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Managing Maintenance and Operations Functions During Stressed Economic Times: A Study of Recent Actions by Physical Plant Departments in Higher Education

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ABSTRACT

The purpose of this paper is to report the results of a survey of how facility managers in Physical Plant Departments of both private and public higher education institutions are coping with reduced budget allocations. These near record shortfalls can mostly be attributed to the economic downturn that has crippled individual state revenues. Information was gathered by forwarding a twenty-one question electronic questionnaire in October 2010 to 689 institutions that are members of the Association of Physical Plant Administrators (APPA). 129 responses were received from the 689 institutions in higher education classified as either colleges or universities. The survey focused on three primary areas: employee costs, services provided, and additional funding sources. Survey responses were tabulated and analyzed to identify trends

and/or inconsistencies as defined by overall results, regional disparity, and size of the institution based on enrollment level.

INTRODUCTION

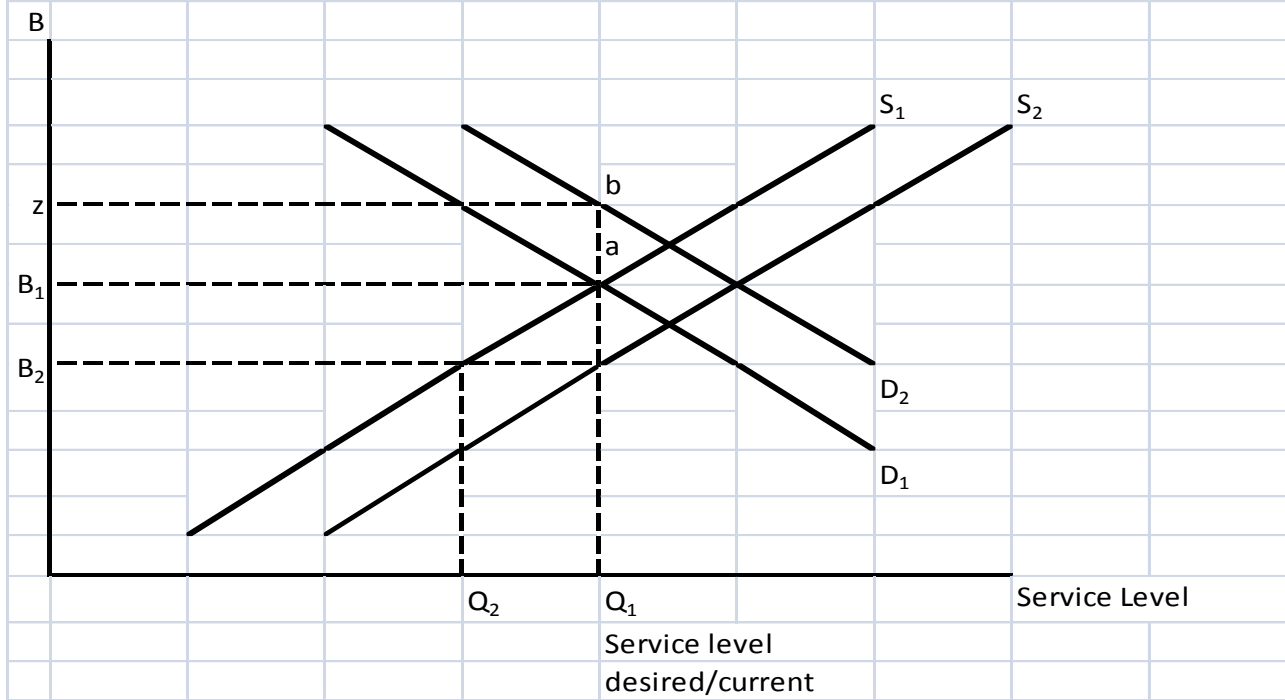
The struggles and hardships inflicted by poor economic conditions are no better exemplified than the financial crisis that faces colleges and universities in higher education. A seemingly perfect storm combining rising health care costs and employee benefits, rising utility costs, rapidly aging facilities, and the addition of newly constructed and complex facilities stand together, while state funding for higher education has been reduced to generational lows. The incredible challenge of balancing available resources while maintaining safe, clean, and attractive facilities lies in the hands of each institution's facility and physical plant managers. The question is simply how are facility departments managing their resources and adjusting to significant budget reductions?

This paper reports the results of a survey concerned with how physical plant departments in higher education have reacted to budget constraints and other challenges over the past three years. The paper uses an economic model to show that efficiency/productivity levels must be increased to maintain the desired/current level of service when faced with budget constraints. Another result shown by the model is the creation of societal/green benefits. Also, the paper provides background information concerning issues physical plant departments have encountered as a result of budget reductions or reductions in the growth of funding. The issues include: operations and maintenance budgets, employee benefits costs, outsourcing, condition of facilities, preventative maintenance, level of service provided, and green initiative projects involving energy conservation measures. These issues served as the basis leading to the study. A section on research methodology that provides a justification for the study is included. Finally, survey results are presented for all physical plant departments participating in the study by region of the United States and enrollment level of the higher education institution. Additional information is presented in the respondent profile in Appendix I, including: enrollment level, the respondents' maintenance and operations budget as well as square footage to be maintained. The following section utilizes a microeconomic model to demonstrate the maintenance of desired levels of service and increased societal benefits.

A MODEL ILLUSTRATING MAINTENANCE OF DESIRED LEVEL OF SERVICE CONSISTENT WITH INCREASED SOCIAL BENEFITS IN A REDUCED BUDGET ENVIRONMENT

In order for an institution to operate at the desired service level in a declining resource environment, it is necessary that efficiency is enhanced. This efficiency may also increase societal benefits through decreased utility usage. The economic model shown below demonstrates the maintenance of desired levels of service and societal benefits when budgets are reduced.

Maintenance and Operations Service Levels / Societal Benefits



As is shown in the above graph, the vertical axis is labeled B and measures benefits and budget resources. The horizontal axis measures service levels.

Q_1 is the desired/current level of service consistent with the pre-recession budget. B_1 is the pre-recession budget consistent with the desired/current level of service, Q_1 . If the budget is reduced to B_2 , the level of service must be reduced to Q_2 . This is less than the desired/current level of service. Efficiency/productivity must be increased if the desired/current level of service is maintained with the reduced budget. An efficiency/productivity increase is shown as a shift of the supply curve from S_1 to S_2 . With an increase in efficiency/productivity, the new budget level B_2 supports the desired/current service level Q_1 .

There are societal/green benefits created from a more efficient use of resources. These benefits are demonstrated as a shift in the demand curve from D_1 to D_2 . Societal benefits are shown as the area, (z, b, a, B_1). Benefits to society may include reduced consumption of water and electricity for a given level of service. Societal benefits are not evident from outsourcing. In order to both lower operating expense and achieve societal benefit increases, the university/ college must rely on improvement in efficiency from advances in technology and installing upgraded equipment. The following section examines some of the recent issues and challenges confronting physical plant departments in higher education.

CHALLENGES FOR PHYSICAL PLANT DEPARTMENTS

Budgeting Allocations for Higher Education

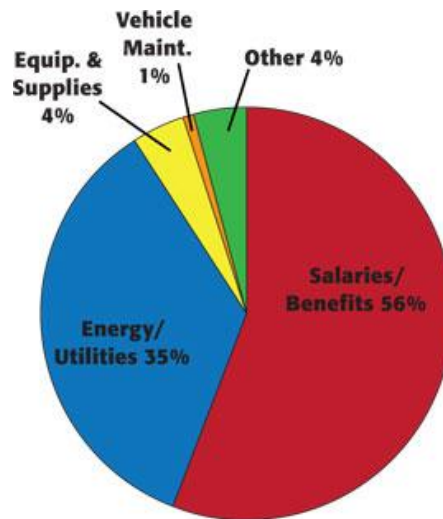
State funding priorities typically focus on public safety, basic services, unemployment benefits, transportation, and a balanced budget (Facione, 2009). Therefore, higher education allocations are often some of the first victims of reduced tax revenues. Since 2008, 43 states have seen decreased state appropriations. As a result, colleges and universities have seen near historic tuition increases in 2010: Alabama 8-23 percent, Arizona 9-20 percent, California 32 percent, Florida's two year increases of 32 percent, and Washington's two year increases of 30 percent (Johnson et al., 2010). In Arizona, the state revenue shortfall for 2009-2010 is estimated at 28 percent of the state's general fund, ranking second worst in the nation behind only Nevada. State universities in Arizona saw the largest dollar reductions from any one part of the state budget (Kelderman, 2009).

Operations & Maintenance Budgets

According to the *38th Annual Maintenance & Operations Cost Study for Colleges*, college and university administrations allocated a median of 10 percent of total expenditures for maintenance and operations (M&O) in 2008. This was down from 16.4 percent in 2007, as reported by the *37th Annual Maintenance & Operations Cost Study for Colleges*. Nearly a quarter of all institutions have an M&O budget of over \$5 million. Pie Chart 1 (below) illustrates a typical M&O budget category breakdown and indicates that salaries/benefits and energy/utilities account for a massive 91 percent of the total M&O budget. Facility managers have little choice but to analyze these categories with great fiscal scrutiny attempting to maximize efficiency and lower costs as budget allocations fail to keep pace with rising costs. Energy expenditures alone rose 24 percent from 2007 to 2008 (Argon, 2008).

Tax revenues continue to fall short of projections because of the slow or stagnant economic recovery. Eleven states are expecting to make mid-year cuts totaling more than \$22 billion after having a shortfall of \$143 billion to begin the 2010 fiscal year (Kelderman, 2009). Alabama, Massachusetts, and Vermont have all reduced spending on higher education by nearly 20 percent since 2008. Looking ahead, nearly 40 states are planning for revenue shortfalls in 2011 (Kelderman, 2010).

Pie Chart 1: Percentage Breakdown of M&O Budget



Source: 38th Annual Maintenance & Operations Cost Study for Colleges

Rising Costs of Employee Benefits

Whether faculty or staff, one of the most significant attractions to employment in higher education is the level of benefits offered to employees. In education, as much as 85 percent of total costs are associated with employee wages and benefits compared to 50-55 percent in most other industries (Cronin, 2010). Education benefits typically include health insurance, basic life insurance, long-term disability, paid time off (average 12 holidays and 12 sick days per year), tuition assistance, and guaranteed retirement benefits (Moore, 2010). Employee premium costs for three of the most common health care plans (PPO, HMO, and POS) increased 7 percent in 2010 and 5.7 percent in 2009. Family coverage, on average, increased from \$13,996 in 2009 to \$15,248 in 2010 (Moore, 2010). At Emory University in Atlanta from 1997 to 2007, average costs of health insurance increased an average of 7.3 percent (Davidson, 2007).

Outsourcing

The topic of outsourcing departmental functions in M&O is highly debatable as both advocates and non-supports have legitimate reasons for their cause. According to the *38th Annual Report of Maintenance and Operations for Colleges*, 11 percent of institutions outsourced M&O functions in 2009. In 2001, services in custodial, facility management, grounds maintenance, HVAC maintenance, and general maintenance were outsourced at rates of 26.3 percent, 9.2 percent, 18.1 percent, 17.8 percent, and 9.2 percent, respectively (Bushman, 2005). Schools with over 950,000 square feet with generally concise geographic boundaries have realized savings of 25-40 percent when

eliminating in-house custodial services (Thetford, 2010). M&O departments are easy targets for administrators looking to cut costs for two specific reasons: quantity of full time staff and high percentage of labor burden. Custodians, grounds keepers, and general maintenance employees typically secure jobs with the lowest hourly wages on campus. However, given that university employees all receive the same benefit packages, labor burdens can easily surpass 50 percent. Facility managers constantly find themselves in defensive positions when discussing M&O staff with administrators.

Condition of Facilities

Higher education institutions expanded rapidly over a construction boom during the 1960's and 1970's, thereby creating today's need for major building renovations or replacements. In addition, square footages of campuses increased over the past decade by adding new facilities that are more costly and complicated to maintain (Carlson, 2008). The average age of a public education facility is 42 years old (Lewis et al., 1999) which will, unfortunately, only increase given deferred new construction and renovation projects since 2007. A new facility will require a major renovation approximately every 30 years given the life cycles for HVAC and electrical systems, advances in technology, and deterioration of building structures such as roofs, windows, doors, and building envelope (Fuller, 2010). Complicating the need for funding is the mindset that very few potential donors whether an alumnus, legislator, or philanthropist, will be interested in providing or securing funds for upgrades to existing facilities (Carlson, 2008). The surest way to attract potential students and faculty is to have new age, technologically advanced, glamorous facilities.

Role of Preventative Maintenance

The key here is for managers to balance competing concerns: most importantly, preventative maintenance (PM) programs versus the ability to respond to day-to-day operational needs and emergencies. The goal of PM is to reduce equipment failure and the need for corrective maintenance while at the same time making a real commitment using limited staffing (Kennedy, 2003). Unfortunately, budget constraints have forced many M&O departments to adopt a "run it 'til it breaks" method of addressing maintenance issues. Properly administered PM programs can generate savings of 12-18 percent annually, extend life cycles of complex systems and equipment, significantly reduce costly emergency breakdowns, and all but eliminate catastrophic equipment failures (Kennedy, 2010). An old saying comes to mind: "penny wise and a pound foolish."

Level of Services Provided

One of the most difficult tasks of a facility manager is balancing the level of available resources while maintaining the level of service standards set by the institution's administration. There are several industry-generic service standard guidelines and one of the most recognized are those stated by the APPA. It provides the following standard levels for custodial services:

- Level A: Pristine service – almost never any complaints
- Level B: Generally neat and orderly – few complaints
- Level C: Routine daily service – a few more complaints
- Level D: Reduced frequency of service – complaints common
- Level E: Minimal cleaning, debris evident – frequent complaints

From 2008 to 2009, the amount of square feet maintained by full-time custodians increased by 16 percent and the full-time general maintenance workers increased by 13 percent. In 2009, a full-time custodian was responsible for 39,647 square feet and a full-time general maintenance worker was responsible for 79,293 square feet. The amount of square feet of building maintained per full-time enrolled student was reported at 277 in 2008, which is a record (Agron, 2008). The bottom line: facility managers are being asked to increase the department's overall efficiency.

Energy Conservation Measures and Green Initiative Projects

Lighting

One of the simplest and most cost effective measures for conserving energy pertains to the lighting of educational facilities. Since large spaces across campuses are unoccupied during various periods throughout the day, reducing or eliminating lighting can be a huge benefit. Installing occupancy sensors and time control systems can have an immediate cost savings. Compact fluorescent bulbs use 75 percent less energy and last 10 times as long. Replacing T-12 fluorescent bulbs to higher efficient T-8's typically produce energy savings that yield a payback period of only a couple of years. Replacing electromagnetic ballasts with electronic ballasts can use up to 25 percent less energy (Kennedy, 2000). Education of building occupants can also pay big dividends. Training faculty and staff to cut-off lights in unused spaces, shut computers down over nights and weekends, help keep doors and windows closed, and adjusting thermostats 2 degrees can all create significant energy savings.

Water Conservation

Look no further than the most frequently used spaces on campuses: restrooms and locker rooms. Low-flow toilets use only 1.6 gallons per flush compared to older fixtures that use 3.5 gallons per flush. Toilets also have the capability of dual flush settings: one for liquid and one for solid wastes. A single waterless urinal has the ability to conserve 45,000 gallons per year in highly used conditions (Kennedy, 2010). San Antonio Water System replaced 57 high flow toilets and annual water usage reductions are estimated at 1,120,000 gallons, saving about \$3,250 (Kennedy, 2003). A good preventative maintenance program can also be very helpful. For instance, one leaky faucet could drip 15 gallons of water a day, yielding 5,475 gallons a year (Kennedy, 2004). The following sections present the methodology and findings of the survey of how facility managers in physical plant departments have coped with reduced budget allocations and other challenges.

SURVEY METHODOLOGY

The research question addressed by this paper involves the determination of how physical plant departments in higher education have reacted to budget constraints and other challenges over the past few years. The research question is important because

there has been a substantial reduction in funding or growth in funding for maintenance and operations functions of physical plant departments in higher education. Each of the coauthors is employed by Jacksonville State University, a regional four year public institution with an enrollment of approximately 8,500 students located in Jacksonville, Alabama. One of the coauthors is the assistant facility plant manager and has directly encountered the issues addressed by this study. The coauthors believe other researchers, higher education administrators, as well as practitioners (facility plant managers) will have interests in the study and results. Prior research reported in the literature is limited to cost studies of maintenance expenditures in education. No prior research exists relating to the areas of this study.

The current study addresses the research question through the use of a survey of facility managers to determine how the managers have coped with budget constraints and other challenges. The survey is useful for measuring the research question because the survey focuses on three areas viewed as important by the coauthors, including: employee costs, services provided, and additional funding sources along with actions affecting these areas.

The survey focused on three major areas of inquiry: 1) employees, 2) services provided, and 3) additional funding sources in light of budget reductions and other challenges for physical plant departments. Actions affecting employees were examined because employee cost is the major expense of physical plant departments. Importantly, the study examines responses and adjustments by physical plant departments in terms of actions involving services provided as a result of budget reductions and other challenges discussed earlier in the paper. The study examines responses of schools to budget reductions by addressing additional funding sources. Actions involving additional funding sources were included because of the direct connection to the current environment of budget reductions for facility departments that helped serve as the motivation for the study.

The intent of the authors was to examine these issues for schools in the United States as a whole. However, to provide additional information and more meaningful results to practitioners (facility managers) and other researchers, the results are categorized and shown for different regions of the United States as well as the size of the school (enrollment).

Development of a valid and reliable questionnaire is a must to reduce measurement error (Radhakrishna, 2007). Groves (1987) defines measurement error as the "discrepancy between respondents' attributes and their survey responses" (p.162). To ensure validity and reliability of the questionnaire used in this study, expert opinion and analysis was used in the development of the questionnaire. Several iterations of pre-tests were done and each iteration resulted in revisions. Comparisons of results were also performed on multiple occasions. The respondents were guaranteed anonymity.

In October 2010, questionnaires were emailed to each of the facility managers for 689 higher education institutions in the United States. The survey was conducted by emailing the survey instrument to every institution listed in the membership directory of

the Association of Physical Plant Administrators (APPA). The survey instrument included 21 questions and was divided into three sections: actions affecting in-house employees, actions involving services provided, and actions involving funding sources. Respondents were asked to indicate by a “yes” or “no” response as to whether the facilities department had taken particular actions in response to budget constraints and other challenges over the past three years. Many questions requested additional detail where the respondent indicated “yes” as to specific actions taken. Each respondent was also asked to provide information concerning enrollment level, size of the maintenance and operations budget and square footage of the gross area of all facilities maintained.

Survey results were segregated based on the respondents’ region of the United States including: Northeastern states, Southern, Central, and Western states. A respondent profile is presented in Appendix I (below) and includes: the respondents’ enrollment level, their maintenance and operations budget level and respondent square footage maintained. The results of the survey based on the completion of the questionnaire by respondent facility plant managers are presented in the following section.

SURVEY RESULTS

A survey consisting of the twenty-one question questionnaire was forwarded to facility manager at the email addresses of each of the 689 institutions listed in the APPA Directory. A total of 129 questionnaires were completed by respondents, resulting in a response rate of 18.7 percent. The 129 institutions participating in this study are all higher education institutions in the United States. The institutions are fairly evenly distributed across the four regions of the United States. The Northeast, South, Central, and West Regions returned 30, 31, 38, and 30 questionnaires, respectively. Of the 129 responses, 35 percent of institutions were private and 65 percent were public. Appendix I shows defining characteristics of the M&O departments that responded to the survey with respect to enrollment level, budget size, and square footage of area maintained.

Actions Affecting In-House Employees

Table 1 (below) presents survey results for the actions affecting in-house employees. Results are presented for the overall United States as well as by region – Northeast, South, Central, and West.

Table 1: Actions Affecting In-House Employees

Overall Results and Results by Geographic Region
 (“Yes” Responses & Percentage “Yes” Responses)

Action	Overall		Northeast		South		Central		West	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
1. Implemented hiring freezes	69	53 percent	19	63 percent	19	61 percent	11	29 percent	20	67 percent
2. Offered early retirement	37	29 percent	10	33 percent	8	26 percent	3	8 percent	16	53 percent
3. Increased employee contributions to benefits	60	47 percent	9	30 percent	15	48 percent	17	45 percent	19	63 percent
4. Freeze wage increases	80	62 percent	15	50 percent	25	81 percent	21	55 percent	19	63 percent
5. Forced to take holidays or furloughs	28	22 percent	5	17 percent	8	26 percent	7	18 percent	8	27 percent
6. Decreased employee benefits	40	31 percent	6	20 percent	7	23 percent	2	5 percent	25	83 percent
7. Altered hours of operation	21	16 percent	4	13 percent	6	19 percent	6	16 percent	5	17 percent
Total Questionnaires Received	129		30		31		38		30	

Some of the major findings are now examined.

Overall:

- (Questions 1 & 4) Over half of the institutions have either implemented hiring freezes or ceased raises or annual step increases. These two categories are the simplest and least painful for facility managers to address. By eliminating any increases in wage or salary costs, departments hope to avoid any downsizing.
- (Question 3) Just under half or 47 percent of respondents indicated that employees have been asked to increase his/her contributions to cover benefits such as insurance premiums, co-pays, life insurance, and supplemental insurances such as eye and dental. Unfortunately, these increases by employees accomplish little in offsetting the budget deficits because of increased costs of these benefits. Bottom line is that these increases simply balance out.
- (Question 5) 22 percent of respondents participated in furloughs to decrease costs in wages.

- (Question 6) Only 31 percent of institutions have actually decreased benefits. Benefits that were listed included tuition remission for employees, benefits levels for new hires, life insurance, and quality of health care.
- (Question 7) 16 percent of institutions participated in reduced hours of operations. Comments included reduced summer hours such as four 10-hour days, closing university activities on Friday during the summer, and simply eliminating overtime.

Regional:

- (Question 1) The Central region only implemented hiring freezes at a rate of 29 percent while the other three regions were 61 percent or better.
- (Question 2) The Central region offered early retirement in only 8 percent of the responses while the Northeast, South, and West were 33 percent, 26 percent, and 53 percent, respectively.
- (Question 3) The Northeast region increased contributions to employee benefits the least at a rate, 30 percent, much lower than the other regions. The South, Central and West were 48 percent, 45 percent, and 63 percent respectively.
- (Question 4) The South region was more active in freezing annual step increases or raises at a response rate of 81 percent while the Northeast, Central, and West were 50 percent, 55 percent, and 63 percent.
- (Question 6) The West region aggressively reduced employee benefits at a rate of 83 percent while the region with the next highest response rate was only 31 percent.

Actions Affecting Services Provided

Table 2 (below) shows survey results for actions involving services provided. Results are presented for the overall United States and as well as by region – Northeast, South, Central, and West.

Table 2: Actions Involving Services Provided
 Overall Results and Results by Geographic Region
 (“Yes” Responses & Percentage “Yes” Responses)

Action	Overall		Northeast		South		Central		West	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
1. Outsourced traditionally performed services	22	17 percent	6	20 percent	9	29 percent	4	11 percent	3	10 percent
2. Eliminated non-essential services	34	26 percent	6	20 percent	11	35 percent	7	18 percent	10	33 percent
3. Decreased level of services provided	58	45 percent	9	30 percent	15	48 percent	14	37 percent	20	67 percent
4. Postponed projects & increased deferred maintenance	60	47 percent	12	40 percent	20	65 percent	14	37 percent	14	47 percent
5. Shifted from capital improvements to small projects	85	66 percent	15	50 percent	17	55 percent	34	34 percent	19	63 percent
6. Attempted to decrease utility consumption	124	96 percent	28	93 percent	29	94 percent	37	97 percent	30	100 percent
Total Questionnaires Received	129		30		31		38		30	

Some of the major findings are now examined.

Overall:

- (Question 1) 17 percent of institutions have outsourced traditionally self-performed functions. Predominately, they are landscaping and building services, but also included general maintenance such as painting.
- (Question 2) 26 percent of respondents have eliminated non-essential services. Most common services stated by respondents were window washing, pressure washing, and even trash disposal for individual offices.
- (Question 3) Overall, 45 percent of departments have actually decreased the level of all services they have traditionally performed.
- (Questions 4 & 5) Half of respondents have attempted to decrease costs by postponing significant capital improvements, increasing deferred maintenance, or by reducing scope of work for renovation projects.
- (Question 6) Almost all institutions, 96 percent, have attempted to reduce utility costs. Outside of wages and salaries, utilities are the highest costs to daily operations. 77 percent of respondents did so by adjusting climate control settings, 67 percent by cutting off lights, and 31 percent utilized shortened hours of operation. In addition, respondents consistently included replacing old inefficient equipment, control upgrades, occupancy sensors, lighting retrofits,

programmable thermostats, water conservation fixtures, and utility performance contracts.

Regional:

- (Question 3) The regional responses varied significantly in response to decreasing the level of traditional services. The Northeast, South, Central, and West were 30 percent, 48 percent, 37 percent, and 67 percent respectively.
- (Question 4) The South region had the highest response rate, 65 percent, compared to the other regions by increasing deferred maintenance and postponing capital improvements. The Northeast, Central, and West were 40 percent, 37 percent, and 47 percent, respectively.
- (Question 5) The central region saw the smallest shift in large scale projects to smaller improvements at a rate of only 34 percent while the West region reported double that response rate at 63 percent with the South and Northeast hovering over 50 percent.

Actions Affecting Funding Sources

Table 3 (below) provides respondents’ views regarding additional funding. Results are presented for the overall united states and as well as by region – Northeast, South, Central, and West.

Table 3: Actions Involving Additional Funding Sources
Overall Results and Results by Geographic Region
("Yes" Responses & Percentage "Yes" Responses)

Action	Overall		Northeast		South		Central		West	
1. Actively pursued federal & state stimulus funding	97	95 percent	25	83 percent	29	68 percent	22	58 percent	21	70 percent
2. Received stimulus funding	14	11 percent	1	3 percent	9	29 percent	0	0 percent	4	13 percent
3. Actively pursued green initiative projects	103	80 percent	27	90 percent	28	90 percent	27	71 percent	21	70 percent
4. Actively pursued utility grants	90	70 percent	26	87 percent	17	55 percent	21	55 percent	26	87 percent
Total Questionnaires Received	129		30		31		38		30	

Some of the major findings are now examined.

Overall:

- (Question 1) Although 69 percent of respondents stated that they have attempted to obtain additional outside funding such as state or federal stimulus funds, only 11 percent were successful in doing so, as indicated by question 2 (overall).
- (Question 3) 80 percent of institutions have actively pursued green initiative projects. Most commonly mentioned projects related to high efficiency HVAC equipment, LEED certified projects, water conservation, solar initiatives, energy conservation, and geothermal projects.
- (Question 4) 70 percent of respondents pursued utility grants such as decommissioning, energy management, solar initiatives, and water conservation.

Regional:

- (Question 1) The Northeast region was most aggressive at pursuing stimulus funding with a response rate of 83 percent while the South, Central, and West regions were 68 percent, 58 percent, and 70 percent, respectively.
- (Question 2) The largest regional discrepancy was indicated by the South Region's 29 percent response rate to receiving additional funding from Federal or State government while the other three regions failed to surpass 13 percent. In addition, the Central Region had 0 percent response rate in this regard.

Actions Affecting In-House Employees (by Enrollment Level)

Table 4 (below) presents survey results for actions affecting in-house employees, based on the institution's level of enrollment.

Table 4: Actions Affecting In-House Employees

Results by Enrollment Level
 (“Yes” Responses & Percentage “Yes” Responses)

Action	Under 3,000		3,000-6,000		6,000-9,000		9,000-12,000		12,000-15,000		15,000-20,000		Over 20,000	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
1. Implemented hiring freezes	14	52 per cent	13	62 per cent	9	60 per cent	7	58 per cent	8	53 per cent	5	56 per cent	13	43 per cent
2. Offered early retirement	5	19 per cent	4	19 per cent	7	47 per cent	6	50 per cent	2	13 per cent	2	22 per cent	11	37 per cent
3. Increased employee contributions to benefits	14	52 per cent	9	43 per cent	3	20 per cent	6	50 per cent	7	47 per cent	5	56 per cent	16	53 per cent
4. Freeze wage increases	18	67 per cent	12	57 per cent	7	47 per cent	7	58 per cent	8	53 per cent	5	56 per cent	23	77 per cent
5. Forced to take holidays or furloughs	5	19 per cent	4	19 per cent	2	13 per cent	3	25 per cent	2	13 per cent	3	33 per cent	9	30 per cent
6. Decreased employee benefits	8	30 per cent	2	10 per cent	1	7 per cent	0	0 per cent	1	7 per cent	2	22 per cent	6	20 per cent
7. Altered hours of operation	2	7 per cent	5	24 per cent	2	13 per cent	4	33 per cent	2	13 per cent	1	11 per cent	5	17 per cent
Total Questionnaires Received	27		21		15		12		15		9		30	

- (Question 1) Over half of respondents with enrollment levels of 20,000 or less implemented hiring freezes.
- (Question 2) Enrollment levels of 6,000-9,000 and 9,000-12,000 experienced much higher levels of offering early retirement to their employees at response rates of 47 percent and 50 percent respectively. The other enrollment levels ranged from 13 percent to 37 percent.
- (Question 3) Enrollment levels of 6,000-9,000 experienced a much lower response rate, 20 percent, than all other levels which ranged from 43 percent to 56 percent in increasing employees’ contributions to benefits.
- (Question 4) Institutions with enrollment levels greater than 20,000 experienced the highest response, 77 percent, in freezing raises and annual step increases while other levels ranged from 47 percent to 67 percent.
- (Question 6) In response to decreased employee benefits, enrollment level of 9,000-12,000 experienced a 0 percent response rate while institutions with enrollment less than 3,000 indicated the highest response rate, 30 percent.

- (Question 7) Institutions with enrollment levels 9,000-12,000 had the highest response rate, 33 percent, when asked about varying operational hours. All other levels ranged from 7 percent to 24 percent.

Actions Involving Services Provided (by Enrollment Level)

Table 5 (below) provides survey results for actions relating to services provided based on the enrollment level of the institution.

Table 5: Actions Involving Services Provided
Results by Enrollment Level
("Yes" Responses & Percentage "Yes" Responses)

Action	Under 3,000		3,000-6,000		6,000-9,000		9,000-12,000		12,000-15,000		15,000-20,000		Over 20,000	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
1. Outsourced traditionally performed services	3	11 per cent	3	14 per cent	2	13 per cent	0	0 per cent	3	20 per cent	1	11 per cent	10	33 per cent
2. Eliminated non-essential services	6	22 per cent	4	62 per cent	4	27 per cent	2	17 per cent	2	13 per cent	3	33 per cent	13	43 per cent
3. Decreased level of services provided	10	37 per cent	7	33 per cent	5	33 per cent	5	42 per cent	6	40 per cent	6	67 per cent	19	63 per cent
4. Postponed projects & increased deferred maintenance	14	52 per cent	8	38 per cent	5	33 per cent	5	42 per cent	5	33 per cent	6	67 per cent	17	57 per cent
5. Shifted from capital improvements to small projects	11	41 per cent	14	67 per cent	5	33 per cent	6	50 per cent	6	40 per cent	6	67 per cent	16	53 per cent
6. Attempted to decrease utility consumption	25	93 per cent	21	100	15	100	10	83 per cent	14	93 per cent	9	100	30	100
Total Questionnaires Received	27		21		15		12		15		9		30	

- (Question 1) When asked about outsourcing traditional services, institutions with enrollment level of 9,000-12,000 had a 0 percent response rate and enrolment levels greater than 20,000 had the highest rate, 33 percent.
- (Question 2) In regards to eliminating non-essential services, institutions with enrolment levels 3,000-6,000 had a significantly high response rate, 62 percent, compared to all other regions with ranged from 13 percent to 43 percent.
- (Question 3) While at least one-third of respondents in all enrollment levels have decreased level of services provided, nearly two-thirds of those with the largest enrollments have done so.
- (Question 4) As to postponing projects and increasing deferred maintenance, institutions in the two largest classifications provided positive response rates of 67 percent and 63 percent compared to a range of 33 percent to 42 percent for all other enrollment levels.

- (Question 5) Institutions shifting to smaller scale projects occurred at the highest enrolment level 15,000-20,000 (67 percent), compared to all other groups ranging from 33 percent to 57 percent.
- (Question 6) Over 80 percent of institutions of all sizes reported attempts to reduce utility consumption.

Actions Affecting Additional Funding Sources (by Enrollment Level)

Table 6 (below) reports respondent’s actions and results with regards to pursuing additional funding sources based on enrollment level for the institutions.

Table 6: Actions Involving Additional Funding Sources
Results by Enrollment Level
("Yes" Responses & Percentage "Yes" Responses)

Action	Under 3,000		3,000-6,000		6,000-9,000		9,000-12,000		12,000-15,000		15,000-20,000		Over 20,000	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
1. Actively pursued federal & state stimulus funding	19	70 per cent	14	67 per cent	9	60 per cent	9	75 per cent	7	60 per cent	7	78 per cent	22	73 per cent
2. Received stimulus funding	2	7 per cent	0	0 per cent	1	7 per cent	1	8 per cent	1	7 per cent	4	44 per cent	5	17 per cent
3. Actively pursued green initiative projects	22	81 per cent	16	76 per cent	9	60 per cent	10	83 per cent	11	73 per cent	6	67 per cent	29	97 per cent
4. Actively pursued utility grants	17	63 per cent	19	90 per cent	11	73 per cent	6	50 per cent	11	73 per cent	6	67 per cent	20	67 per cent
Total Questionnaires Received	27		21		15		12		15		9		30	

- (Question 2) As to the receipt of federal stimulus money, institutions with enrollment levels of 15,000 to 20,000 had a positive response rate of 44 percent dominating all other institution enrollments, which ranged from 0 percent to 17 percent.
- (Question 3) When asked if the institution pursued green initiative projects, schools with more than 20,000 students responded at rate of 97 percent, with the remaining enrollment levels ranging from 60 percent to 80 percent.
- (Question 4) When asked if the institution pursued utility grants, the response rate ranged from 50 percent to 90 percent book ended by enrollments less than 3,000 and a level of 9,000 to 12,000. At least two-thirds of schools with over 12,000 students provided positive response rates to active pursuit of utility grants.

Profile of Respondents

Appendix I (below following conclusion) shows defining characteristics of the M&O departments that responded to the survey with respect to enrollment level, budget size, and square footage of area maintained. Of the 129 responses, 35 percent of the institutions were private and 65 percent were public.

CONCLUSION

Former University of Alabama Head Football Coach, Gene Stallings, was the keynote speaker for the 2010 59th Annual SRAPPA Conference. His overall message was simple: “facility managers must accept greater responsibility and although our current financial situation is tough, this is no time for excuses. Good managers need to become great, and great managers need to get even better.” His sentiments could not be more accurate.

Given the tough economic conditions experienced over the past 3 years and the forecasted slow recovery, facility managers must change the mindset of business as usual and refuse to accept the status quo. It is difficult if not impossible to improve scope and quality of services by focusing on productivity and efficiency, while at the same time, receiving constant or reduced resources, and budgets. No education system has ever improved a student’s college experience by persistently reducing its budget.

The culture and commitment of higher education to treat full-time faculty and staff identically is being tested even further by near record budget shortfalls. The level of employee benefits provided by higher education institutions is greater than most other industries. Survey responses indicate that traditional in-house provided services at some institutions are being outsourced and the result is a reduced labor burden on physical plant payrolls. In addition, some education institutions are asking employees to increase contributions for benefits as overall costs continue to escalate. On the other end of the candle, overall benefits at some institutions are being reduced. Respondents referenced retirement program contributions, supplemental insurances such as eye, dental, and life, increased minimum retirement ages, and loss of tuition assistance programs.

Because wages are such a large percentage of the overall M&O costs, over half the respondents indicated that hiring freezes and ceasing salary increases were implemented. Although these policies place a greater burden on individuals at lower pay scales, the overall temperament is still positive and better than the alternative: unemployment. Reduced manpower has forced facility managers to reduce traditional services provided as indicated by 45 percent of the respondents that answered yes. Reduction in the frequency of services such as preventative maintenance, trash removal, window washing, and pressure washing were most the most popular adjustment by facility managers.

Facility managers are also focusing on energy usage which comprises 35 percent of the M&O budget. Green initiative projects that reduce annual energy demands are at the forefront. Water conservation, high efficiency equipment, smart control systems and devices, geothermal solutions, solar energy, and waste recycling were some of the most

referenced projects by facility managers. Performance contracting, the process of measuring, monitoring, and decreasing energy consumption, is a relatively new management tool and is increasing with proven results. Renovation projects that improve the insulation of the building envelope are also increasing in popularity as funds for new facilities have decreased and the average age of existing facilities is increasing. Window, roof, and door replacements have an immediate impact on utility demands and can be completed relatively easy while not creating a long period of inconvenience for the tenants.

The bottom line is that facility managers must take a hard look in the mirror and determine which functions can be improved. New technologies, improved products, and efficient equipment provide great opportunities to increase production and efficiency. It is never easy to be in the customer service business, even in times of prosperity. Facility managers and their employees are the backbone of the behind-the-scenes campus staff and they realize the importance of the mission to support the operations of the university. As facility managers always have, they will continue to find a way to get the job done.

Appendix I: Profile of Respondents

Respondent Enrollment Level

Enrollment Level	Total Respondents	Percentage
Less than 3,000	27	21
3,000-6,000	21	16
6,000-9,000	15	12
9,000-12,000	12	9
12,000-15,000	15	12
15,000-20,000	9	7
Greater than 20,000	30	23
Total	129	100

Respondent M & O Budget

M&O Budget	Total Respondents	Percentage
Less than \$1 million	2	2
\$1 – 3 million	26	20
\$3-6 million	33	26
\$6-9 million	13	10
\$9-12 million	15	12
\$12-15 million	12	9
Greater than \$15 million	28	22

Total	129	100
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Respondent Square Footage

Gross Area of Facility	Total Respondents	Percentage
Less than 250,000 sf	1	1
250,000-500,000 sf	3	2
500,000-750,000 sf	10	8
750,000 – 1 million sf	16	12
1-1.25 million sf	8	6
1.25-1.5 million sf	14	11
Greater than 1.5 million sf	77	60
Total	129	100

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