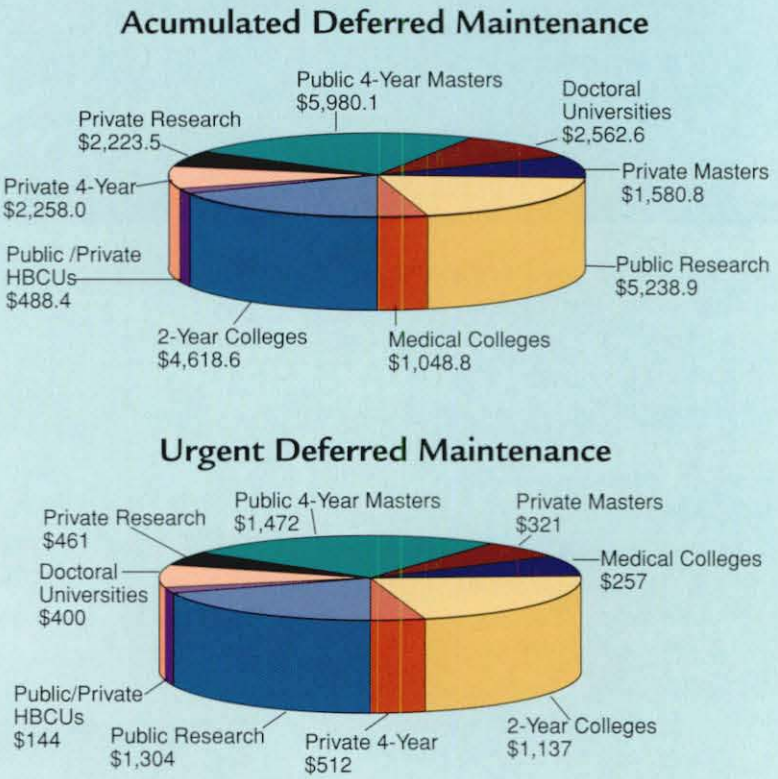
Final Note

The 1995 APPA/NACUBO/Sallie Mae survey provides important data to aid the higher education community in addressing accumulated deferred maintenance. A substantial portion of colleges face large and increasing deferred maintenance problems on their campuses, although problems are not universal.

There are serious predicaments at masters and baccalaureate, two-year, HBCUs, and medical colleges. The most serious challenges are located at the largest research and doctoral universities. Unless addressed, their ability to continue to lead the world in academic achievement is severely threatened.

Higher education associations can wield great influence to guide effective policy-making and focus institutional leaders on the need to eliminate or reduce their accumulated deferred maintenance. An ambivalent policy in regard to campus facilities conditions will hamper society's overall ability to gain what it seeks from higher education. Federal, state, and local governments, and corporations, foundations, and individuals must make a sustained commitment to continue to uphold higher education facilities to assure the vitality and success in meeting the missions of public and private colleges and universities. In so many instances, past commitments to this obligation have enriched the lives of individuals, helped to secure America's place in a competitive global economy, and created flourishing national, regional, and local economies.

Estimated Cost to Eliminate Accumulated and Urgent Deferred Maintenance (ADM), by Types
(dollar amounts in millions)



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Rebuild America and the Opportunity Assessment Model

by Ronald L. Shelton

There are more than 3,600 institutions of higher education in the United States that enroll more than 14.5 million students each year. While their primary mission is to provide for the nation's advanced teaching, professional development, and research activities, these institutions also fulfill significant public service functions in their roles as important and longstanding corporate organizations within their communities. The U.S. Department of Energy (DOE) Rebuild America program strengthens communities by helping meet the unique priorities of the local economies through improved energy efficiency of their building stock.

Rebuild America is interrelated with APPA's Opportunity Assessment model, described by Leslie Solmes in the January/February issue of *Facilities Manager*. In essence, the Opportunity Assessment approach has been developed to comprehensively combine efficiency and operating improvements in buildings and facilities with properly sized and efficient campus utility supply systems. During the past year, this approach was applied in three leading U.S. universities—the University of Maryland, the University of New Mexico, and the University of Southern California. With attention to the combination of increased end-use efficiencies, operations and maintenance improvements, and supply side economics, these institutions have projected annual energy-related cost savings in the range of 20 to 30 percent. These savings are about equally divided between results from efficiency improvements and from better-managed energy supply systems with improved rate contracts.

In these three initial applications, the range of each university's total project cost was $34 million to $65 million, with annual energy budget savings of $5.1 million to $6.9 million. Based on life cycle costs, the approach sought to aid each institution in realistically assessing how capital investments could be funded without significant new appropriations. It also helped to identify the amounts of current operating budgets that could be preserved to pay for the cost of both utilities and capital through the term of any required debt financing. All three universities are currently in various stages of procurement and business structuring.

The Rebuild America Program

Rebuild America was created as part of President Clinton's 1992 Climate Change Action Plan to help communities reduce energy use in existing commercial and multifamily buildings through building retrofits. The program aims to provide the impetus for this goal by offering technical expertise, assistance in obtaining financing, the synergy of partnering with other community organizations with like goals, and the domino effect of sharing the ways and means of one project's successes with other projects. The focus of the program is the formation of community partnerships to address local needs and priorities. It is highly flexible, avoiding a one-size-fits-all approach and emphasizing results, not processes. The key is that actions are designed and led at the local level, with public and private sector interaction.

For the purposes of the Rebuild America program, "commercial" designates any building type other than residential, and "multifamily" means buildings with five or

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Figure 1. Overview of Rebuild America Program

- ***Goals*** for the year 2000 are to form and support 250 community partnerships to
  - ✔ retrofit 2 billion ft² of commercial and multifamily buildings,
  - ✔ invest $3 billion in retrofit capital improvements,
  - ✔ help meet national energy efficiency goals and decrease emission of greenhouse gases, and
  - ✔ realize $650 million annual savings.
- ***Strategy*** focuses entirely on actions by community partnerships:
  - ✔ must involve leaders from both public (local or state government) and private sector;
  - ✔ no specific approach mandated by DOE;
  - ✔ action plans are defined locally by partners;
  - ✔ financing is arranged locally.
- ***DOE assistance*** includes
  - ✔ designated program representative and individualized assistance for each partnership;
  - ✔ technical analyses and advice, information on financing options;
  - ✔ training through workshops and seminars, a large variety of printed materials and sources.

more apartments as well as any type of low-income public or assisted housing. As of 1994, this sector had energy use expenditures of almost $95 billion. Of this amount, it is conservatively estimated that $12 billion could be saved by use of currently developed cost-effective technologies. The program aims to encourage use of these technologies and to provide technical assistance to accomplish that goal.

How Partnerships Work

From 1995 until the present, Rebuild America has signed more than eighty community and state partnerships across the United States. Each partnership must include at least one state or local government, but may include utilities, colleges, financial organizations, private businesses, nonprofit organizations, and individual community leaders and consultants. Any combination of these entities can create a successful program, and any one of these groups or individuals may lead the effort. Many of the successful programs already under way are led by a nonprofit organization which acts as a catalyst to bring together community leaders.

Once the Rebuild America partnership has been established, the partners develop a multiyear action plan, which contains specific information on community and partnership goals (economic development, square footage renovated, energy saved, etc.), building stock targeted for improvement, energy efficiency measures to be used, capital investment plan and retrofit strategy, technical assistance requested from DOE, projected costs and savings, and a monitoring and evaluation plan. APPA's Opportunity Assessment includes all the elements of an action plan and can meet that requirement. Partners are recognized nationally and locally for their commitment, and special awards are presented to those who achieve exceptional results.

The Role of the Rebuild America Program

Rebuild America provides a number of products and services to help partnerships through the planning and action phases of the program. Once a partnership has been formed and a lead organization identified, a program representative is assigned, and the Rebuild America staff will facilitate development and implementation of the action plan. Team members are invited to attend training workshops on a variety of technical, financial, and programmatic subjects. A model action plan is provided, along with a handbook on planning and implementation of projects, and a comprehensive sourcebook on technology performance and cost, survey and audit techniques, and sample performance contracts. A host of communication tools provide access to specialized needs.

For the first two years of the program, Rebuild America offered financial assistance to new partnerships through a competitive solicitation, which has resulted in fourteen awards ranging from $300,000 to $1.2 million. These fourteen partners are using their funds for staff support, analyses, and partnership development. The funding cannot be used to pay for installing retrofits.

As the program has matured, these awards have been discontinued, and the program has become focused on providing a full menu of technical assistance to all of the more than eighty partnerships. These partners include city and state agencies, chambers of commerce, councils of government, development authorities, academic institutions, information clearinghouses, environmental organizations, housing authorities, and energy conservation groups.

Rebuild America staff are actively engaged in providing on-site consultation with partners and in expanding the role of workshops in achieving the development and implementation of action plans. A number of general requirements common to the partnerships have emerged, and these have been addressed by the initial rounds of workshops, products, and on-site consultation. With the resulting knowledge and experience, Rebuild America staff are conducting new workshops and peer interactions that will effectively improve the likelihood that significant results will occur on a broad scale. One of the measures of program impact is that $70 of nonfederal funds are invested for every dollar of Rebuild America expenditures.

Rebuild America partners join the program because of its clear advantages to their efforts and to their communities and the nation:

- meeting local community and economic priorities through energy cost savings;
- leveraged capital investment and assistance in finding alternatives to financing;
- reduction of investment risks through group effort and government assistance;
- assistance from an objective third party in the development of requests for proposals, specifications, etc.;
- information on the latest technologies from the national laboratories and program representatives; and
- participation in Rebuild America's local and national campaign to help local communities raise awareness of energy conservation measures.

Current Rebuild America Partners

As expected, each Rebuild America partnership has been unique, representing a variety of local, state, and regional organizations with a wide variety of forms and approaches. Some examples:

- **Boston, Massachusetts**—The Rebuild Boston Energy Initiative—a partnership of the Massachusetts Energy Efficiency Council and government agencies, community development groups, private businesses, utilities, and energy service companies—is investing $50 million to improve energy and water efficiency in 5,000 public housing units and more than 15 million square feet of residential and commercial space. The program focuses on low-income multifamily housing in the downtown core as a key element in the city's revitalization efforts, cutting energy bills by $6 million annually and creating approximately 700 new jobs.
- **Texas A&M University**—The Brazos Valley Energy Conservation Coalition, led by Texas A&M University in College Station, Texas, is targeting approximately 8 million square feet of commercial buildings (hospitals, industrial, school districts, community colleges, office buildings, post office buildings, shopping centers, and campus facilities) as well as multifamily buildings (apartment complexes and Texas A&M University dormitories) for energy conservation retrofits that will achieve at least a 25 percent reduction in energy usage within a seven-year period.
- **Arizona State University**—Arizona State University has the lead role in a partnership composed of the cities of Phoenix and Tempe, the state, BOMA, and others to form a continuing organization for technical support and financial packaging, with strong initial attention to the campus itself. During the next five years, the partnership plans to retrofit 12 million square feet of space of which approximately 80 percent will be commercial and 20 percent will be multifamily properties.

Figure 2. Summary of DOE Technical Assistance for Rebuild America Partnerships

- ***Model action plan*** that can be used as a guide
- ***Individual program representatives*** who serve as partnerships' liaison with Rebuild America
- ***Publications resources*** such as the *Rebuild America Handbook* (information on forming a partnership, collecting and screening data, financing, developing an action plan, evaluating buildings, implementing a program, and verifying and reporting results), the *Rebuild America Sourcebook* (detailed information on business and technology areas that are crucial to completion of renovation activities) and the *Financing Guide*
- ***Technical assistance*** on issues and technologies such as building/equipment simulation software, design tools, partnership plans, and selection of auditors and contractors
- ***Workshops and training*** on topics such as developing action plans, life cycle costs, CFC/chiller replacement, computer modeling, retrofit design tools, innovative financing, etc.
- ***Technical information*** on key metrics, data collection, and management
- ***Resource information*** about other DOE programs and other federal programs.

Savings are expected to be 25 percent of current energy use.

Planned Coordination of Opportunity Assessment with Rebuild America

APPA and DOE will provide some support to the colleges and universities that choose to implement this approach as Rebuild America partnerships. They will also help explore and define methods to expand this approach to community partnerships with college and university leadership. Continuing linkages with other appropriate DOE, utility, and private sector activities that can aid in the effectiveness of such expansion are planned.

According to APPA staff, planning is progressing for the 1997 Opportunity Assessment activities. A partial listing of projects and objectives planned for 1997 includes *product development* (OA software, sample RFPs for metering services, specs and guidelines for metering and validating results), *education and outreach* (case studies on OA projects, presentations at conferences and seminars, education and marketing materials in printed and electronic formats), and *training and technical support* (workshops for potential OA participants, technical support for OA partners, training for DOE lab staff and others in understanding and assisting OA projects). This ambitious funding proposal is currently under review by the Department of Energy and will be reported on in future issues of *Facilities Manager*.

Conducting and implementing the Opportunity Assessment is good business. Direct benefits include early and continuing operating cost savings, infrastructure renewal, and options for innovative financing that can be "off the balance sheet." Benefits will multiply and be easier to achieve when the participant provides leadership for extending these concepts to public and private facilities within the local community. In Rebuild America Partnerships, DOE will provide

- **recognition** for the partnership locally as a leader within the community, and nationally for an exemplary strategy and results; and
- **DOE products and services**, including individualized assistance from technical experts as well as access to topical workshops, seminars, peer exchanges, and guidance materials.

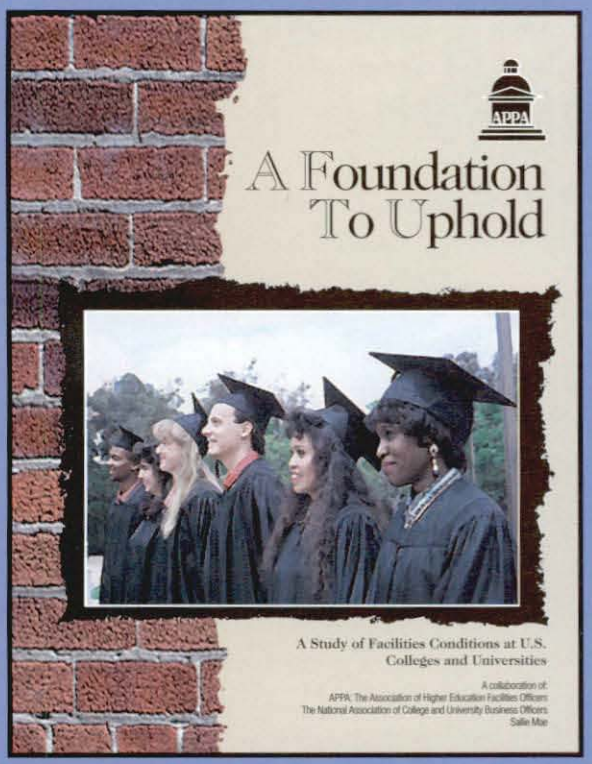
Figure 3. Rebuild America Technical Resources

DOE offers special expertise in the following areas, through its staff and the national laboratories:

- Building energy benchmark analysis
- Building audit methods and guidelines
- Building simulation and design tools—whole building concepts
- Commissioning and operations and maintenance improvements
- Electric, geothermal, and thermally activated heat pumps and chillers
- CFC management—training and retrofit
- Forced air distribution systems
- Steam and hot water systems
- District heating and cooling
- Efficient lighting systems
- Monitoring and verification
- Windows and daylighting roofing systems
- Unplanned air flows and interior pressure imbalance
- Indoor air quality and moisture issues
- Office equipment
- Multifamily residential building retrofit and rehabilitation
- Financing options and performance contracting
- Codes and standards
- Community economic development
- Renewables

By working cooperatively in this integrated and comprehensive effort, we can meet the unique goals of each partnership and initiate widespread, self-sustained progress for energy efficiency in the nation's stock of existing buildings.

A Foundation to Uphold



Information for anyone interested in capital investment and accumulated deferred maintenance on our nation's campuses.

In 1988, *The Decaying American Campus* drew national attention to the huge backlog of capital investment and accumulated deferred maintenance (ADM) needs on our nation's campuses.

Now APPA and NACUBO, with the assistance of Sallie Mae, have reexamined these conditions with a new survey of U.S. institutions of higher education. *A Foundation to Uphold,* published by APPA reveals that deferred maintenance levels have grown since 1988 and explores the intricacies of this complex problem. Included is information on:

- Which institution types and which facilities spaces tend to have the largest amounts of ADM
- How large backlogs of ADM can weaken the mission of higher education
- The costs of eliminating deferred maintenance
- Construction and renovation data
- How new initiatives such as ADA have affected deferred maintenance levels
- Actions that higher education, state, federal, and local officials can take to address their deferred maintenance issues
- The interdependency of financial and facilities management

This important publication is a call to action for advocates who recognize the consequences of inadequate facilities on the educational mission. *A Foundation to Uphold* explains the importance of including maintenance needs in the financial picture, and urges closer interaction between facilities and financial officers.

Included in *A Foundation to Uphold* are the complete text of the survey instrument, a comprehensive breakdown of the findings by Carnegie classification, an examination of current construction and renovation on campuses, the impact of ADA, and how officials can begin to address this threat to U.S. higher education.

Comprehensive survey results are illustrated through charts, graphs, and tables. A list of the participating institutions is also included.

Ordering Information

A Foundation to Uphold is available from APPA: The Association of Higher Education Facilities Officers. To order, fill out the form below and enclose payment in U.S. funds. Checks and credit cards are accepted. (Credit card orders may be faxed to 703-549-2772.) All orders are shipped via UPS. Please allow 3-4 weeks for delivery.

A Foundation to Uphold, 195 pages, softcover. ISBN 0-913359-96-3. $50 plus $8 shipping and handling.

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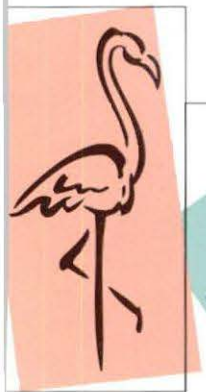
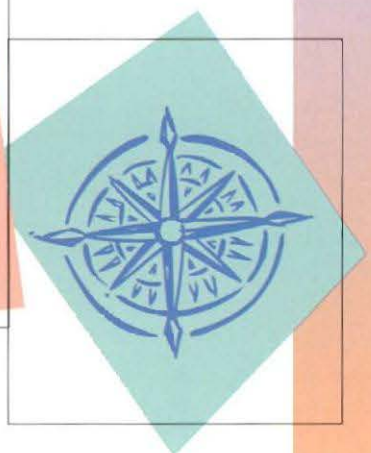
APPA's 1997 Annual Meeting
July 13-15, 1997
Orlando, Florida
Walt Disney World Dolphin

World Class Service: Discover the Magic!

We've taken the theme of this year's meeting to heart by planning one of the most exciting meetings ever. The 1997 Annual Meeting takes place at the Walt Disney World Resort, Orlando, in the Disney Dolphin. To compete with the attractions of Disney World, the APPA education committee and staff have gone all out to ensure educational presentations, social events, and guest speakers that are truly world class.

We invite you to discover the magic of APPA, of professional development, of meeting new people, and of sharing in the knowledge and experience of others. Take a look at what the 1997 Annual Meeting offers.





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Twist & Shout 50s Beach Party—Kick off your shoes and dance the night away at this 50s theme welcome party. Enjoy food, drinks, and entertainment courtesy of Johnson Controls, Inc.

Disney Behind-the-Scenes and *Accent on the Environment* Tours—These two 3-1/2 hour tours take you to the inner workings of the Disney Resort; places most visitors never see. Highlighted on the tour are the innovative approaches the resort has taken to manage such vital services and environmental concerns as grounds, materials recovery, water treatment, and support systems. Space is limited—Be sure to reserve your tickets early!

5K Fun Run and Walk—Start your morning with an enjoyable run/walk. All participants will receive a free T-shirt, and all children who complete the course will receive a medal. Sponsored by TMA Systems, Inc.

Disney University General Sessions

Few companies take "service" to heart like Walt Disney World, and what better place to learn about it than Disney University. These sessions are open to all attendees and included in your registration.

Service, Disney style: Broaden your professional understanding and expertise in the fields of service and customer satisfaction by studying "how to do it" strategies practiced at the Walt Disney World Resort.

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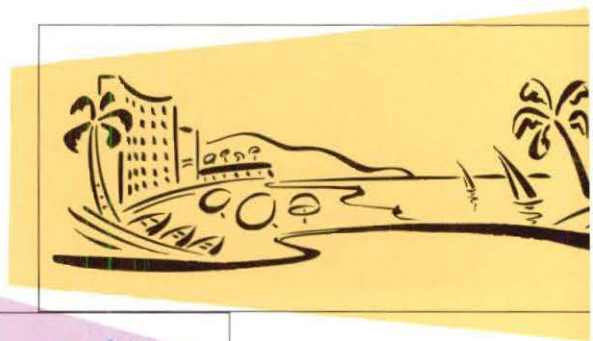

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You'll find exhibits from hundreds of vendors showcased here, featuring the products and services you need to keep your operations world-class. More than an exhibit hall, the Learning Center offers educational opportunities and recreational activities like a treasure hunt and Walt Disney characters for the kids.

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Ceramic Cooling Tower Company
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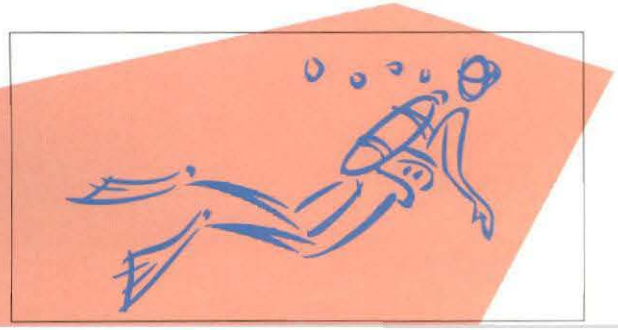


Educational Sessions

You'll find a wide selection of educational sessions at the Annual Meeting, covering all of today's hot facilities topics: deferred maintenance, utilities deregulation, customer service, and changing the organizational culture. There isn't enough room here to list them all, but here's a random sampling.

Starting Over: Is It Time to Restructure the Way We Manage Higher Education and Its Facilities? *(William D. Middleton, Brenda N. Albright)*

A Foundation to Uphold: A Study of Facilities Conditions *(Harvey H. Kaiser)*

Electricity: Paying Less in Today's Market *(Derek Dahlen)*

ADA Compliance & Campus Facilities Legal Outlook: Lessons Learned & What to Expect Next *(Gerald Morgan)*

Keynote Speaker

Roger Dow is more than the Vice President and General Sales Manager for Marriott Lodging; he's a best-selling author (*Turned On: Eight Vital Insights to Energize Your People, Customers, and Profits*) and renowned customer enthusiasm expert. Few people could address the theme of world-class service better. Join Mr. Dow as he opens the 1997 Meeting by sharing his insights and experiences.

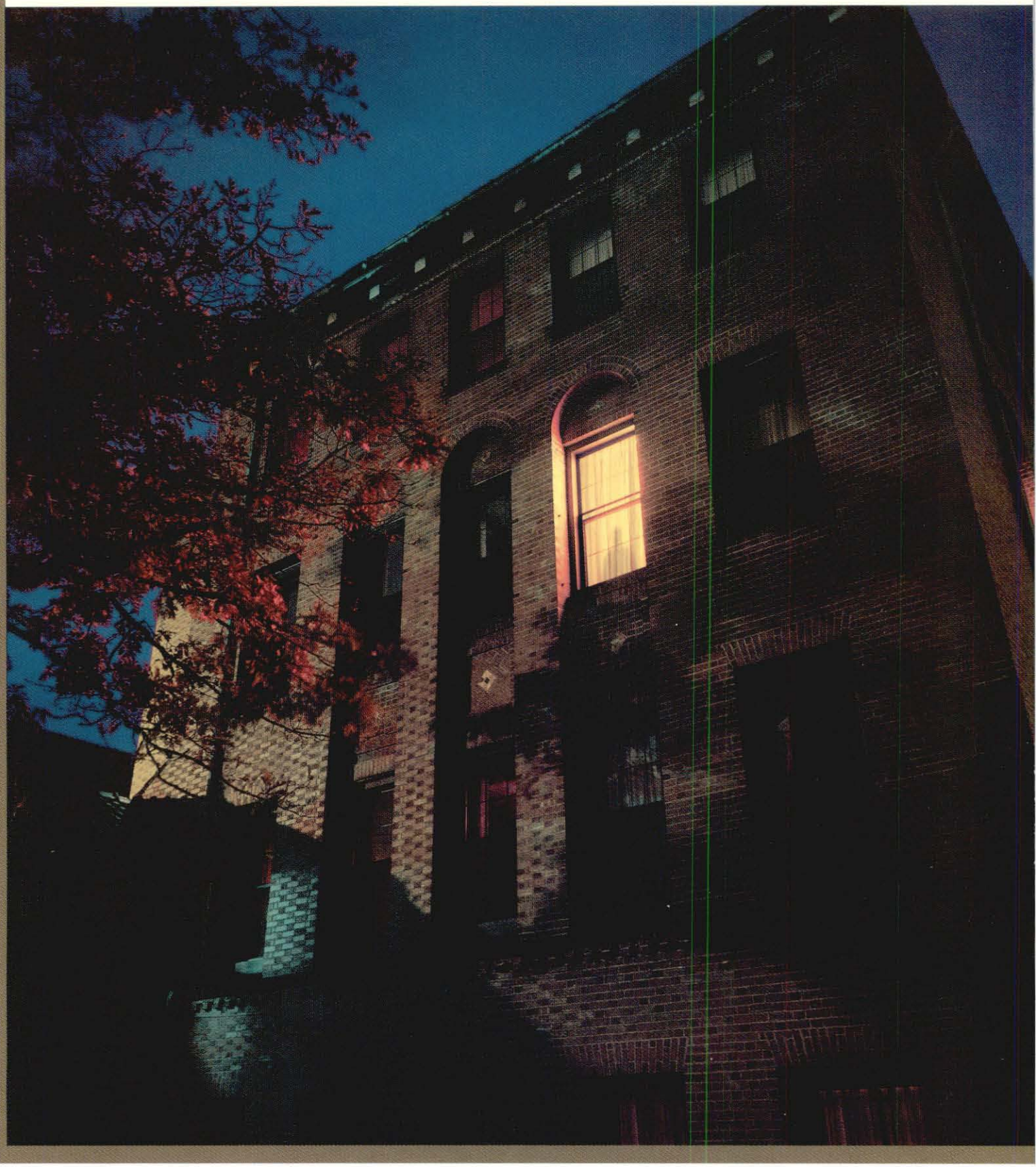
About the Disney Dolphin

The Walt Disney World Dolphin is located in the heart of the resort, and offers complimentary transportation to the theme parks. This fantasy-inspired hotel also offers three pools, including a tropical grotto pool, boating and tennis, and Camp Dolphin Youth Program.

Join us

Mark your calendar now to join us at Walt Disney World in July. More details on the meeting will be in your mailbox shortly. In the meantime, check APPANet, APPA's World Wide Web site, to find out more at http://www.appa.org.

ANOTHER LA



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JOHNSON CONTROLS

Continuous Assessment Improves Educational Facilities

by Pieter J. van der Have

This article is intended to serve a two-fold purpose. An important objective is to emphasize that using self-assessment devices and establishing benchmarks are critical to those of us committed to the sustenance of our institutions. But before we do that, we will identify the *similarities* and some of the *differences* that exist between "higher" education and that "other" group, the K-12 institutions. We will close by suggesting that measuring/assessment devices, benchmarking techniques, survey results, etc. can readily be used by all institutions dedicated to the education of our youth. The final conclusion, of course, will be that **APPA** and its members can be the catalysts to make the fusion happen. Admittedly, this article relies on specific information pertinent to the United States. Having personally experienced K-12 and postsecondary education internationally, I feel reasonably confident that the issues we identify in this article transfer quite easily across the world's time zones and language barriers.

Life in K-12

Decades ago, as I progressed on my arduous journey through the public school systems, in a wide variety of locations, I faintly remember the character of the school *buildings* themselves. Looking back now, I remember most distinctly that the floors in the hallways were almost always buffed to a mirror-like condition, and that the surrounding grounds always seemed strewn with kid-generated litter. Teachers took a lot of pride in the decoration of their own classrooms, but appeared to have little or no sense of ownership in the rest of the building. Generally, each school had a "head custodian" or caretaker, and this was someone who had real pride in the building. This was the person with a giant key ring on his (rarely her) belt. You could hear him before you saw him. Often a salty old dawg, this custodian knew the building, and even knew many of the kids. If you damaged something, and were caught, you frequently became much more familiar

Pete van der Have is director of plant operations at the University of Utah, Salt Lake City, Utah. He is also the current APPA Vice President for Information Services.

with a vice principal or a counselor, who ensured that you and your parents learned the error of your ways.

The school buildings were only used approximately eight hours per day, 180 days a year, give or take a few. The buildings were frequently old, but in apparently good condition. As various governmental agencies started to impose (unfunded) mandates on school districts, the media and parents became increasingly familiar with their facilities, and that everything was not as rosy as we had believed. In fact, having had the opportunity to visit a number of public school settings in the last few years, I became increasingly aware that there are many issues facing public education facilities. Parents, school boards, and/or other supporting agencies have historically not demonstrated consistent concern about the effective management of K-12 facilities, protecting their investments, etc.—the buildings are just "there."

Constituents have consistently been more concerned with academic, social, and athletic programs and clean restrooms, than they have with the brick and mortar. Today still, as one reviews the literature on the subject, administrators are only waking up to the reality that their facilities present a burden on the district. Yet, the process of changing or improving educational *programs* continues to receive attention and funding without corresponding consideration of the facilities and the degree of impact they might have on the success or failure of the academic programs.

There is some good news. In the United States, governmental agencies have started to recognize a need for increased emphasis on *security* and on *accessibility*, both in words and funding. Parents (who often live within the immediate neighborhood of the school) are taking a much more active role in the functioning and the appearance of the facility than they might have twenty or thirty years ago. Yet, as a rule, K-12 buildings are still perceived as a mismanaged financial burden, a sponge on the budget. (Does this sound familiar to those of us in higher education?)

In some areas, parental and neighborhood representatives have invited themselves into the district processes involved in the location, design, construction, and costs of additional facilities. Some of us in higher education find similar involvement by some of our neighbors. A distinct difference in the level and type of involvement between the two groups of stakeholders is that in K-12, the neighbors are very frequently also the parents of the children who are or will be attending the school facility in question, whereas with higher education, the involvement is more on the level of neighbors who are concerned about the impact on their neighborhoods, their own investment.

In total, considerably more money goes into the support of K-12 programs and facilities than flows into higher education. School districts receive the majority of their funding from sources other than the "local" government, as Figure 1 shows. District administrators, teacher associations, and parent groups have to work with each other and with more distant entities to receive funding. The level of funding is commonly formula based, usually using the number of pupils in a given district as the common denominator. The condition or age of the district's facilities is not used in the decision-making process. Therefore, actual need has so far had no direct correlation to the amount of funding provided to school districts for facility rejuvenation or alteration. As a result, there are few school districts who have been interested in funding and completing a facilities condition assessment. As is the case in higher education, this is a cause-and-effect relationship, although it might be difficult to prove which one is which.

- 74% of all public school buildings in the United States need to be replaced.
- Almost **one-third** of such buildings were built prior to World War II (whereas in higher education we say that one-third of our buildings are over 30 years of age.
- One of every four public school buildings in the United States is in inadequate condition.
- 61% need significant maintenance or major repairs:
  - 43% are obsolete
  - 42% contain environmental hazards, and
  - 13% are structurally unsound.

In 1994 the U.S. government established a new initiative designed to help bring about radical improvements in American education, K-12. Congress has since then attempted three times to pass reform legislation which would enable progress, finally with strong bipartisan support establishing an ambitious program coined **GOALS 2000**. The vision is to allow every student to be the best he or she can be—to learn to world-class standards. Part of the funding established through this legislation provides funding under the Safe School Act of 1994. This provides funding (up to $3 million per year) to support the development of a safer environment in any LEA (local educational agency) which can demonstrate unacceptably high crime rates. Unfortunately, the allocations do not address any facilities issues, except as they might interact with security and access.

As facilities professionals and leaders in higher education, we have been inclined to consider ourselves as unique in the way we deal with issues related to our business, because we frequently felt that the issues themselves were unique to higher education. Realistically, there are problems and challenges common to all of us in the educational facilities business! A 1991 survey conducted by the

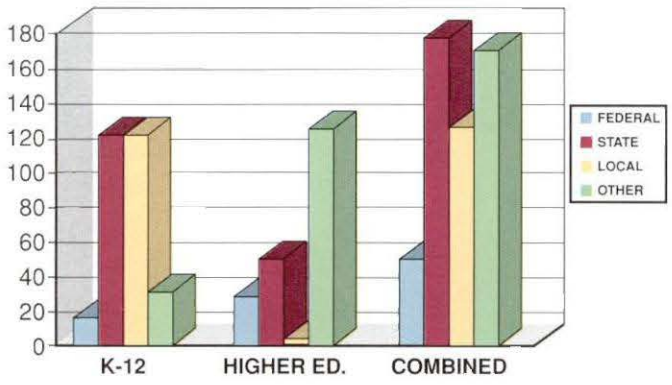
American Association of School Administrators presented a number of frightening statistics. (See sidebar on page 33)

The good news for public education in the United States is that President Clinton, in a major announcement shared with schoolkids in San Diego (March 31, 1994) indicated that "Today we can say, America is serious about education; America cares about the future of every child; and America will lead the world in the 21st century."

The accompanying bad news is that although a strong desire has been expressed regarding the enhancement of public education, Department of Education budgets have to date still not shown any serious consideration regarding the mitigation of facilities issues.

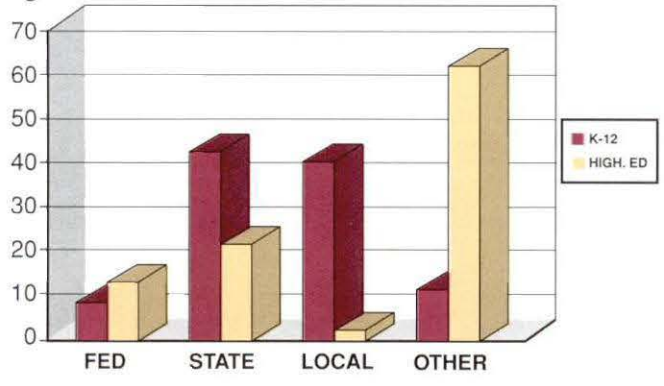
Total funding allocated to education from all known sources in fiscal year 1994-95 was identified at $506.5 billion! Figure 1 shows the distribution of those funds among the various categories, and from the various sources.

Figure 1



This graph illustrates clearly that K-12 and higher education are competing for funds, though not necessarily from the same sources. Obviously, the federal government provides much of the funding for the full range of educational programs, but not the majority of it for either category. The most significant competition for funding occurs at the state level, and surprisingly, also from other sources. Using the same data, but analyzing the percentage of funding from the various sources towards the total program, we arrive at the presentation in Figure 2.

Figure 2



The U.S. Congress has of late concentrated on pushing funding requirements for education and other programs to the state level. As one looks at the information presented in Figure 2, it is readily apparent that K-12 and post-secondary education are continuously competing for funding all of us need so badly. This is more than just a little unfortunate since we are all striving to support the intellectual development of the same individuals, only at different stages of their lives.

A Merging Occurs

There is another fact which none of us can choose to ignore: The preferred emphasis among legislators and other stakeholders-with-their-hands-on-the-purse-strings is the exponentially growing interest in high-tech educational delivery systems. Existing brick and mortar is taking a backseat to technology, cyberspace, and distance ("virtual") learning, specifically in terms of funding priorities. Among others, California, Utah, and Vermont have home pages on the World Wide Web publically bragging about their high level of interest, activity, and funding in this area. Obviously, those of us who are sincerely interested in the intellectual development of our youth and society in general, willingly and eagerly support this new paradigm. The unfortunate side effect of this trend, however, is that states have generally not been able to support this new initiative and still effectively deal with remaining facilities issues, including ADA-related issues (Americans With Disabilities Act), gender equity questions, other code compliance and Environmental Protection Agency questions.

Beyond funding issues, all of us in the educational facilities business are now working with a human resource pool with a work ethic foreign to traditional managers. The playing field has changed, the way the score is kept is changing, the players are changing. And definitely, the spectators now want to have more of a say in the way the game is played.

Developing and nurturing financial resources to support learning activities in higher education has always been a challenge. The level of funding provided to higher education is with increasing frequency "performance based." Again, this is a concept many of us can readily support, if it were only not based on the performance of those over whom we have no control and little impact. We feel bridled when we understand that to a large extent it is not "our" performance which determines our appropriations. Today, with increasing frequency, the levels of funding provided to the institution (and therefore, the facilities organization) are based more frequently on the successes of the institution as a whole, and the perceived or measured productivity/effectiveness of its faculty. Thus, as our counterparts have within public education, we must

learn to communicate and cooperate effectively with our neighbors, our students, the parents, and the taxpayers.

Developing Our Own Knowledge Revolution

Often working in teams not restricted by institutional, parochial, or international boundaries, the more insightful facilities managers have developed and continue to develop tools which will assist them in articulating sound justifications toward the acquisition of essential appropriations. In the meantime, they use many of these same tools to measure the effectiveness of their own organizations' functions. Additionally, our profession has reached a level of success and confidence where we readily share these tools with each other, either one on one, through a professional association such as APPA, and through the use of the many electronics real-time communication devices so readily available to many of us.

Very recently APPA established APPANet, an Internet-based Web site that encourages us to collect and share facts, questions, data, information, knowledge, wisdom and insight. Through its numerous listservs, members and non-members have the opportunity to learn from each other and from APPA's vast storehouse of information. Through this home page, the enterprising member can link to other organizations and associations which can provide information beyond what APPA has chosen to develop. This continuously developing service is available to facilities professionals, regardless of the nature of the employing organization. As of this writing, several hundred thousand individuals have logged on to this service, accessing it from seemingly all regions of the globe. As this service continuous to mature, it will offer access to even greater amounts of valuable information.

APPA developed one measurement tool several decades ago which is still offered today, *The Comparative Costs and Staffing Report*. Many of us have contributed to and utilized this database. The benefit to many institutions has been immeasurable, and it has helped us provide a yardstick against which we could measure ourselves. This biennial report continues to be a successful implement used by hundreds of institutions of all types and sizes. Then, more recently, APPA volunteers, staff, and others have teamed together to develop a benchmarking tool called the Strategic Assessment Model. In an evolutionary stage today, this model will allow us to measure ourselves against ourselves, contrast or compare ourselves to others like us, and help us identify which areas we ought to be measuring. The ultimate goal, of course, is to help us identify areas where we are successful, and help us establish goals and targets where we might choose to improve. The survey for the 1995-96 Comparative Costs and Staffing Report has been sent to all APPA members along with the current Strategic Assessment Model survey. If you would like copies of the surveys and participate this year, please contact Diana Tringali at 703-684-1446 ext. 228.

In 1989, APPA began to offer a service that has been wonderfully successful: the Facilities Management Evaluation Program (FMEP). This service, although it costs somewhat more than a box of chocolates, or all of Tom Peters' publications, has done more to help organizations to improve their way of doing business than any of the latest fad management books. Since the original offering of the service, several dozen institutions of higher learning have requested teams of highly qualified peers visit their campuses. The reports generated by the numerous FMEP teams have been especially useful in helping the client institutions establish a relationship with their supervising agencies based on trust and knowledge.

Each FMEP team is made up of three or four facilities professionals who are able to bring to the table a tremendous depth and breadth of experience in the business. As a result, this team is able to ask the right questions and offer a number of suggestions and recommendations which will allow the client organization to move ahead. The team is able to take basic data and information provided by the client organization, and provide in return a wide range of knowledge and wisdom unique to the client's situation.

There are a number of reasons why an institution may choose to participate in an FMEP. For instance, a facilities manager may expect that a peer review performed by a group of professionals who have no vested interest in the results will provide a foundation for future success with his/her administration or governing board. On occasion, senior administrators expressed a desire to develop a better feel for the successes of their own facilities departments and/or administrators. In all cases, even where the organization being reviewed received high grades, there has been opportunity for growth.

If an organization is interested in performing a Facilities Management Evaluation, its representative needs to contact APPA to initialize the process. The first step into the process usually begins with the client organization performing a self-evaluation based on an outline provided by APPA. Included in the parameters for self-evaluation are:

- **Purpose and Goals:** Does the department and its leadership know where it is going and why?
- **Organization and Resources:** Has the organization been well-defined, do its people know what they're doing, are the resources clearly identified and effective?
- **Policies and Procedures:** Are programs and policies in place which will guarantee the effective completion of all tasks, stretching the life expectancies of the facility and its components, and generally satisfying internal and external stakeholders?

- **Personnel Training and Development:** Are programs in place which nurture staff, develop them, and protect them from avoidable injuries, etc.?
- **Fiscal Planning and Development:** Are programs in place which monitor costs, inventory facilities needs, provide management information, promote efficient energy use, etc.; is the sense of accountability and responsibility well-placed?
- **Facilities Condition and Appearance:** Does the place look good, or at least consistent with defined and communicated standards?
- **Communication and Quality of Relationships:** Is there a sense of open communication between and among all organizations and levels of the campus community, including front-line staff?
- **Campus Planning:** Is there a program for planning future growth, capital development and renewal, involving the appropriate players?

Sometimes, the client may choose to only complete this phase, having identified enough data and information to allow for some plotting of future directions. If the client should choose to gain the additional benefit of extra eyes, ears, and perspectives, members of an evaluation team will be jointly selected and agreed upon between APPA and the client. This group of individuals then comes on site for a number of days (length of stay and the size of the team being determined by the size of the institution), to interview, review, analyze, read, listen, and learn. They could be on site for up to five days. As they are doing this, they focus their efforts along the same lines as followed during the self-evaluation.

The report is prepared and reviewed, and finally but confidentially made available to the client institution for further action. From start to finish, the process may take from three to six months, depending on the size of the institution, the complexity of the organization, and the levels of success reached by the leaders of its facilities organization.

With very few exceptions, all facilities organizations throughout all levels of education have room to improve and to grow. For that reason and others, facilities professionals can benefit from evaluations such as the FMEP and SAM to identify future directions they may choose to take. It is obvious that facilities' issues are the generally identical, regardless of whether one is look at public vs. private, K-12 or postsecondary.

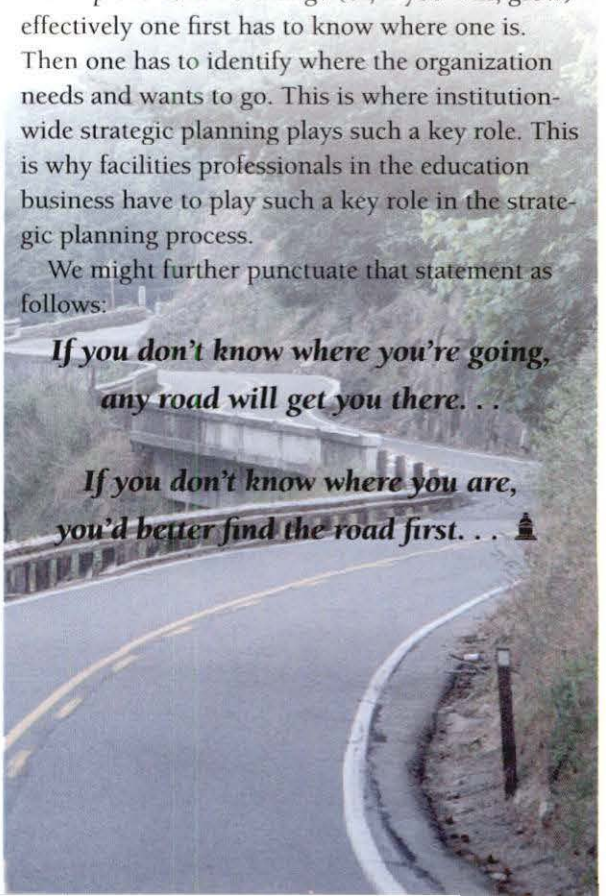
The Best Defense is a Unified Offense

To enable ourselves to convince our stakeholders of the issues facing facilities in education, we first have to be confident we know where we are, and how successfully we are meeting the expectations of internal and external stakeholders. The mix of those assessments will help us plot out a course for *continuous improvement*. This is not a dream, it is a requirement. The challenge facing facilities professionals is not only to change, but *to change in the right direction*. As we all know, *change* does not necessarily bring *growth and improvement*. To change (or, if you will, grow) effectively one first has to know where one is. Then one has to identify where the organization needs and wants to go. This is where institution-wide strategic planning plays such a key role. This is why facilities professionals in the education business have to play such a key role in the strategic planning process.

We might further punctuate that statement as follows:

If you don't know where you're going, any road will get you there. . .

If you don't know where you are, you'd better find the road first. . .



Deferred Maintenance and the Americans With Disabilities Act

by Jerry S. Davis

Colleges have responded in many ways to the Americans With Disabilities Act (ADA) of 1990. The deferred maintenance survey conducted by Sallie Mae for APPA and NACUBO asked what actions colleges had taken in the past two years, how much they spent to comply with ADA, how much they must spend to achieve compliance, and how long it will take them to reach that goal (if they have not already achieved it).

Actions Taken to Comply with ADA

The most frequently identified action steps taken to comply with ADA were completing an audit to determine necessary modifications and appointing an ADA coordinator and/or committee. Over eight out of ten respondents said they had taken these actions. Almost seven out of ten had agreed on strategies for ranking compliance needs, and just over half had prepared formal plans to comply with ADA. About 45 percent had identified sources of funds for ADA modifications, and 36 percent had developed long-range funding plans.

Jerry Davis is director of education and student loan research at Sallie Mae, Washington, D.C. He was the chief researcher of the APPA/NACUBO/Sallie Mae deferred maintenance study,* A Foundation to Uphold, *and is the author of its research report, from which this article is adapted.

Table 1 shows that the ADA responses varied by college types. Private masters universities and four-year colleges were less likely than their public counterparts, 67 percent versus 100 percent, to have reported at least one specific response. Over 93 percent of the research and doctoral universities, but only 81 percent of other colleges, reported some response. Developing a long-range funding plan was the action *least likely* to have been taken by all but the private research universities. Fewer research universities reported preparing formal compliance plans than preparing funding plans or finding funding sources. All responding colleges were *most likely* to have completed needs surveys and appointed ADA coordinators.

The ADA holds public colleges to different standards of compliance than it does private colleges. So it is not surprising that public college respondents more frequently reported having taken action.

Here are the percentages for all public and private colleges combined:

	All Public	All Private
Completed a needs survey	91%	70%
Appointed an ADA coordinator	91	61
Developed strategy to prioritize needs	74	56
Prepared formal compliance plan	69	32
Identified funding sources	55	29
Did long-range funding plan	42	25

Private colleges were only about three-fourths as likely as public colleges to have completed a needs survey and developed a strategy to rank their ADA needs. Private colleges were about two-thirds as likely as public colleges to have appointed an ADA coordinator or committee. They were half as likely to have developed formal compliance plans, identified funding sources, or prepared a long-range funding plan. Figure 1 displays the expected responses of all colleges to the ADA, assuming that actions of the survey respondents represent those of other similar colleges.

TABLE 1

Responses To Passage Of Americans With Disabilities Act, By College Types

	Public Research	Private Research	Doctoral Universities	Public 4-YR/MA
Completed a needs survey	93.5%	86.7%	96.0%	96.9%
Appointed an ADA coordinator	95.3	86.7	88.0	100.0
Strategy to prioritize needs	83.7	80.0	76.0	76.9
Formal compliance plan	79.1	53.3	64.0	70.8
Identified funding sources	62.7	60.0	44.0	60.0
Long-range funding plan	53.5	60.0	20.0	44.6
Number	43	15	25	65

	Private Masters	Private 4-Year	2-Year Colleges	All Respondents
Completed a needs survey	63.0%	69.2%	85.1%	84.0%
Appointed an ADA coordinator	59.3	55.4	85.1	80.8
Strategy to prioritize needs	40.7	55.4	70.2	68.1
Formal compliance plan	22.2	27.7	63.8	55.0
Identified funding sources	29.6	26.1	44.7	45.0
Long-range funding plan	14.8	26.1	40.4	35.8
Number	27	65	47	307

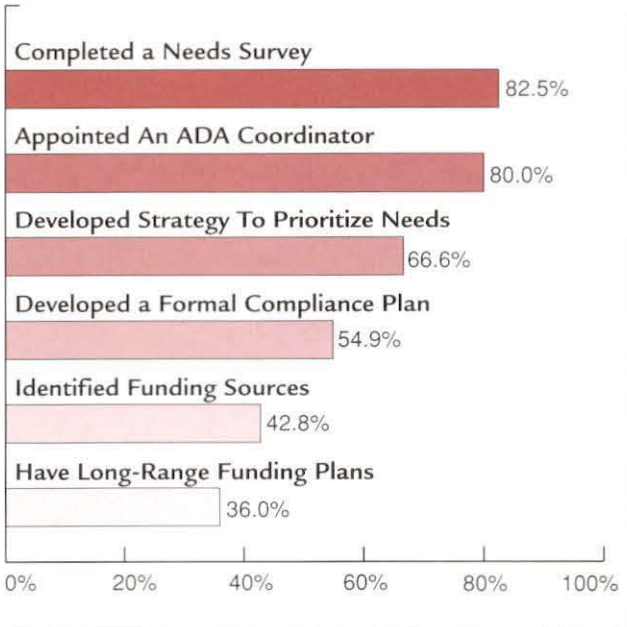
ADA Investigation and Enforcement Actions

Based on the survey responses, within the past two years an estimated one out of ten colleges in the United States was subjected to an ADA investigation or enforcement action by a federal or state agency and/or was named in a complaint or suit by someone alleging failure to comply with the ADA. Table 2 shows that the survey respondents were slightly more likely to have been sued than subjected to an investigation, 18 percent versus 13 percent, but this difference was not statistically significant.

Almost 42 percent of public research universities, but just 27 percent of private research universities, 24 percent of doctoral universities, and 21 percent of public four-year and masters colleges, reported ADA complaints or lawsuits. Under 7 percent of the private masters universities and four-year colleges, the two-year colleges and the medical colleges reported ADA law suits or complaints.

FIGURE 1

Resources of All Colleges to ADA Compliance



(The eight HBCU respondents to this question were too few to produce any valid conclusions.)

Public research universities and public and private doctoral universities were more than twice as likely as other types of colleges to have been investigated or subjected to an ADA enforcement action, 26 percent versus 10 percent. Larger institutions, simply due to their larger numbers of enrolled students, probably have a higher probability of being sued or investigated. Besides having fewer students and staff to sue them, or demand investigations, smaller colleges may be less impersonal and more responsive to students' ADA concerns. Public colleges were about three times as likely as private colleges to have been subjected to an investigation, 18 percent versus 6 percent. Public colleges were over twice as likely to have been named in a complaint, 23 percent versus 9 percent.

College Expenditures on ADA Compliance

The 338 survey respondents reported spending nearly $97 million, or an average of $286,300, on ADA compliance construction and renovations during the 1993–94 academic year. If these respondents represent their respective college populations, then all colleges across the nation spent almost $400 million on ADA compliance. However, because the responding colleges generally are larger than the non-respondents, the actual expenditure was probably closer to $300 million. Figure 2 displays the estimated expenditures for ADA compliance for all colleges. These data show that over 55 percent likely spent under $50,000, with one out of eleven not spending anything. Only 5.4 percent were likely to have spent more than $500,000.

Although the total expenditure for the responding colleges was large, more than one-fourth spent under $25,000

and half spent under $74,000 in 1993–94 (see Table 3) One-fifth spent over $300,000. Half the colleges spending over $300,000 were larger research and doctoral universities. Only 13 percent of the smaller colleges reported spending over $300,000. The median expenditure for all public colleges was $94,000 and the median for all private colleges was $40,000.

The study staff recognized that work to address accumulated deferred maintenance (ADM) or capital renewal needs is included with projects undertaken to meet ADA requirements. Therefore, colleges were asked what proportions of their 1993–94 ADA expenditures were used to meet deferred maintenance needs. Over 63 percent said that under 10 percent of their ADA expenditures could have been assigned to deferred maintenance or capital renewal. The average was only 17 percent. Only one-fourth said that more than 20 percent of their ADA expenditures could have been assigned to deferred maintenance or capital renewal.

Dollars Needed to Achieve Full Compliance

The colleges were asked how much more they would have to spend to achieve compliance with the Act. The mean response was nearly $4 million, with 12 percent saying they would have to spend $10 million or more. However, over 31 percent said they would have to spend less than an additional $500,000 for compliance. Therefore, the distribution of estimated expenditures is bimodal, with a few colleges having to spend substantial amounts and a much larger percentage having to spend relatively little. Table 4 displays the respondents' data. The median amount for all public college respondents was $1,895,000. The median for all private college respondents was $896,000.

Almost 61 percent of research universities said they would have to spend over $6 million to achieve compliance. However, only 10 percent of the remaining respondents said they would have to spend this much. Half

TABLE 2

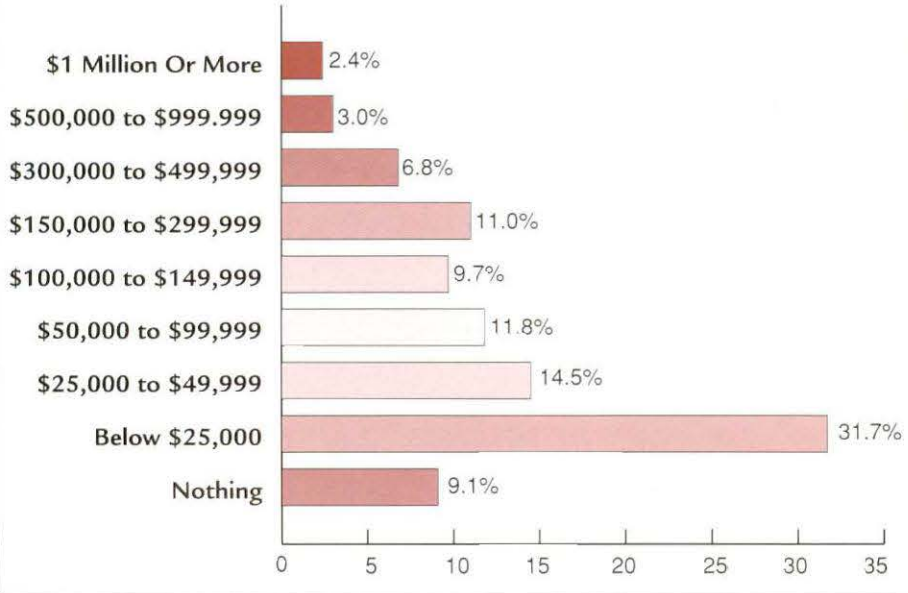
Percentages Of Colleges Named In An ADA Complaint Or Suit And/Or Subject To An ADA Investigation Or Enforcement Action, By College Types

	Complaint or Lawsuit	Investigation/ Enforcement	Number of Respondents
Public Research Universities	41.9%	27.9%	43
Private Research Universities	26.6	13.3	15
Doctoral Universities	24.0	24.0	25
Public 4-Year/Masters	21.5	15.4	65
Private Masters	7.4	3.7	27
Private 4-Year	6.2	4.6	65
Public/Private HBCUs	37.5	25.0	8
2-Year Colleges	6.4	8.5	47
Public/Private Medical Colleges	8.3	8.3	12
All Respondents	17.9%	13.4%	307
All Colleges*	10.6%	9.6%	

*Weighted by proportions in the population.

FIGURE 2

Estimated 1993–94 Expenditures For ADA Compliance, All Colleges



the respondents who expected to spend over $6 million were public or private universities.

On the average, the colleges spent, in 1993–94, the equivalent of about 7.2 percent of the total remaining amount they believe they will have to spend to achieve compliance. Here are the percentages for each college type:

Public Research Universities	8.4%
Private Research Universities	4.6%
Doctoral Universities	4.8%
Public 4-Yr/Masters	3.8%
Private Masters Universities	14.4%
Private 4-Yr Colleges	10.4%
Public/Private HBCUs	9.4%
Two-Year Colleges	9.1%
Medical Colleges	11.3%
All Respondents	**7.2%**

Private four-year colleges and masters universities and the medical colleges respondents spent larger proportions of what ultimately is needed for ADA construction and renovation compliance. On the average, the private research universities and the doctoral universities spent less than other colleges.

Figure 3 displays the estimated average amounts *all colleges* would have to spend in future years to achieve compliance with the Americans With Disabilities Act, if the respondents were representative of the total college populations from which they were drawn. Under 5 percent would have to spend $10 million or more. About 46 percent estimate spending under $500,000 to reach ADA compliance. Almost 83 percent of all colleges are expected to spend under $3 million to achieve compliance.

If the respondents were representative of all colleges, then all colleges would have to spend about $12 billion in total to achieve compliance with ADA. However, because the respondent colleges are larger than the non-respondent colleges, the actual aggregate amount is closer to $9 billion than to $12 billion.

Costs Per Student for ADA Compliance

The study staff examined the average per student cost of achieving compliance with ADA by responding college types. The estimated ADA amount for each responding college was divided by its number of head-count students. The average cost for the 292 responding colleges with complete data was $850, as displayed in Table 5. However, half the colleges would have to spend less than $375 per student to meet their compliance goals. The median per student values was under $300 at public four-year and masters degree colleges, two-year colleges, and doctoral universities.

About 24 percent of all respondents, but 31 percent of research universities and medical colleges, would have to spend over $1,000 per student. So would about 31 percent of private four-year college respondents and 47 percent of HBCU respondents. The distribution of the average per student costs to comply with ADA provisions is bimodal, just as was the distribution of total costs of compliance.

It is not be surprising that 21 percent of respondents thought it would take more than ten years for them to comply when: 1) in 1993–94, the respondent colleges spent an average of only 7 percent of the total remaining amounts they expect to spend

to meet ADA compliance, 2) the average total remaining amount needed was close to $4 million, and 3) the total represented about $850 per student.

Over 46 percent of research universities and nearly 22 percent of public four-year and masters colleges said it would take them more than ten years to comply. The median years to compliance was lowest for two-year colleges with about 12 percent saying their campuses were fully accessible. This higher rate of accessibility is likely the consequence of two-year campuses being relatively new to higher education. About 5 percent of all other respondents said they were in compliance. About four out of ten respondents said they would be in compliance with the Act within four years. Within ten years, eight out of ten colleges should be complying. Figure 4 shows the estimated number of years it will take all colleges to achieve compliance. Over 8 percent are complying now and about 67 percent should be complying within six years. Only 16 percent expect to take more than ten years to achieve compliance.

Summary and Conclusions

The survey showed that colleges and universities had taken important steps to achieve the goals of the Americans With Disabilities Act. Over eight out of ten completed a survey to determine compliance needs and appointed an ADA coordinator or committee. Over half had created formal plans to achieve compliance and had strategies to rank-order needs. Over four out of ten private college respondents said their colleges had completed surveys, appointed coordinators, and created formal plans to achieve compliance. Over seven out of ten public college respondents said their colleges had taken all three of these actions.

Although only 8 percent of colleges currently met compliance with ADA, just one out of ten had been identified in an ADA complaint or lawsuit or been subjected to a formal investigation or enforcement. Larger colleges were more likely than smaller ones to have reported such experiences.

TABLE 3

Expenditures For ADA Compliance In 1993–94, By College Types

	Public Research	Private Research	Doctoral Universities	Public 4-YR/MA	Private Masters
Nothing	0.0%	0.0%	0.0%	9.1%	3.9%
Under $25,000	4.8	0.0	5.9	19.7	34.6
$25,000 to $49,999	2.4	7.1	17.6	10.6	19.2
$50,000 to $74,999	4.8	7.1	11.8	15.2	3.8
$75,000 to $99,999	0.0	0.0	8.8	4.5	0.0
$100,000 to $149,999	2.4	14.3	23.6	9.1	19.2
$150,000 to $299,999	19.0	35.8	14.7	15.2	7.7
$300,000 to $499,999	19.0	7.1	2.9	10.6	7.7
$500,000 to $999,999	19.0	14.3	11.8	4.5	0.0
$1 Million Or More	28.6	14.3	2.9	1.5	3.9
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Median	$450,000	$233,000	$112,500	$67,500	$40,000
Mean	$1,089,000	$402,900	$238,000	$146,000	$128,500
Number	42	14	34	66	26

	Private 4-Year	Pub/Priv HBCUs	2-Year Colleges	Medical Colleges	All Respondents
Nothing	15.3%	3.6%	10.2%	0.0%	6.8%
Under $25,000	30.8	10.7	40.8	21.4	21.3
$25,000 to $49,999	13.8	10.7	16.4	0.0	11.8
$50,000 to $74,999	10.8	17.9	6.1	21.4	10.7
$75,000 to $99,999	7.7	7.1	2.0		
$100,000 to $149,999	7.7	10.7	8.2	7.1	10.4
$150,000 to $299,999	6.2	10.7	10.2	21.4	13.3
$300,000 to $499,999	6.2	0.0	6.1	0.0	7.7
$500,000 to $999,999	0.0	17.9	0.0	14.3	7.1
$1 Million Or More	1.5	10.7	0.0	7.1	6.5
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Median	$31,900	$100,000	$24,400	$100,000	$73,600
Mean	$92,200	$400,800	$63,500	$285,400	$286,300
Number	65	28	49	14	338

FIGURE 3

Estimated Average Amounts Colleges Would Have to Spend To Achieve Compliance With The ADA

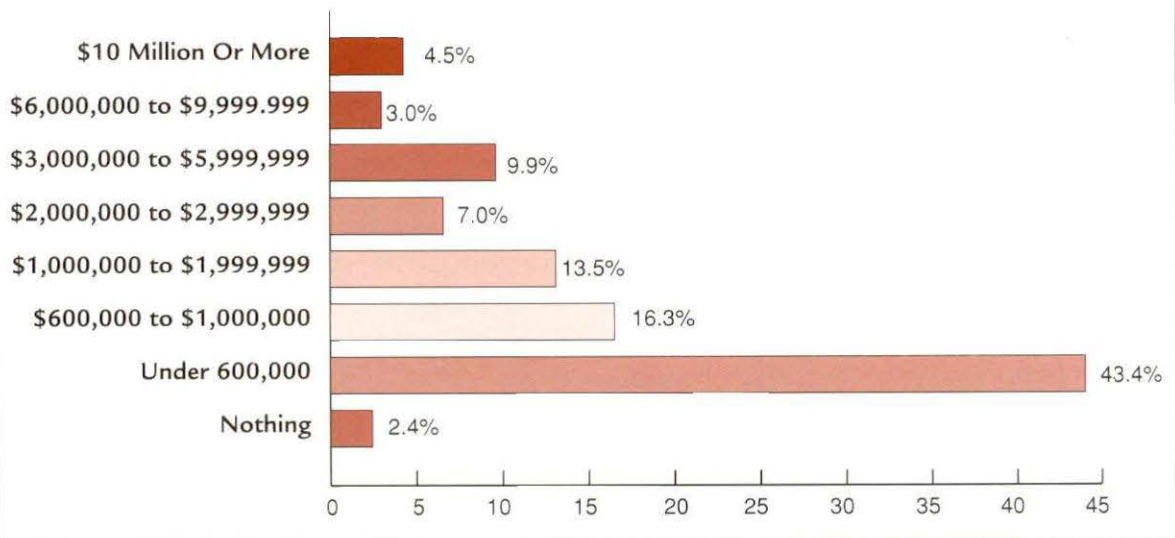
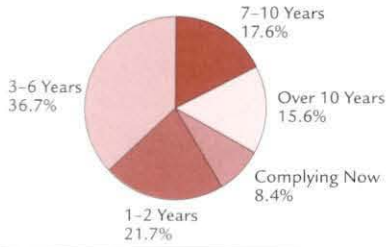


FIGURE 4

Estimated Number of Years it Will Take Colleges To Achieve Compliance With The ADA



Five percent of colleges spent $500,000 or more in 1993–94 on ADA compliance projects. Almost half spent under $50,000. American colleges in total must spend an additional estimated $9 billion in the future to achieve compliance with the Act. However, almost half must spend under $500,000 and only 24 percent will have to spend over $2 million. About half the colleges should have to spend under $375 per student to achieve compliance. Two out of three colleges should be in compliance within the next six years, with only one out of every six taking more than ten years to reach this goal.

TABLE 4

Estimated Total Costs Of Achieving Compliance With The ADA, By College Types

	Public Research	Private Research	Doctoral Universities	Public 4-YR/MA	Private Masters
None	0.0%	0.0%	3.6%	1.6%	0.0%
Under $500,000	13.5	0.0	14.8	25.0	33.3
$50,000 to $1,000,000	0.0	7.1	3.7	15.6	25.0
$1,000,000 to $1,999,999	0.0	7.1	25.9	17.2	25.0
$2,000,000 to $2,999,999	8.1	7.1	14.8	1.6	16.7
$3,000,000 to $5,999,999	13.5	28.6	25.9	15.6	0.0
$6,000,000 to $9,999,999	16.3	21.4	3.7	10.9	0.0
$10 Million Or More	48.6	28.6	11.2	12.5	0.0
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Median	$8,500,000	$6,000,000	$2,375,000	$1,455,000	$833,000
Mean	$12,867,000	$8,795,000	$4,997,000	$3,856,000	$895,000
Number	37	14	27	64	24

	Private 4-Year	Pub/Priv HBCUs	2-Year Colleges	Medical Colleges	All Respondents
None	7.1%	0.0%	2.1%	0.0%	2.0%
Under $500,000	37.5	17.6	60.4	18.2	29.5
$500,000 to $1,000,000	16.1	23.5	16.7	18.2	13.8
$1,000,000 to $1,999,999	23.2	5.9	8.3	0.0	14.4
$2,000,000 to $2,999,999	8.9	17.6	4.2	18.2	8.4
$3,000,000 to $5,999,999	5.4	5.9	8.3	45.4	13.1
$6,000,000 to $9,999,999	1.8	11.9	0.0	0.0	6.7
$10 Million Or More	0.0	17.6	0.0	0.0	12.1
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Median	$667,000	$2,167,000	$897,000	$2,750,000	$1,326,000
Mean	$888,000	$4,281,000	$694,000	$2,529,000	$3,980,000
Number	56	17	48	11	298

TABLE 5

Estimated Average Per Student Costs Of Achieving Compliance With The ADA, By College Types

	Public Research	Private Research	Doctoral Universities	Public 4-YR/MA	Private Masters
Under $100	13.5%	7.7%	18.5%	25.8%	25.0%
$100 to $199	8.2	15.4	11.1	17.7	16.7
$200 to $299	13.5	7.7	22.3	11.3	16.7
$300 to $499	18.9	7.7	29.6	12.9	8.2
$500 to $999	21.6	23.0	7.4	9.7	20.8
$1,000 to $1,199	5.4	15.4	3.7	3.2	4.2
$1,200 to $1,999	13.5	7.7	3.7	8.1	4.2
$2,000 or More	5.4	15.4	3.7	11.3	4.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Median	$470	$750	$290	$260	$250
Mean	$705	$1,100	$515	$720	$520
Number	37	13	27	62	24

	Private 4-Year	Pub/Priv HBCUs	2-Year Colleges	Medical Colleges	All Respondents
Under $100	20%	0.0%	34.8%	18.2%	21.2%
$100 to $199	16.4	5.9	10.9	0.0	13.0
$200 to $299	5.4	23.5	6.5	9.1	11.6
$300 to $499	7.3	5.9	19.6	0.0	13.7
$500 to $999	20.0	17.6	15.2	27.3	16.5
$1,000 to $1,199	16.4	0.0	0.0	00	5.8
$1,200 to $1,999	3.6	11.8	4.3	18.1	7.3
$2,000 or More	10.9	35.3	8.7	27.3	10.9
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Median	$550	$675	$265	$950	$375
Mean	$920	$1,700	$650	$2,410	$850
Number	55	17	46	11	292

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Striving for Facilities Equilibrium at Louisiana State University

by Matthew C. Adams, P.E.

Louisiana State University, founded in 1860, is the flagship institution of higher education in Louisiana with a Carnegie designation as Research University I. The campus, ranked as one of the most beautiful in the country, is located on 1,700 acres on the east bank of the Mississippi River in Baton Rouge. The campus consists of more than 8 million square feet in over 300 buildings that serve the needs of more than 27,000 students and 4,550 faculty and staff. The campus was constructed in its current site in the 1920s, and many of the buildings are in Italian Renaissance architecture. Forty-seven buildings are on the National Historic Register.

Over the years, rapid facilities expansion, inferior quality buildings, legal mandates, and state budget problems contributed to Louisiana State University's increased capital renewal and deferred maintenance (CRDM) backlog. State funding in Louisiana for its universities has decreased 20 percent, or almost $109 million dollars, since 1986. In addition to limited funding available, a state constitutional change has limited the total state general obligation bond indebtedness which limits the amount of funds available for all state facilities.

However, Joe Kelley, executive director of facility services, recommended a plan that will eliminate most of Louisiana State University's CRDM backlog and provide enough funding to ensure facilities equilibrium. Kelley's plan includes short-term deferred maintenance funding, short-term bond issue, energy savings plans, long-term annual CRDM funding, and a policy mandating that funding for all new construction include a maintenance reserve fund. With this plan, the university will generate $100 million in one-time funds by the year 2000, and will completely eliminate their CRDM backlog. It further assures the perpetual funds to prevent recurrence of the budget problems.

The problem was so enormous that candidate, now Governor, Mike Foster toured the LSU campus in fall 1995 and made it a part of his campaign platform.

Matt Adams is president of M. C. Adams & Associates, an operations engineering firm based in Atlanta, Georgia. ***This article is adapted from a book of deferred maintenance case studies due to be published by APPA this spring.***

CRDM Funding History

Like many universities, Louisiana's funding problems began in the late 1940s and 1950s when LSU began to rapidly expand facilities to accommodate the World War II veterans returning to college. The rapid expansion continued throughout the 1960s and 1970s as baby boomers filled the universities. Because the demand for classrooms, labs, and other university facilities was so great, construction quality and future minimum maintenance were not primary concerns.

While these demographic trends had an impact on universities nationwide, the state of Louisiana was particularly affected because the state did not have laws or guidelines governing quality standards for permanent facilities. The state has and enforces building codes through the State Fire Marshal's Office and the State Health Department, but these codes deal only with life safety issues and do not ensure quality HVAC or roofing systems. Louisiana has recently undertaken the task of establishing campus design guidelines and minimal quality standards. However, as a result of past unclear guidelines, LSU now has a CRDM backlog in excess of $45 million.

Increased Responsibilities/Decreased Funding

In the period from 1983–84 to 1995–96, the campus size *increased* by 32 percent, the maintenance budget *decreased* by 15 percent, and staffing was *reduced* by approximately 150 positions. The net result was a 15 percent reduction in maintenance expenditures in 1984-adjusted dollars, decreased from $2.87/sq. ft. in 1983–84 to $1.09/sq. ft. in 1995–96. As a result of this drastic cut, maintenance activity went from proactive to reactive, and major projects were deferred. While LSU has decreased its deferred maintenance by 8 percent through funds generated by energy savings and reallocation of campus funds, the deferred maintenance backlog is still quite large.

Increased Autonomy

While the current deferred maintenance backlog may seem overwhelming, LSU's Joe Kelley has developed a plan

that will completely eliminate CRDM backlog in the next five years and provide enough funding to assure facilities equilibrium. Two recent successes have helped clear the path for increased autonomy and credibility. The recent increase in project authority from $150,000 to $300,000 illustrates their greater autonomy, and their award-winning energy program built credibility.

Before 1995, the state legislature required that all projects greater than $150,000 be approved in capital outlay. Funds for these projects came from cash or general obligation bonds rather than campus operating funds. Typical capital outlay projects were roof and utility line replacements. However, as the state's fiscal problems continued, state colleges and universities became more dependent upon capital outlay. In 1995, the state legislature increased project authority from $150,000 to $300,000.

Increased Credibility Through Award

LSU proved its ability to achieve facilities excellence with a limited budget when they entered into a *shared savings energy contract* that produced a self-funded, highly efficient energy system.

The Louisiana State Legislature allows institutions to enter into shared savings contracts if the saving are great enough to fund the project. LSU's shared energy savings contract has certainly been self-funding, and it has benefited the institution in several other ways as well:

- **Decreased Utility Costs**—The new system has decreased utility costs $3.4 million annually. While annual utility bills formerly cost LSU $12.8, they now cost $9.4 million.
- **Reducing Deferred Maintenance**—By retiring the old energy generating system, LSU eliminated 200 pieces of outdated equipment and reduced deferred maintenance by $5 million.
- **Expanded Capacity**—The new energy system has expanded capacity 20 percent, and expanded potential capacity 40 percent.
- **Generated Savings**—As a result of the energy saving project, LSU has incurred more than $480,000 in net savings.

Because of the success of their energy savings efforts, LSU received the Association of Energy Engineers' award for 1995 Project of the Year. More importantly, this project was evidence that through innovative thinking, LSU could both generate savings and increase efficiency (see Figure 1).

Strategic Plan to Eliminate CRDM Backlog

Encouraged by their success with the shared energy savings contract, LSU developed a plan that addresses both the short-term and long-term issues of eliminating the CRDM backlog and ensuring future facilities equilibrium.

Figure 1
Energy Project Total Savings

Total Savings	$ 7,537,927
Lease Payments	5,441,704
Insurance Costs	63,339
Maintenance Costs	742,939
Project Savings	***$1,289,945***

Item 1: Short-Term DM

While Louisiana Public Institutions of Higher Education await a more formalized, long-term plan, Kelley's plan calls for deferred maintenance funds of $30 million through the operating budgets. The purpose of this interim budget item is to ensure that critical projects can continue until other funding measures are in place.

Item 2: Fees and Bonds

Kelley also recommends a combination of a student building use fee and bond issue. A portion of the revenue from the bond issue would be used as debt service on the bond. Both the fee and the bond issue, however, require legislative approval.

Student Use Fee

Many universities are now charging their students a "building use fee" each semester they register. This plan shifts a potion of the cost of maintaining higher education facilities from the general taxpaying public to the user of the facility. Figure 2 presents a comparison of some of the building use fees.

If all Louisiana Public Institutions of Higher Education were to charge $50/year per student ($25/semester), it would generate more than $7 million annually.

$50 Million Bond Issue

Of this $7 million, $5 million could be used as debt service on $50 million, fifteen-year bond issue. This would fund approximately half of the current system-wide CRDM $100 million backlog.

Figure 2
Comparison of Building Fees

Institution	General Building Use Fee
Auburn	$ 30.00
University of Alabama - Birmingham	141.00
Florida State University	142.80
Texas A& M University	300.00
Texas Tech University	360.00
University of Houston - UP	360.00
University of North Texas	240.00
University of Texas - Austin	360.00
University of Virginia	92.00
Louisiana State University (Proposed)	*50.00*

Limited Timing

To prevent this fee being perceived as a tuition increase, the university administration would clarify that this is a temporary measure. After the bonds are retired in fifteen years, the student fee would be discontinued.

Item 3: Energy Savings

Kelley's plan also requires institutions to have a plan to generate and leverage energy savings by March 1, 1997. LSU's success with its shared savings energy contract is likely to encourage participation by member universities and approval for funding by the state legislature.

Item 4: Funding

The plan calls for the legislature to include minimum annual funding for capital renewal, replacement, and preventive maintenance to be increased over a five-year period to equal annual needs.

Item 5: Maintenance Reserve for New Buildings

All new construction and major renovation projects will be funded at 110 percent of cost to allow for development of a maintenance reserve fund. The 10 percent over the cost of constructing or renovating the building will be invested in a reserve account to be utilized over the life cycle of the facility for future capital renewal and replacement needs. Assuming a 3 percent average inflation level and a 10 percent return on invested funds, sufficient capital renewal and replacement funds would be available in perpetuity in the reserve account. This assumes, of course, aggressive investing and careful use of the reserve fund. This plan, if approved by the legislature, gives the universities a one-time $100 million fund that will eliminate its CRDM backlog. Items 4 and 5 ensure that funds are available on a perpetual basis, and this creates facilities equilibrium.

Legislature-Initiated Funding

Before Joe Kelley had an opportunity to present his plan to the state legislature, the legislature initiated funding for higher education. Louisiana Governor Mike Foster had run on a platform that placed high priority on education. The governor, himself an LSU graduate, fulfilled his promise to provide funding for university facilities. The plan approved by the legislature includes $7.9 million in special funding for the 1996-97 academic year, and an equal amount for the next four years.

Conclusion

The new legislation-driven funding enables LSU to move toward facilities equilibrium more quickly. The additional funding ensures that LSU will eliminate its system-wide CRDM backlog of over $100 million without resorting to such measures as a building fee or a bond issue. LSU's Joe Kelley has developed a plan that will completely eliminate CRDM backlog in the next five years and achieve facilities equilibrium.

[To obtain a copy of LSU's full report or a video produced by LSU's Office of Public Relations, contact Peter Davidson at 504-388-6964.]

A Facilities Renewal Program

by Harvey H. Kaiser

The conditions of higher education facilities in 1995 described in the recently published *A Foundation to Uphold* should affect colleges and universities in different ways: for the third of the 3,768 institutions with the same or less deferred maintenance than in the benchmark year of 1988 there is encouragement for the progress on reducing backlogs; for the 7.3 percent of the campuses that report they "don't know" the extent of conditions, there is dismay and concern; and for the more than half of the campuses that reported increases there is the question of why they aren't addressing their address facilities.

Why do some institutions face the problem, find the funding, and develop implementation programs to reduce backlogs of deferred maintenance? Why do some institutions and statewide systems of higher education recognize stewardship responsibilities for their capital asset investment, while others either ignore the problem or, at best, provide partial solutions? What are the primary factors that lead to successes?

The overarching answer is that success occurs where there is:

- determined leadership
- an institutional commitment to address the problem
- a strategic plan for reducing deferred maintenance backlogs and a funding strategy for capital renewal.

Assuming that determined leadership (and perseverance) the following is the context of an institutional commitment and a four phase process for the development of a strategic *Facilities Renewal Program*.

Context

The adoption of a Facilities Renewal Program requires acceptance by campus leadership of a commonly agreed upon value: the concern for *stewardship and the restoration* and preservation of capital assets created by past generations. The commitment to this value has several underlying motivations:

- *financial* (preservation of assets)
- *academic* (support of the academic mission and future competitiveness)
- *management* responsibilities (plant maintenance and renewal)
- *emotional* (traditions, nostalgia, and pride in appearance).

For example, an interested legislator or member of a governing board aware of campus conditions can introduce the facilities renewal into policy discussions for preservation of capital assets from a *financial* perspective. The rationale is that deteriorated facilities result in a decreased value of capital assets and represent an unfunded liability. This concern can be translated into an assignment to campus leadership to determine the status of conditions and to report on priorities and costs to eliminate facilities deficiencies.

The impact of deteriorated facilities can impair fulfillment of the *academic* mission of an institution. Conditions can also provoke concerns for future competitiveness in attracting faculty, staff, and students of desired caliber. Sometimes, a new chancellor or president, or a chief academic or financial officer, can offer a fresh perspective on the limitations imposed by deteriorated facilities to support the academic enterprise. Predecessors may have addressed campus priorities during periods of growth to support institutional mission. However, more recent difficult choices in resource allocation may have failed to adequately accommodate facilities renewal.

Another source of the development of a facilities renewal program is either or both the chief financial officer and facilities management staff concerned about their *management* responsibilities. Although this source may appear to shift the emphasis to a *facilities* problem detached from financial and academic concerns, the challenge is to deliver the message that *financial* and *academic* priorities are the impelling motivation for a proposed facilities renewal program.

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A final motivating factor is the *emotional*—ties to campus traditions, nostalgia, and pride in appearance of facilities and the landscape of an institution. The latent dissatisfaction among alumni or friends of a college about the condition of "Old Main," or a strong disappointment about the lack of attention to well-remembered and cherished place has caught a campus administration's attention.

An essential ingredient for addressing the facilities problem is to establish awareness among campus leadership and the governing board that *financial, academic, management*, and *emotional* values are at risk. The concern that deferred maintenance and capital renewal is inconsequential or, possibly, is due to negligence, can lead to frustration about "getting the message" to campus leadership. To ensure success, a program eventually led by campus leadership must introduce all campus constituencies to the sense of urgency required to address facilities problems in a clear and consistent manner.

The following is a four-phase process for the development of a capital renewal program for a statewide system, college, or university.

1. Program Goals And Objectives

The initial phase in the development of a facilities renewal program is to determine overall goals and objectives. An outcome is a prospectus that introduces the subject's urgency, identifies major issues and impacts, and outlines a plan of action to address deferred maintenance and capital renewal. It is essential to include both the *long-term* renewal needs and *short-term* deferred maintenance needs. Often, accomplishing acceptance of the need to reduce deferred maintenance backlogs stops short of actions to prevent future recurrence of the problem. There is also a need for recognition that problems will recur unless there is a long-term program for adequate maintenance and renewal funding for life cycle deterioration of facilities.

A statement of overall goals and objectives developed in a prospectus format relies on existing information on facilities conditions to the extent available. Comparative benchmarks to similar institutions, an assessment of funding histories, and examples of conditions and their impacts can illustrate the urgency for action. The reliability of existing information on facilities conditions is to be approached cautiously, with caveats about the need for future thorough data collection and analyses. Typically, a complete assessment of building *and* infrastructure needs and a forecast of capital renewal needs is proposed in the prospectus.

This phase in the process of development of a facilities renewal program requires interviews with various sources. The views of governing board members and campus senior leadership is essential for an evaluation of the feasibility of a facilities renewal program. Included are those individuals that can serve a dual role in the future to provide additional information and in the development of a program's advocacy. The interviews should explore budgeting traditions and practices, and levels of campus awareness and attitudes towards facilities conditions.

Short-Term Goals and Objectives

The overall objective of the short-term component of a facilities renewal program is the reduction of accumulated backlogs of deferred maintenance to manageable levels. It is important to distinguish between the *short-term* reduction of accumulated backlogs of deferred maintenance *long-term* renewal to offset life cycle deterioration of building and infrastructure systems and components. A goal is to achieve a backlog in the range of 2 percent of current replacement value that can be funded from current fund expenditures and that does not require external sources of funding. A caution is to ensure that infrastructure is included in assessments of deferred maintenance. Experience in facilities condition assessments indicates that infrastructure conditions can represent 20 to 25 percent of accumulated deferred maintenance. Although the short-term component of a program can be considered a "one-time" expenditure, it may take eight to twelve years to accomplish.

There is empirical evidence that institution's historically underfunding plant operations and maintenance (O & M) and failing to routinely reinvest in capital renewal can expect levels of deferred maintenance that approximate 20 percent of current replacement value. At these levels of deferred maintenance, institutional capacity to fund reductions of deferred maintenance exceeds annual operating budgets. Thus, a combination of reallocated internal resources and external sources is necessary to fund deteriorated facilities conditions.

Data and information necessary for the development of a short-term facilities renewal program's goals and objectives include:

- interviews with senior administrative officers and facilities management staff
- facilities condition assessment of *buildings, fixed equipment, and infrastructure* (facilities audit)
- prioritized list of current facilities renewal projects
- facilities renewal funding histories.

Long-Term Goals and Objectives

The long-term goals and objectives of a facilities renewal program should ensure that funding is adequate to prevent future backlogs of deferred maintenance. Because facilities renewal recurs as a result of the life cycle deterioration of building and infrastructure systems and components, there is a need to provide adequate funds on a recurring basis.

Annual renewal funding requirements for building and infrastructure systems and components can be forecast with a relative degree of accuracy. An annual facilities renewal forecast enables budget planning for the funding of reserves to be established as needs arise. Alternative funding mechanism are: 1) to allocate an *annual renewal allowance* in the operating budget; or 2) to create a pool of funds as a reserve to be drawn against as projects are identified and planned on an annual basis. The prioritization of projects in a long-term program is necessary to ensure that academic priorities are coordinated with facilities improvements. A capital planning and budgeting committee, comprised of senior campus officers and with support by facilities management staff, should review project proposals and status of funded projects on quarterly. A summary annual report of a long-term renewal program should be prepared for wider distribution, including the governing board and other campus constituencies.

Related to the processes of prioritization and reporting of a long-term renewal program is a regular assessment of facilities condition and an evaluation of the adequacy of current operations and maintenance of plant budgets. A comprehensive facilities audit designed to inspect all facilities is necessary to provide a benchmark for conditions. In successive years, facilities should be conducted on a three-year cycle. The understanding of the adequacy (or inadequacy) of O & M budgets to address facilities renewal is based on analyses by facilities management staff to justify arguments about resource allocations.

Data and information necessary for the development of long-term facilities renewal program goals and objectives include:

- interviews with key policy and decision makers
- facilities renewal funding history
- current fund and plant fund expenditures
- O & M budgets (past three years)
- current replacement value of buildings, fixed equipment, and infrastructure
- institutional organizational structure
- facilities management organizational structure
- governance structure
- financial report
- campus space inventory.

Outcomes

Outcomes of the program goals and objectives phase are:

1. A prospectus for distribution to selected campus constituencies that describes the facilities renewal program
2. Scope and methodology for a proposed facilities renewal program
3. Preliminary estimates of the costs and schedule for the development of a facilities renewal program.

2. Program Context

The program context phase of the development of a facilities renewal program is an evaluation of unique institutional characteristics and identifies major issues that affect facilities condition. Included are opinions and attitudes of key policy and decision makers obtained through interviews, along with available data and other information. Understanding the "climate" and "politics" of the institution aids in identifying potential strategies for a facilities renewal program. The process of the collection and analysis of data and information provides findings and conclusions that contribute to the determination of the feasibility of introducing a facilities renewal program. This process also affords the opportunity for identification of advocates who will in the future champion a facilities renewal program.

The scope and methodology of this phase includes review and analysis of the following:

- strategic plan
- academic plan

- strategic facilities plan
- campus master plan
- institutional analysis
  - governance structure
  - campus traditions, procedures, and practices
  - capital planning and budgeting process
  - resource availability
- campus history of facilities renewal
- existing conditions
- facilities renewal priorities
- facilities information system availability
- staff capabilities (data collection, presentations, and implementation).

Outcomes

Outcomes of the program context phase are:

1. A report stating findings and conclusions that contribute to the determination of the feasibility of a facilities renewal program
2. A "policy framework" that guides the development of recommendations for an overall program strategy and, specifically, a communications strategy.

3. Program Strategy

This phase of the process prepares a detailed program strategy. In addition to an institutional analysis, data collection needs are identified by a comprehensive facilities study. The study provides a detailed list of priority projects based on the combined results of a *facilities condition assessment* of building and infrastructure system deficiencies and a *space needs assessment*. These assessments integrate academic and facilities priorities and include descriptions of the deteriorated conditions. *An operations and maintenance department assessment* identifies potential efficiencies and subsequent cost savings and/or improvements in service that can benefit capital renewal funding.

Methodology for the development of a facilities renewal program strategy is:

- determine program goals and objectives
- develop comparative benchmarking with similar institutions
- prepare a comprehensive facilities study, including:
  - facilities condition assessment
  - space needs assessment
  - operations and maintenance assessment
- evaluate relationships of constituencies:
  - legislative and/or governing board
  - campus leadership
  - potential advocates and opponents
- prepare a facilities renewal program strategic plan, including:
  - organizational responsibilities
  - prioritized projects
  - implementation schedule.

Outcomes

Outcomes of the program strategy are:

1. A summary of findings and conclusions
2. A report describing a detailed program strategy.

4. Communications Strategy

The final phase of a facilities renewal program is the development and implementation of a communications strategy that builds upon the preceding phases. The strategy should be inclusive of all campus constituencies with careful preparation and consideration. Included in this phase are preparation of:

- a communications concept
- definition of the roles and responsibilities of various constituencies:
  - governing board
  - campus leadership
  - chief executive officer
  - chief academic officer
  - chief financial officer
  - academic leadership (deans, department chairs, directors, etc.)
  - faculty
  - administrative staff
  - other campus constituencies (students, alumni, friends, etc.)
- media strategy
- presentations
- format reports.

Outcomes

The outcomes of the communications strategy phase are:

1. A detailed communications strategy for a successful facilities renewal program, and
2. A program for implementation.

Conclusion

"Remember, a University builds to last for centuries, not for just tomorrow or for mere decades."

William Pearson Tolley, Chancellor, Syracuse University (1942–1969)

The vision of college and university leaders committed to building well and wisely for the future applies also to maintaining buildings created by past generations. Among the many demands on campus leadership is the state of their facilities. Inspiring today's campus leaders to advocate preservation of the building legacy of the past is the principal challenge for overcoming deteriorated facilities conditions. As stated in the survey findings of *A Foundation to Uphold*:

> *The most beneficial situation, deferred maintenance as a high priority for senior administrators, confirms the view that current unsatisfactory facilities conditions will continue to prevail unless campus leadership commits itself to addressing the problem.*

Advocacy and support by campus leaders can place a facilities renewal program among the top institutional priorities. Advocating the use of resources for renewal of existing facilities requires leadership traits of vision and courage. Supporting a controversial issue, such as a facilities renewal program, may not necessarily be prudent or politic, but it is among the traits of leaders.

Facility Asset Management

Standardized Facility Condition Auditing

by Matthew C. Adams, P.E.

THE news is out. Enough of our peers have completed facility condition audits to prove to the world, beyond a shadow of a doubt, that educational facilities are decayed and obsolescent. The costs are shocking. While many institutions have an idea of where they stand, some "guestimate" and others document every deferred maintenance item. The reality is that a meaningful audit requires time, resources, and attention to detail. Ideally, every institution should conduct routine facility audits using comparable formats, but some institutions choose to form audit teams within their own organization, and some outsource this technical work. Of paramount importance is the methodology and design of the audit, not who completes it. I have seen audits that cost millions of dollars and audits that cost thousands. Naturally, we want to invest only thousands in order to gain millions in renewal funds. A well-designed audit process is one that minimizes costs, maximizes results, and is compatible in format with our peer institutions' data.

The Ends Justify the Means

Auditing facilities underscores an institution's commitment to responsible stewardship of the facility portfolio. Without basic knowledge of the conditions and needs of the institution's facilities, we cannot make accurate decisions regarding resource allocation. While political motives often influence the audit process, the fundamental reasons to undertake the condition audit process are: substantiate the need for renewal resources; determine specifically where renewal resources are needed; create a sense of accountability for facility portfolio management; compile baseline facility condition data that can be benchmarked against peer and national statistics; initiate the conversion from reactive, emergency maintenance to planned and preventive maintenance.

Converting from a reactive to a proactive maintenance mode highlights an issue that often frustrates facilities managers. How do we complete a technical facilities audit while also creating a simple and straightforward renewal budget document? On the one hand, facility audits are designed to identify specific projects whose (life cycle) time has come. On the other hand, the audit serves as a business plan of sorts that specifically spells out to the institution's budget officers the exact required resources for renewal. Ironically, the facilities management staff often struggles with the minute details and estimates of specific projects contained within the audit documents only to hear the senior budget officers of the institution say that the audit data was too technical and cumbersome. In the end, estimating project work is as much of an art as a science. Where is the value in scrutinizing the accuracy of art? I do not suggest that accuracy doesn't count, but too much attention to specific detail is a waste of both time and resources. In order to ensure the effectiveness of your facility condition audit, focus on repeatability, clarity, and uniformity.

Repeatability

The facility audit is best designed to be an ongoing process. Unfortunately, many institutions have only one high profile audit conducted often by consultants. The large backlog number creates "shock value" and consequently results in some short term increases in renewal financing. Any increase in resources, even short term, is good. However, the vision is of continual review and management of the facility portfolio. This requires a cyclical re-auditing of the facilities and presentation of the results at least annually. All successful programs share this element. It is irresponsible to spend resources on a one-time audit that can not be easily updated or repeated in each of the following years. To repeat the audit after the initial inspection, the institution needs the tools (software and procedure guidelines) and staff that were utilized in the initial audit.

The central repository of the inspection data is ideally a software

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database or spreadsheet program. Whether developed in-house or purchased, this program requires detailed documentation and acceptance by the institution's in-house information systems staff who usually end up supporting and maintaining the program. Without their assistance, the process will stall. I tend to view facility audit software design specification as either of two extremes. When buying a high-end package from a vendor or consultant, go for the gusto and acquire the most advanced and powerful applications available within your budget. Get the packages that will make a good link with other systems (O.D.B.C. compliant) and allow a meaningful link between deferred maintenance and capital renewal projects and space records. Make sure that other reference institutions actually use the software and that it is "bug" free or time tested. If a consultant is developing a first-run package to meet the requirements of your project, watch out! Software that is created to meet the requirements of just one project is often abandoned by the consultant after the project is complete. No support or improvements will be available in the long run. On the other end of the spectrum is simple spreadsheet record keeping and reporting available from both consultants and in-house staff. Microsoft Excel spreadsheets can provide the majority of the audit data management needs and easily manipulated by an Access database as well. Since most institutions have Microsoft Office, little or no training is required. Microsoft even provides tools to publish spreadsheets as web pages for data collection. There is definite beauty in simplicity.

With regard to inspector's staff, utilize the best technicians available. Experienced, registered engineers and architects can complete inspections quickly and professionally. The inspection teams composed in-house add new members each year to expand the available inspection resources and ensure continuity. When in-house teams view audits as a part of the normal operating procedures, the start/stop time is often minimized. Any consultants utilized can either train the in-house staff to continue the audit process or agree to update and re-inspect a portion of the facilities each year. Always research the experience and stability of the consulting firm prior to contract award.

Clarity

Ultimately, the data generated by the facility audit will be used by a variety of individuals and departments. It is frustrating when facility audit reports are referred to during meetings and presentations and the data is unclear or difficult to interpret. The specific level of detail desired for each individual deferred maintenance project is difficult for many to determine. At the beginning of the audit design process, most engineers and architects tend to err toward too much detail. On the other hand, some try to oversimplify the process and use overall building rating schemes.

The most effective audits use individual projects itemized for each building. These projects are stand-

alone line items if they have a cost over $5,000. Smaller projects are bundled together into meaningful groups above the same cost threshold. Projects are best classified in the Construction Specifications Institute format. The 80/20 rule applies to facility audits—80 percent of the deferred maintenance backlog associated with a facility will be comprised of 20 percent of the number of total projects. Verify and double check the accuracy of all projects related to life safety and hot topics like air quality, because business officers are hesitant to expose themselves or the institutions to liability. The project's title, building location, overall cost based on a standard estimating guide, and comments in lay terms describing the rationale for the project are minimal requirements for any facility audit.

Deferred maintenance, capital repair, plant adaptation, and routine maintenance are the four distinct types of maintenance. The news of large backlogs is bad enough, but the separation of audit data into the four categories is critical. In addition, each project is given one or more priorities based on risk to human life or safety; risk to the facility and its systems; return on investment ranking (is this money well spent to renew a useful facility or reduce maintenance costs?); overall ranking based on expected life cycle failure. Plant staff don't like to hear this, but often the clarity and relevance of the project rankings is more important than the detail of the projects themselves. Remember, people at both ends of the organizational chart utilize this data, so direct its production by its end use.

Uniformity

In the not-too-distant future, I expect that we will have some form(s) of central data collection on an annual basis for deferred maintenance and capital renewal statistics. It may parallel the APPA's Strategic Assessment Model or the APPA/NACUBO/Sallie Mae deferred maintenance study, but on a more frequent basis. The Internet seems a likely tool for data collection. Already, Frank Brewer and his staff at the University of Maryland are undertaking a state-sponsored project to put the facility condition audit process on their own Web site. The idea is to allow all University of Maryland campuses access to the tools and later training to conduct audits in a consistent and uniform manner. The state system can then more accurately allocate capital renewal dollars each year. In order to allow comparison of audit data between individual facilities, campuses, systems, and states, there must be a lowest common denominator.

APPA and NACUBO have published some standards that form a good basis for uniform auditing including the four basic categories of maintenance mentioned earlier. The project ranking methodologies must address any specific requirements of your institution but also include those described earlier. Designing and documenting the auditing methods and formats is easy enough when you use in-house staff; however, hired consultants need detailed specifications for the facility auditing process and reporting format too. Most consultants have a proprietary method for facility audits, so make sure that any unique service proposed is comparable and compatible with the reporting standards of your institution, system, state, and APPA/NACUBO.

The costs associated with conducting facility condition audits are substantial. If a consultant charges a certain fee to complete an audit, you can be sure there is a corresponding cost to the facilities department to conduct the audit internally, whether it is accounted for or not. With these criteria in mind, careful planning of the audit process ensures the best return on the resource investment.

Software & Solutions

Shop Cautiously for Integrated FM Software

by Howard Millman

VENDORS of integrated facility management software (IFMS) are about to turn up the volume. Over the next six to twelve months listen for an increase in the background hum emphasizing this technology's benefits. A seamlessly integrated, comprehensive facility management suite sounds like a great way to keep track of everything worth tracking.

But I suggest that you investigate, evaluate, and then procrastinate; this technology is currently a bit too embryonic. The half-dozen or so facilities managers who have asked me for my opinions have been disappointed because they want to hear me say that IFMS is a here-and-now technology. It's not.

What I told them can also work for you. I suggested they back up a step and ask themselves one question—what are the realistic chances that one application can manage preventive/routine/emergency work orders, and support maintenance planning, budgeting, staffing, and load leveling, as well as space management and energy management under a unified graphical information interface? Like Dorothy's trip to Oz, this is the stuff that today's dreams, or nightmares, are made from.

Leveraging Success

Part of the underlying reason for the rise in interest stems from the success that facilities have enjoyed with computerized maintenance management systems. Agreed, these schools wrestled with vendors, balky software, abstruse hardware, and hesitant staffers on their road to automation, but most systems eventually delivered on the promises printed on the box.

Now physical plant departments hope to leverage that success by including all those other tasks within one stable, usable, and cost-effective system that could likewise benefit from automation. The operative words here are stable, usable, and cost effective.

Unfortunately, facilities managers in universities have special needs. They combine a people-oriented service industry with space and equipment maintenance. It's also a comparatively small market.

Mix and Match

Near term, most if not all IFMS systems will consist of a combination of stand-alone products. Generally, each module will originate with a different vendor and an integrator (that can be you, a consultant, or a value-added vendor) who will assemble all the pieces and hope that it works.

If you plan to travel that road, I urge you to tread carefully, and be sure to consider these recommendations:

1. Determine accountability for the different phases and products involved in the installation.
2. Who provides technical support? In the two pilot systems I have worked with, the customer determined who to call for support. Even though the integrator offered tech support, the customers have discovered that they receive faster and more accurate answers if they contact the module's true vendor.
3. What about "look and feel"? Since each of these pieces will likely come from different sources, how uniform is the interface? Commands? Keystrokes? If the IFMS runs under Microsoft Windows, it will likely offer a high degree of consistency.
4. A plug-in architecture can also provide benefits. For example, it can make upgrades easier by enabling you to unplug one module and add another. By having the ability to switch pieces, you are more likely to recover from any single vendor's problems such as lack of responsiveness or, as adopters of a few of the earlier CMM systems unfortunately discovered, even bankruptcy.
5. Scale back your need for detail, especially in the beginning stages of the project. For example, one school wanted to collect data on all forms of energy and fuel uses. We designed a method to automatically transfer quantities from an energy accounting and motor fuel utility into a database. The database (Microsoft Access) provided the cost data and a report generator. The school, by setting practical limits on the information they really needed, solved their problem by using currently available, low-cost technology.

Coming of Age

In the software business, it's usually the vendors who search for problems in your facility for their software to help solve. Sometimes they don't have to look too far. Other times it's a problem you never even knew you had. But IFM software reverses the roles because it's university maintenance and capital planning offices that are driving product development.

In view of this ready-made market, we will see several new products become available in the next six to twelve months. But for now, vendors need more time to work out the compatibility issues. Then maybe the road will lead to the Emerald City.

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The Bookshelf

Book Review Editor: **Dr. John M. Casey, P.E.**

Ironing It Out: Seven Simple Steps to Resolving Conflict, by Charles P. Lickson. Crisp Publications, Inc., 1996. 171 pp, softcover.

THE author of this work, Charles P. Lickson, a former practicing attorney, has been involved in courtroom litigation and dispute resolution for over thirty years. During that time, it is evident that he has acquired a lot of experience in handling conflict in and out of the courtroom. Drawing from his extensive background, he wrote this workbook to be used in the resolution of conflicts.

Lickson states that the premise of this book is, "Since conflict is inevitable, why not make the best of it?" He further states in the first chapter that most of us see conflict as a negative force; however, he encourages us to make a paradigm shift from viewing conflict as negative to realizing conflict as a creative process that can have positive results. The author presents a seven-step process to enable the manger to handle conflicts in a productive manner. Therein lies the strength of the book. By using the seven-step process, a manager can focus on the real issues involved in a conflict and avoid wasting time on trivial matters. Very much like the book's metaphor of the onion, which is made of many layers that can be peeled away one by one to get to the heart, the process advocated by the author peels away the various side issues until arriving at the center of the conflict.

Lickson devotes the first five chapters to reviewing conflict in a general way and lists seven basic assumptions that a mediator should subscribe to in order to make the conflict process a fulfilling experience. Many of the basics are painfully obvious, but the author does a skilled job in revealing the obvious, while encouraging us to realize that conflict is as complex as the humans involved in the process. Probably the most insightful of the seven basic points is the idea that "the learned response to conflict can impact our whole life." We have been conditioned to respond to conflict in a variety of ways, and some will run from it, some will avoid conflict at all costs, some will succumb to it, while others will fight. However, a key underlying tenet of the book is that if conflict is a learned process, we can chose to relearn how to handle conflict in a productive manner.

Lickson does an excellent job of avoiding launching into a bunch of psychological theories. He utilizes a down-to-earth style when discussing what's at stake and states that "it is unlikely the dispute can be resolved without addressing the 'needs' of the parties involved." Thus, he recognizes the requirements for moderators of conflict to ensure that they recognize the wants and needs of those involved. Rather than launch into Abraham Maslow's hierarchy of needs, Lickson demonstrates the point by providing a case study, a technique that he utilizes throughout the book, along with practical exercises and a series of forms that can be utilized in clarifying and resolving conflict. Indeed, one whole section is committed to forms and additional resources.

The seven-step process to resolving conflict which the author calls "ironing it out" starts with a simple step titled "Remove all masks." Basically, this implies that we remove all facades and get real with each other, and by doing so one is willing to commit to being honest during the conflict resolution process. After removing the masks, one of the really difficult steps to take is identifying the real problem. In order to help us understand this step, the author provides an exercise called "peeling the onion" which may be useful "to peel away the surface issues to get at the real problem."

Lickson then encourages the reader to make a paradigm shift from having a "must-win" attitude to a "win-win" attitude. Rather than maintaining an adversarial approach to the situation, one should utilize an advocacy approach. After the first three steps, the process requires developing several resolutions to the conflict, evaluating the various possible options and selecting one. Lickson provides an exercise and a problem-solving checklist to assist the reader to "get a handle" on this phase of the seven-step model.

After selecting the best possible resolution to the conflict, the next step is to communicate "in a manner certain to be received." The author recognizes that "communication is the essential tool. Without the ability to effectively inform the other side of your desire and proposal to resolve conflict, there will never be an end to the struggle at

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hand." In order to communicate the message effectively, Lickson provides a three-step model along with an exercise to hone the reader's communication skills. However, if this is a critical component of conflict resolution, the author dedicates only a meager amount of space and words to this process.

Finally, once through the first six steps, step number seven is to "acknowledge and preserve the value in the relationship." The author points out the tragedy of broken relationships, partnerships, and friendships caused by conflicts that are not handled in a productive manner. After completely explaining the seven-step process, Lickson provides examples of how the process can be used in family and parent-child issues, workplace and public disputes, and "all those other disputes." Each example is supported with a case study.

After reading, outlining, and reviewing Lickson's book prior to writing this report, I found it difficult to clarify what "new" ideas the author brought into the world when he wrote this work. I went back to text books and management books on decision making and conflict management and discovered that the seven-step process was not that significantly different from the problem solving procedures outlined in the classical texts. Thus, if you are expecting an earth-shattering, never-heard-before conflict management process, this is not the book for you. However, if you want a nuts-and-bolts guide on how to handle conflict in a productive manner, this book has a lot to offer. The simple layout of short chapters, most highlighted by case studies and examples, makes the book easy to read and understand. If you do not wish to dust off the classic texts on your shelf on handling conflict, this is a useful management tool. Indeed one could gain a tremendous edge when entering a potential conflict by typing the seven steps on a three-by-five card and referring to it to keep the process on target.

Ironing It Out is available from Crisp Publications, 1200 Hamilton Court, Menlo Park, CA 94025-1427.

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Commercial and Institutional Maintenance Management, by Kenneth L. Petrocelly. The Fairmont Press, 1995. 240 pp, hardcover, $75.

Commercial and Institutional Maintenance Management could be called the sequel to Petrocelly's previous work, *Managing Physical Plant Operations*. Therein the author detailed the restoration of a physical

In Brief

In response to the trend of utilities deregulation sweeping across the country, the Building Owners and Managers Association International (BOMA) has released a question-and-answer guide for understanding the ensuing changes and their impact on the commercial real estate industry. *Power Shopping: A Guide for Building Owners and Managers to Prepare for the Deregulated Electricity Marketplace*, provides readers with the basics of electricity costs and billing, how to implement an energy management program in a building, and the do's and don'ts of wheeling. A copy of the book can be obtained by calling 1-800-426-6292. Please identify the book by order #135-PWR-SHP-521.

plant that had fallen to the effects of poor maintenance and, ultimately, no maintenance. Whereas the former work focused on the power plant, the current book attempts to detail the "whole maintenance operation."

Petrocelly begins his treatment of the topic at hand by defining maintenance as "a process whereby a series of functions are performed to bring about a particular end result". He uses the remaining pages of his book to describe the functions that make up the process. The author's thirty years of experience in physical plant administration and maintenance management uniquely qualify him to determined critical issues relating to this topic and present them with a high level of authority. He divides facilities maintenance into three distinct "fundamental factions"—physicality, functionality, and department operations. Physicality deals predominantly with the condition and capacities of existing buildings, while functionality includes such things as the practicality of adjacencies and ergonomic constraints. Department operations provides a format to "sort out the overlapping issues" and no doubt provide structure and order to the process.

Having well introduced his topic, Petrocelly produces a more detailed treatment of it over the next twelve chapters. Chapter 2 details the organization's elements of maintenance management. The author states, "Organizations that are based on logical precepts thrive; those that are not, fail." He goes on to justify the importance of a mission statement and clearly defined goals within the organization. Included in the text are many useful examples of policies and procedures that could be utilized as a template for other similar operations.

When presenting the Maintenance Manager in Chapter 3, the author shares with his readers that "no other working profession possesses the same degree of diversity of background, education and experience as that shared by the men and women who oversee the care and repair of our buildings, grounds, and their associated systems." Detailed requirements relating to background and expertise are presented with a very enlightening presentation of what Petrocelly calls "common sense" management. Effective communication, constructive organization, insightful decisions, timely response, accurate documentation, and flexible programming are essential to "common sense management."

Maintenance, according to the author, is of two varieties, remedial and preventive. Chapter 4 details the differences between the two. This chapter also provides the reader with useful examples of policies and concepts that enhance one's ability to understand the topic. Realizing that not all functions are best performed in-house due to personnel or financial constraints, the author also provides a detailed treatment on service contracts and other elements of the process that could potentially be outsourced. Again, examples of this type of work and specifications as to how it is performed are provided.

The remaining portions of the book are presented in the author's informative handbook style, and include such topics as human resources management, standard operating procedure manuals and their creation, ancillary programs, utilities operation and management, the physical plant as a structure and organization, construction and renovations, and quality control.

Commercial and Institutional Maintenance Management touches on the full spectrum of maintenance management topics in a clear, inviting, and easy-to-read form that is consistent with the author's style as observed in other texts. This book is full of example forms, policies and procedures, job descriptions, RFPs, and helpful advice. The short length of the book (240 pages) and the author's conversational approach to the topic makes it pleasurable reading and in no way minimizes the wealth of information contained therein. I recommend that all facilities personnel have Petrocelly's book in their library, and especially recommend that it be read by anyone making the difficult transition from plant maintenance staff to plant management.

Commercial and Institutional Maintenance Management is available from The Fairmont Press, Inc., 700 Indian Trail, Lilburn, GA 30247.

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July 13–15—***1997 Educational Conference & Annual Meeting.*** Orlando, FL.

Sept. 14–19—***Institute for Facilities Management.*** Toronto, ON, Canada.

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Mar. 26–28—***EPA Lighting Upgrade Workshop.*** Dallas, TX. Contact 1–888–STAR–YES.

Apr. 2–3—***Illinois Facility Director's Meeting. Southern Illinois University/Edwardsville.*** Contact Bob Washburn, 618–692–2560.

Apr. 2–4—**National Pollution Prevention Roundtable Spring Conference.** Denver, CO. Contact 202–466–7272.

Apr. 3–4—***Construction Project Administration & Claims Avoidance.*** Ft. Lauderdale, FL. Contact ASCE, 800–548–2723.

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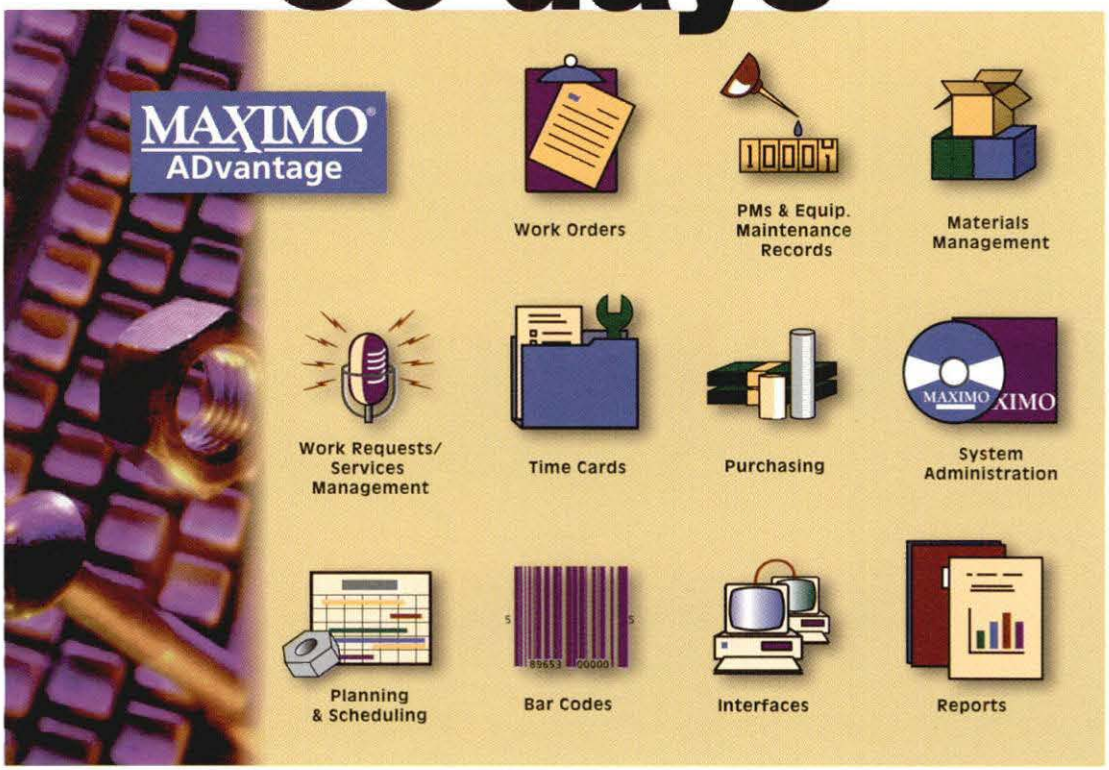

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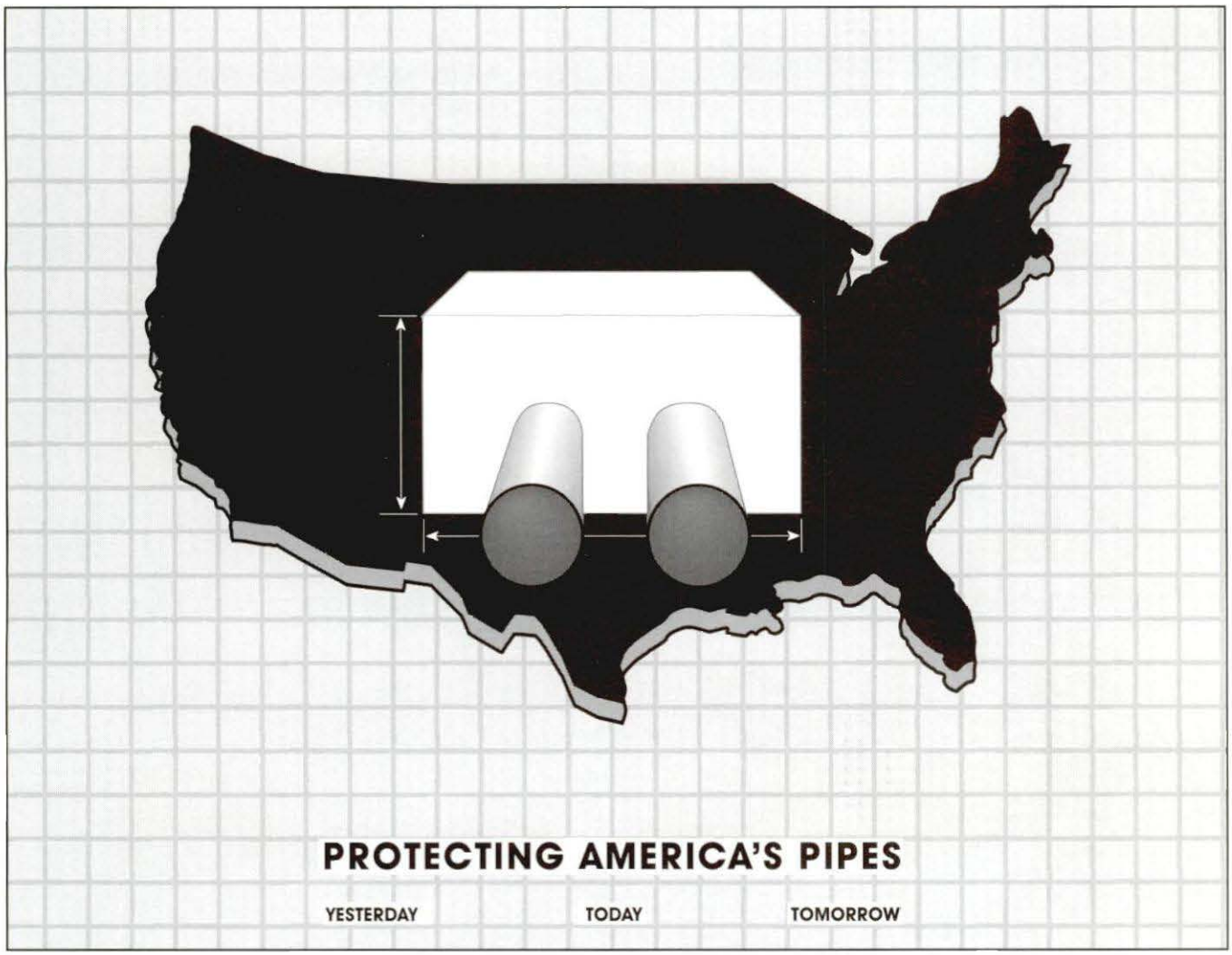

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