Introduction

The Office of the Legislative Fiscal Analyst, at the request of the Legislature, consulted with state agencies and higher education in an effort to calculate the deferred maintenance needs of State facilities. Public facilities owned by the State are an essential element in the provision of government services. Taxpayers are asked to spend millions of dollars each year to construct, remodel and maintain facilities to ensure the viability of public programs which occupy some 33 million square feet of capital assets with a replacement value of more than $3.7 billion.

As part of their programmatic efforts, state agencies are trusted to maintain buildings in an effort to maximize efficiency, prolong building life and to ensure the safety and comfort of workers and visiting citizens. Agencies have several options in determining how their buildings will be maintained: Higher Education maintains a physical plant staff on each campus, UDOT maintains its sheds with assistance from Utah Correctional Industries, and the Division of Facilities Construction and Management (DFCM) provide maintenance services in about 15 percent of State-owned facilities.

This report analyzes the amount of maintenance that has been deferred by state agencies (including Higher Education) and offers solutions to deal with the problems. To understand deferred maintenance, however, one must understand the entire maintenance program pursued by the state. This report provides new definitions, assesses the current state of maintenance funding, and suggests solutions that can be used by the Legislature, state agencies and higher education.

Defining Deferred Maintenance

The question *What is deferred maintenance?* seems simple enough on the surface, but facility related definitions vary not only between agencies, but within agencies as well. Furthermore, the definition implies a failure to properly address maintenance needs and suggests that maintenance funds may have been used for other purposes. In dealing with a similar problem during the 1998 General Session, the Legislature asked the State Building Board to create a common definition of operation and maintenance (O&M) funding. Last year the Utah Building Board adopted the following definition for operation and maintenance to be applied to all state agencies:

> Facilities *operations and maintenance* (O&M) is defined as: funding of utility costs, routine corrective and preventive maintenance, custodial services, utility distribution systems and site maintenance, furnishings repair, O&M administrative costs, security, and other planned or unscheduled maintenance.[1]

The difficulty addressed by formalizing the definition of O&M is now being found in relation to the concept of deferred maintenance. Finding a consistent

definition within one state agency is very difficult – finding a common definition within state government is impossible. Even within the Utah System of Higher Education, which has one governing board, there is no single definition of deferred maintenance. Agencies and institutions count a myriad of facilities needs into their deferred maintenance categories – everything from carpet replacement to roofing failures to aging steam tunnels are counted as deferred maintenance needs. At least one college campus includes seismic retrofits as part of their deferred maintenance backlog. Officials in the Commissioner's Office are currently seeking a more uniform definition of deferred maintenance.

Problems with Calculating Deferred Maintenance

In attempting to create a uniform definition, one study from the Utah Association of Physical Plant Administrators (UAPPA) offers a more comprehensive concept called *accumulated deferred maintenance* (ADM).[2] UAPPA's concept of ADM is intentionally broad, adding to deferred maintenance costs other items such as capital replacements and capital upgrades. The notion of ADM provides what is perhaps the most precise formal attempt to define deferred maintenance in state government, but it still lacks the ability to provide an accurate tool for assessing potential costs to the state for maintenance backlogs. In attempting to calculate the amount of deferred maintenance, it is crucial to develop uniform definitions of maintenance, capital renewal and obsolescence.

Maintenance Definitions

There are essentially four types of maintenance: repair maintenance, preventative maintenance, predictive maintenance and deferred maintenance. The following definitions are adapted from *RS Means*, a leader in facility research:

> *Repair Maintenance:* Work that is performed to put equipment back in service after a failure, to extend the life of equipment, or to make its operation more efficient (currently addressed as part of the State O&M Definition).
>
> *Planned Preventative Maintenance:* Service or replacement of equipment components for the purpose of extending its life or making its operation more efficient (currently addressed as part of the State O&M Definition).
>
> *Predictive Maintenance:* An inspection process designed to estimate the condition of equipment and possibly predict the failure rate of equipment or its components.[3]
>
> *Deferred Maintenance:* Any project identified through predictive maintenance as needing attention either through *repair maintenance* or *planned preventative maintenance* that can not be handled within a short period of time (currently addressed through Capital Improvement funding).

By combining predictive maintenance inspections with regularly scheduled facility audits, building managers can use the above definitions to build a deferred maintenance list.

A predictive maintenance schedule could prevent unwanted visitors.

A facility audit allows staff members from both the programmatic and operations areas to make a complete list of everything that needs attention, from faulty wall sockets and failing air handlers to requests for improved lighting or better window shades. Once the requests are made, the facility manager must rank requests in terms of urgency and should omit those that are not actually maintenance issues (*i.e.*, requests for larger offices or faster computers). Once the list is compiled in priority order assignments are given to maintenance staff to complete. Anything that can not be completed within a short time frame (two to three months) becomes part of the *deferred maintenance list.*[4]

Deferring Maintenance

In adopting this definition of deferred maintenance, there is still the difficulty of understanding why the maintenance has been deferred. Whether using a narrow or comprehensive definition, the term seems to "imply that deferral has been caused by negligence rather than conscious planning."[5] Negligence may be the reason that specific projects have gone without repair, but other reasons may, in fact, be cause for legitimate deferral. Among these reasons could be a lack of funding, unforeseen expenses in the facility budget, or impending remodeling. For example, if a building was in need of repainting

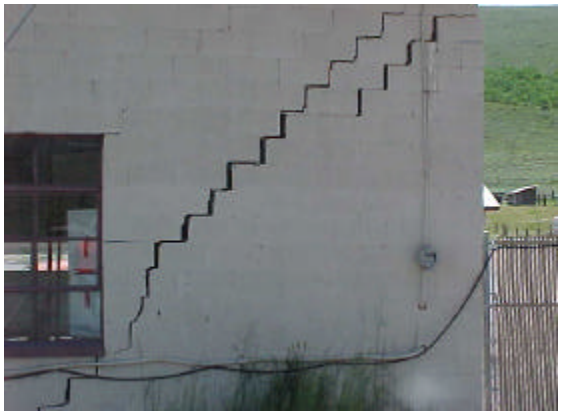
How long did this "small leak" go unrepaired?

but a remodeling project was a year away, a manager may decide to defer the painting until after the construction period to prevent additional damage to the new paint. The key to the deferred maintenance list, then, is that deferred projects must be explained in a formal way that shows deferral is the conscious decision of the manager rather than a neglect of assigned duties.

Capital Improvement and Renewal

As buildings age, components must be replaced to keep the building in good working condition. Air conditioners, boilers, lighting ballasts, windows and carpeting have an expected life that is generally less than that of a building. Small items such as ballasts and windows can be replaced as part of the preventative maintenance schedule, but big ticket items like roofs, air handlers and boilers must be budgeted separately as part of a capital renewal process. The purpose of the preventative maintenance schedule is to maximize the life expectancy of major equipment, not to extend its life expectancy indefinitely. Many building components and infrastructure systems in Utah have outlived their usefulness and are serving years beyond their expected life. For example, portions of the steam tunnels at Utah State University are 70 years old and are in need of replacement. The cost to upgrade just the steam tunnels will reach millions of dollars, not because of maintenance that has been deferred but rather due to capital assets that are in need of renewal. Other buildings are in similar situations, especially at older institutions like the University of Utah and the College of Eastern Utah.

While Higher Education certainly has the lion's share of renewal needs (they occupy the oldest state buildings and nearly two-thirds of all owned space in the state) they are not the only agency facing crucial needs that do not have a dedicated stream of funding. The Division of Parks and Recreation owns the Territorial Statehouse in Fillmore, a building powered by out-of-date electrical systems that are taxed to their fullest extent and often malfunction. The lack of a sprinkling system in the building only adds to the danger, as sparks from blown fuses or overloaded circuits could easily start a fire that would quickly ravage the building.



This problem presents a real cost to the State, but is it deferred maintenance?

The Capitol Building is also in need of immediate improvement. Large concrete fascia is attached to the building only by gravity and the Dome has no protection against an earthquake – experts say that even the slightest shake would topple much of the building.

The buildings listed here are dramatic examples of an aging inventory of buildings owned by the state. **Clearly, the problems need to be addressed,**

but they are not deferred maintenance problems. Agencies are classifying seismic upgrades, safety features and even ADA compliance needs as deferred maintenance for lack of a better term. These needs are more accurately described as capital renewal needs and should be classified as such.

Obsolescence

To qualify as obsolete, a building "is not necessarily broken, worn out or otherwise dysfunctional… (it) simply does not measure up to current needs or expectations."[6] In the private sector, buildings are planned, programmed and designed to be functional for a specific number of years. "Over time the quality of service declines from its initial level as the facility exhibits the results of normal wear, poor workmanship or materials, unlikely events, aging or some combination of such factors."[7] Public buildings take on a special significance, however. Every college campus has buildings that have become part of the community. From Old Main in Logan to the President's Circle in at the University of Utah to the Noyes Building at Snow College, the state has spent considerable amounts of money to ensure that landmark buildings will not be obsolete. Buildings do not simply become obsolete because of age, however. The current demands brought on by technology can also render a facility obsolete. The installation of fax machines, computers and high speed copiers tax phone lines and electrical capabilities. Additional air conditioning is needed to cool offices and closets that house computer equipment, straining HVAC systems and air handlers.

Has modern HVAC made Philadelphia's city hall obsolete?

Examples of Obsolescence

If the **Territorial Statehouse** were still being used as the seat of state government in its current condition, it would be hard to argue that it is not obsolete. Even as a museum, the argument can be made that the building is obsolete because it does not meet current fire safety and ADA standards. The **Capitol Building** is a more complex problem in relation to obsolescence. As the State has grown in population and in budget, the staff size in each branch of government has also increased. This growth has put office space at a premium within the Capitol, resulting in hodge-podge remodeling that has not been centrally coordinated. Combine this with an increase in interest by legislators to have permanent offices and one could reasonably argue that even without its seismic problems, the Capitol Building does not measure up to current needs or expectations.

A building does not have to be as old as the Territorial Statehouse or as revered as the Capitol to face obsolescence problems. In the early 1990's the **Department of Human Services** needed two new office buildings of approximately 40,000 square feet each. Within the short time frame in which the buildings were completed, the nature of the work done by DHS had changed dramatically. A mission change created the **Department of Workforce Services** and the new agency inherited responsibility for the two buildings. DWS was able to make a few minor changes, most notably the addition of an open lobby area, to make the buildings suit their needs in the best way possible. Now the mission of DWS has changed and they have downsized their staff, removing the need to continue ownership of the two buildings. With considerable effort, DFCM found other state agencies that are leasing space in the same area to move into the facilities, but the space is not suited to the current needs and expectations of those who will be occupying it. Because of a lack of flexibility, these buildings may have been obsolete before they were even occupied, but this should not be considered in the same category as deferred maintenance.

The historic Statehouse is no longer a viable Capitol Building.

Why Worry About Definitions?

It may seem pointless to parse the definition of deferred maintenance as it is generally used by state agencies. After all, if seismic retrofitting is part of deferred maintenance or not, the cost to remedy the problem remains the same. However, there are at least four reasons that a more precise definition is desirable:

1. There should be a uniform definition throughout the state for deferred maintenance. Legislators or their staff should be able to converse with state agencies without having to wonder if one agency's cost estimates use the same terminology and data as another agency.

2. Each of the above categories have unique policy aspects associated with them. If facility audits conclude that maintenance problems are the result of failure to follow a preventative maintenance schedule, the Legislature may be less likely to view additional funding as necessary. On the other hand, the Legislature may choose to provide additional funds for deferred maintenance that is the result of documented past underfunding.

3. Requests for capital renewal or improvement funds can be better understood separately from other maintenance issues. Replacing a boiler 5 years short of its expected life cycle creates a much different policy issue than replacing a boiler that has exceeded its useful life expectancy by 10 years.

4. The Legislature should have oversight when it comes to dealing with obsolete buildings. There are several options available to lawmakers in dealing with obsolescence including sale of the property, retrofitting of deficient systems and demolition or complete replacement of the structure.

Current State Action on All Types of Maintenance

Regardless of definition, the total *maintenance backlog* (deferred maintenance, capital improvement/renewal, obsolescence mediation, and seismic retrofitting) is a substantial sum. Although the state has a significant backlog of deferred maintenance, capital renewal and obsolescence remediation projects, it is not due to a lack of effort on behalf of both the Legislature and State Agencies. In considering new buildings, the Legislature makes a point to understand the impact of future Operations and Maintenance (O&M) costs that will continue throughout the life of the building. DFCM is charged with evaluating maintenance staff in all state buildings and is further required to provide "condition assessments" for buildings on a statewide basis. Higher Education must use money obtained from research grants to fund part, if not all, of the O&M in buildings where research is conducted. **Three entities – the Legislature, DFCM and Higher Education – make the most significant impact on maintenance issues in the state.**

The Legislature

All public facilities are owned by the citizens of the State of Utah. The Legislature has demonstrated a significant commitment to the public through its willingness to finance and construct facilities to keep pace with the growing demands on transportation, education and taxpayer services. Furthermore, the Legislature provides significant funds for operation and maintenance of facilities and annually appropriates more than $30 million for capital improvements.

Operations and Maintenance

The Legislature has made significant commitments to the facility needs within the State. Each year more than $110 million flows to agencies for physical plant operations. This is an average of approximately $3.35 per square foot and does not include funds from the Weighted Pupil Unit that are used by local school districts to fund operation and maintenance of their facilities. Estimates are the only data available due to the fact that agency budget and accounting structures have not been designed in a uniform way to track maintenance costs. Agencies that contract for maintenance with DFCM are included in the DFCM line, which is the easiest to calculate since the ISF budget provides the total maintenance cost associated with the buildings they manage. The table below provides an estimate for the amount of funds expended for O&M in the state.

	Square Feet	O/M Budget	Cost per Ft^2
Higher Education	22,000,000	$80,230,120	$3.65
DFCM	4,237,115	16,284,200	3.84
UDOT	1,397,987	2,587,091	1.85
DOC Draper	1,216,375	2,819,660	2.32
DOC Gunnison	347,247	1,392,325	4.01
BATC	238,116	1,197,381	5.03
DATC	210,000	978,977	4.66
OWATC	271,462	1,201,700	4.43
UBATC	134,380	651,930	4.85
Field Operations	167,832	N/A	
Courts	135,000	N/A	
ABC - Warehouse/Office	168,000	N/A	
DHS/DYC	1,442,673	164,870*	
Total	31,966,187	$107,508,254	$3.36

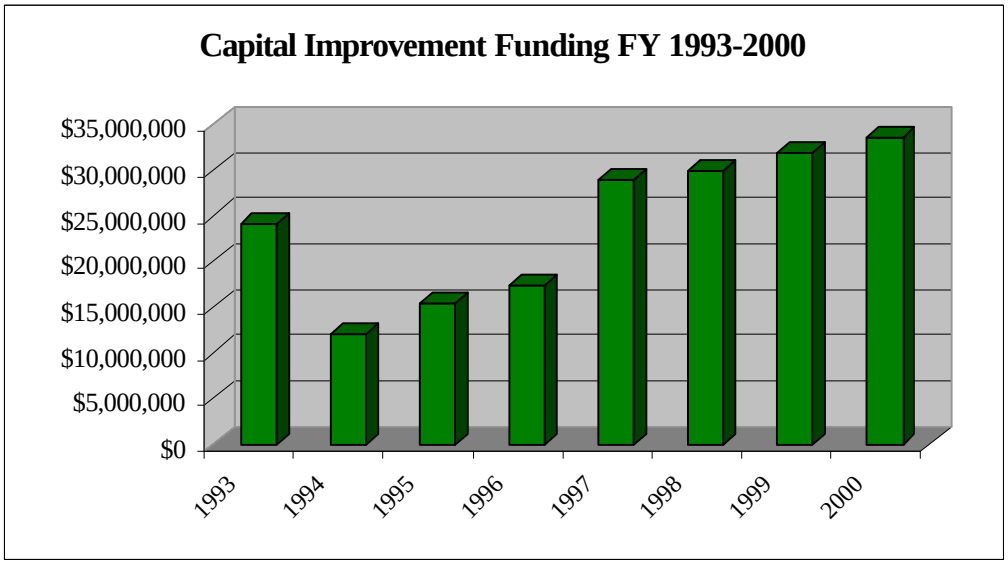
*incomplete data

Table 1: Estimated Statewide O&M Expenditures

Capital Improvement and Renewal

In addition to O&M funds, the Legislature annually contributes millions of dollars to capital improvement projects. A capital improvement project is defined in statute as a remodeling project that costs less than $1,000,000 but adds no new square footage to the state inventory. The amount is driven by a formula that allocates 0.9 percent of the replacement value of state buildings to capital improvement projects. In Fiscal Year 2000 the total amount requested for capital improvement projects was $49,148,000, nearly 50 percent more than

approved funding of $33,558,000. It is important to note that the $49 million



request represents a "short list" of all agency needs that is compiled by DFCM for the Building Board. Furthermore, agencies "short list" the request they forward to the Building Board, realizing that only their most pressing needs can be addressed. While the $33.5 million appropriated can not fund every request, it is more than double what was appropriated five years ago.

The Division of Facilities Construction and Management

DFCM is the state's building manager for all buildings with the exception of those occupied by Higher Education. DFCM has comprehensive delegation agreements with the Department of Natural Resources and the Department of Transportation that allow each agency to maintain their own facilities. Some agencies continue to maintain their own facilities through a delegation agreement with DFCM, but the Division still retains the responsibility for maintenance oversight on all buildings, regardless of which agency provides primary maintenance.

Facility Preventative Maintenance Audits

DFCM's *Facility Preventative Maintenance Audit* assesses 17 areas of preventative maintenance (18 for Parks, Wildlife and State Lands) that include attention to custodial needs, life safety issues, energy management and maintenance documentation. Each area has a maximum score, weighted for importance in the overall program. Each Audit contains 100 points and DFCM considers 90 points to be the state standard for acceptable maintenance.

Audit Scores

DFCM reports Facility Audit Scores to the Legislature on an annual basis. A copy of this report is available both from DFCM and the Legislative Fiscal Analyst. The following table shows initial audit scores by agency (Higher Education joined the audit process in Fiscal Year 2000).[8]

Agency	Audit Score
ABC	74.9
Corrections	92.0
Courts	76.1
DHS	80.8
National Guard	77.1
Natural Resources	81.8
Transportation	79.4
Workforce Services	77.6
Education	85.0
DFCM	91.3
Statewide Average	**81.6**

Table 2: Audit Scores for State Agencies

These numbers alone can be somewhat misleading. Only two agencies scored over 90 points – DFCM and the Department of Corrections. DFCM's audit comes from an audit of approximately 2.5 million square feet in 29 different buildings. Clearly, it is not unreasonable to expect that the state building manager would excel in this measurement, but the audit scores include two facilities that scored only in the mid 70s and four more that scored less than 85. Follow up audits on these facilities show that renewed emphasis has been placed on maintenance, and each of the sites have improved their scores significantly. In contrast to DFCM, the Department of Corrections score is based on two audits – one at the Central Utah Correctional Facility in Gunnison and one at the State Prison in Draper. The 97.1 earned at the brand new CUCF facility is impressive, and the 86.8 earned at the Draper site has been improved to a 91.7 for the 1999 Audit. A copy of the Draper prison Audit is included at the back of this report as Appendix A.

Condition Assessments

In addition to conducting facility audits, DFCM is also responsible for providing condition assessments at state facilities. More comprehensive than a preventative maintenance audit, *Condition Assessments* look at mechanical, electrical and architectural elements to assess the needs of state buildings. The assessments, which number about 100 to date, are conducted by engineering firms and provide information on immediate, five-year and ten-year facility needs. The condition assessments are a resource for the Building Board and DFCM that provide guidance in setting priorities for capital improvement projects. The quality of the condition assessment varies from study to study, but they seem to be improving over time. A 1996 assessment of the State Rehabilitation Center identified few, if any, items that could not have been

documented by a maintenance foreman or manager. A 1999 assessment of the Washington County Courts building appears to be more comprehensive and identifies problems that would not likely be apparent to a typical maintenance foreman.

The combination of Preventative Maintenance Audits and Condition Assessments allows DFCM to begin to estimate the actual amount of deferred maintenance, capital renewal and obsolescence abatement that has accumulated in the state. These tools are still relatively new, however, and will be more useful as agencies begin to realize that they will be held accountable for their own maintenance.

Higher Education

The Utah System of Higher Education is perhaps the most key player in the deferred maintenance issue. As mentioned above, Higher Education holds responsibility for nearly two-thirds of the state building inventory. The age of institutions within the USHE combined with rapid growth in students, faculty and new construction has left the colleges and universities with a significant backlog of maintenance items. Each institution maintains a physical plant staff, and each plant director meets regularly with the other directors to jointly find solutions to maintenance problems. For the last several years, these directors have expressed concern that appropriated funds for O&M have not kept pace with inflation, causing institutions to draw money away from programmatic needs to maintain the physical plant. Data developed by USHE staff confirms this claim:

FY 1988 Plant Budget (USHE)	$44,777,359
Appropriated FY 1988 -1999	$30,450,080
Calculated Budget	$75,227,439
FY 1999 Plant Budget (Actual)	$80,230,120
Difference	$5,002,681

Table 3: Higher Education Additions to Appropriated Funds

Physical plant budgets for FY 1988 totaled nearly $45 million. Over the last ten years, the Legislature added more than $30 million to this fund. However, according to this USHE analysis, colleges and universities have found an additional $5 million to enhance their physical plant budgets since 1988. A great deal of this funding comes from external research grants. Studies conducted on campus that are funded through external research grants are required to pay a proportionate share of overhead costs associated with operating a building. Regent policy requires colleges and universities to document the proportion of space a building will use for academic purposes when requesting state funding for operation and maintenance of new facilities.

Prioritizing Needs within the USHE

While the USHE has been providing more funds for maintenance needs, they have not done as well at prioritizing infrastructure needs. The steam tunnel issue at Utah State University and energy problems at the University of Utah have met with incredible difficulty in climbing the priority list within the institutions and within the Regent's prioritization process. Two important steps have been taken to address infrastructure needs. The first is the use of a third party provider that will deliver new equipment to the University of Utah and use guaranteed energy savings to amortize the associated debt. This plan saved the state some $29 million that would have been put into the project at the University. The second step involves changing the prioritization process so that infrastructure projects have a chance to compete for Regent approval to be forwarded to the Governor. The new process will enhance points for infrastructure projects that potentially could cause one or more buildings to be shut down if major repair issues are allowed to remain unresolved.

State Agencies and Deferred Maintenance

State agencies (including the USHE) are beginning to realize that they are no longer merely responsible for maintenance, they will be held accountable for the condition their buildings are in. The use of Preventative Maintenance Audits and Condition Assessments will allow legislators to see how well facilities are being maintained. For the most part, maintenance is being performed on schedule as scheduled, but the age of the building inventory could cause a funding crisis in the years to come if no action is taken by the legislature. The question then becomes *How much will deferred maintenance remediation cost and what is it that we should do?*

Kitchen staff complained of excessive heat - where is the belt to drive the cooler fan?

Estimating the Cost of all Maintenance Backlogs

The most key finding of this project is that there is a tremendous lack of data regarding facility maintenance. The inability of state agencies and institutions to estimate their deferred maintenance totals is extremely troubling, although most have realized the deficiency and have taken steps to correct the problem. The Division of Youth Corrections is currently analyzing their budgets in an attempt to separate O&M from programmatic costs, UDOT estimates mesh needs with desires, and Natural Resources is relying on DFCM Facility Audits - even though they have not completed surveys of all DNR buildings. Other agencies have a better grasp of their needs. For example, Utah State University has a maintenance backlog of $45 million in *audited* space and estimates that their total needs are $75 million. The University of Utah audit shows more than $200 million in needs. DFCM estimates that it will take anywhere from $3.60 a square foot to more than $12 a square foot for older buildings to eliminate maintenance backlogs. Even if all backlogs could be erased for $3.60 per square foot, the total needed for non-higher education buildings would be $35.9

million and easily tops $300 million when adding in all State buildings.

Agency	Square Feet	Backlog Cost at $3.60/sq.ft.
DFCM	4,237,115	$15,253,614
UDOT	1,397,987	5,032,753
DOC Draper	1,216,375	4,378,950
DOC Gunnison	347,247	1,250,089
BATC	238,116	857,217
DATC	210,000	756,000
OWATC	271,462	977,263
UBATC	134,380	483,768
Field Operations	167,832	604,195
Courts	135,000	486,000
ABC - Warehouse/Office	168,000	604,800
DHS/DYC	1,442,673	5,193,622
UU (Audited)	8,755,525	200,000,000
USU (Audited)	5,364,888	45,000,000
WSU	1,752,094	6,307,538
SUU	1,073,642	3,865,111
Snow	949,377	3,417,757
Dixie	817,165	2,941,794
CEU	646,790	2,328,444
UVSC	1,235,277	4,446,997
SLCC	1,410,260	5,076,936
Estimated Total	31,971,205	$309,262,849

Table 4: Estimated Maintenance Backlog Costs

Combined with just the audited figures for the University of Utah and Utah State University, the backlog reaches $281 million without counting the seven smaller schools. The addition of the seven smaller schools pushes the total to more than $300 million and UDOT estimates (partially audited) project another $38 million over the above estimate. Using conservative figures, the State has approximately $350 million in total maintenance backlogs. Assuming that all capital improvement dollars went solely to deferred maintenance, capital renewal and obsolescence remediation, it would still take nearly a decade just to take care of the *current* maintenance backlog. If the State is to attempt to get a handle on maintenance backlogs, it must first take some serious steps in the Legislature, the Division of Facilities Construction and Management and the Utah System of Higher Education.

Recommendations - Legislative Solutions

1. The Legislature should direct the Building Board to develop and implement statewide definitions for deferred maintenance, capital renewal and obsolescence. The Legislature should first develop a meaningful policy toward maintenance issues, beginning with defining the various needs that exist in maintenance backlogs. In the past, the Legislature has directed the Building Board to develop policies, including a recent request for the Board to develop a statewide definition of operation and maintenance. Implementation of these definitions should include a directive to state agencies that reporting of maintenance backlogs is to follow the new Building Board definitions.

2. The Legislature should consider increased funding for operations and maintenance budgets. It has been ten years since any inflationary increases have been given for O&M needs. However, any funds appropriated to enhance O&M should be directed to state agencies that can clearly demonstrate that they are properly accounting for appropriately defined expenditures within the physical plant.

3. The Legislature should place infrastructure projects high on its priority list. New buildings and major remodeling projects are as important as they are high profile. However, it may be time for the state to enhance its investment in the repair of critical items that are ultimately hidden underground or in mechanical rooms.

4. The Legislature should consider the possibility of providing "block grants" of capital improvement money to State Agencies and Institutions. Rather than tying capital improvement dollars to specific projects (which often include significant cosmetic costs), the Legislature could apportion money based on a formula. The current method for funding Capital Improvement funds (sometimes called Alteration, Repair and Improvement funds) ties funding directly to a specific project. This means that agencies must make a case for need based on the severity of individual projects. This process creates an incentive, especially within Higher Education, to ignore small problems until enough of them can be grouped together to create a "large" need. If the Legislature allowed "block grants" that were not tied to specific projects, it could give the institutions and DFCM the responsibility of taking care of more pressing infrastructure needs and make cosmetic remodeling less desirable. One concern with this method is the real possibility that funding could become sidetracked with this plan. However, with proper oversight and professional management by DFCM, this may be an important step forward in eliminating maintenance backlogs while increasing accountability within state agencies and higher education.

5. The Legislature should consider creating a separate line item for O&M in each agency budget. This would allow Appropriation Subcommittees the opportunity to more closely scrutinize how maintenance funds are being used. This could be especially important within the budgets of the Department of Corrections and the Division of Youth Corrections. Current policy allows DOC and DYC to combine operation and maintenance needs with programmatic funding when a new building comes online. By aggregating these

two distinct needs, it is very difficult to determine if adequate funding is applied to facilities needs. Additionally, the current funding request policy has the effect of providing substantial one time funding for each corrections agency. When the Legislature funds programs at a new DOC or DYC facility, the funding flows to the agency at least three months before the facility opens to ensure that new staff are trained and POST certified on opening day. However, the salary cost for new employees is combined with the O&M cost, which is not needed until the building actually opens. The end result is that hundreds of thousands of dollars are appropriated to DOC and DYC to pay for costs that do not yet exist. *A corollary to this policy option would be for the Legislature to require DOC and DYC to split budget requests into programmatic and O&M categories, following the Building Board definition of operation and maintenance.*

6. The Legislature should consider adopting a dedicated account for replacement of infrastructure systems in all buildings. When an agency occupies a new building, part of their rental structure could include a deposit into an account that will accrue funds to be used to replace chillers, boilers, carpets, paint, roofs and other systems that wear out over time. This would be easy to add to new buildings as they come online, but it may be worthwhile to assess this fee on existing buildings as well. The following table shows the startup cost for such a program:

Per Sq. Ft.	Total Cost
$0.01	$330,000
0.03	990,000
0.05	1,650,000
0.07	2,310,000
0.09	2,970,000
0.11	3,630,000
0.13	4,290,000
0.15	4,950,000
0.17	5,610,000
0.19	6,270,000
0.21	6,930,000
0.23	7,590,000
0.25	8,250,000

Table 5: Cost per Square Foot

Large agencies such as Higher Education, the Department of Corrections and the Department of Human Services may be able to operate from a revolving account that will use funds from newer buildings to resolve problems at older buildings. If the Legislature chooses to pursue this policy, it should consult with DFCM to determine the most appropriate level of funding.

7. *The Legislature should consider increasing funding for Capital Improvements.* Legislation has been introduced the past two years to increase

the Capital Improvement set aside from 0.9 percent to 1.1 percent of the replacement value of all state buildings. This would have an impact equal to assessing five to seven cents per square foot on all state buildings without the implication that the funds are tied to a specific facility. The additional funds could be dedicated to addressing deferred maintenance needs as defined by DFCM and the Building Board.

Recommendations - Division of Facilities and Construction Management

1. DFCM must be more active in its role as State Building Manager. Many agencies have delegation agreements that allow them to maintain their own facilities, but the ultimate responsibility for buildings occupied by State Agencies lies with DFCM. **If the agencies repeatedly show that they can not or will not maintain facilities, DFCM should revoke the delegation agreement and assume responsibility for the building**. If a building occupied by a state agency is found to be in disrepair, the Legislature should hold DFCM accountable for the condition of the building, regardless of any delegation agreement. As DFCM becomes more assertive in revoking delegation agreements, agencies are likely to complain that DFCM management will constitute an undue burden on their already strained budgets. However, if agencies have to spend more for DFCM maintenance than they are currently spending, it may be an indication that O&M funds were being diverted to programmatic uses rather than remaining in the physical plant budget.

2. DFCM must ensure that basic maintenance levels are maintained in every state building. At a minimum, every building should have the following:

- Posted maintenance schedule;
- Operation manuals for all equipment (including software manuals);
- Maintenance log, including maintenance tasks and deferred maintenance lists;
- Adequate custodial equipment, and
- Essential tools for maintaining all systems on the premises.

3. DFCM should develop and maintain a Management and Information System that will allow for automation, accountability and accurate assessment of maintenance needs. Information systems are a key to managing any maintenance program. No agency is keeping a formal record of items in need of repair and the cost to fix them. DFCM recently purchased a comprehensive database system that promises to provide integrated data. This system will allow DFCM to develop a true statewide facilities database with the ability to monitor and perform all areas of facility management including preventative maintenance, scheduled maintenance, and private contract monitoring. The software will also track development and construction projects, including schedule and budget performance. It will also record and track all state owned properties and their associated information, and track all leased facilities The information gathered will be automatically updated and will be accessible to all state agencies via the wide area network or through the Internet.

4. DFCM must ensure that the Condition Assessments are accurate, useful and tied directly to capital improvement dollars. Condition Assessment documents need to be better. The documents should make recommendations based on statewide definitions of maintenance, deferred maintenance, and capital renewal but they should not contain recommendations for new structures that enhance the programmatic abilities of an agency. Furthermore, capital improvement recommendations should be directly linked to completed condition assessments. There should also be an explanation for assessments that are completed but not used in the current budget cycle.

5. DFCM must work toward 100 percent auditing of maintenance backlogs. If there is no audited accounting for the backlog, there will be no way to measure progress in mediating the issue. Each facility must have an accurate, up to date list of maintenance items. Appendix B provides an example of a report that may be kept on site by the facility staff.

6. As the State Construction Manager, DFCM must insist that architects design buildings that are functional and flexible to stave off obsolescence for as long as possible. Buildings must be designed to be more flexible. DFCM, with the support and funding of the Legislature, is currently studying ways to create prototypical office buildings that are less expensive to build, more efficient to operate and easily adaptable to changing agency needs.

Recommendations - Higher Education

1. The USHE should make a regular report to the Legislature regarding discretionary spending on infrastructure projects. Colleges and Universities must make infrastructure a priority. Institutions continually appear before subcommittees pleading their case for state support on infrastructure issues – so long as it doesn't interfere with their major building project. In addition, some institutions have been able to use "discretionary" funds for major purchases, especially land acquisitions. If discretionary funds are available, administrators should consider campus infrastructure needs when assigning expenditures.

This is not to say that USHE Presidents do not use discretionary funds to assist in infrastructure projects. In fact, presidents have used discretionary funds for cooling towers and paving projects. Furthermore, many "discretionary" accounts would be more accurately defined as "dedicated" accounts - accounts that must be used within a specific range of needs. A better system of reporting "discretionary" spending should ease the minds of both the Legislature and the Board of Regents.

2. Each college and university must maintain a maintenance record that shows what has been done and what needs to be done on every building. Each facility plant manager must make sure that the institution is conducting maintenance programs that follow the same guidelines that other plant managers in the state are following. Furthermore, each building on campus should hold the same minimal maintenance levels as described above in the DFCM section (DFCM #2).

3. *All institutions of Higher Education should work closely with DFCM to ensure that buildings are maintained properly*. Beginning this year, Higher Education will rely on DFCM for Facility Audits. The initial plan calls for assessing campuses by three or four building types (i.e., classroom, laboratory, or office). Given that USHE accounts for nearly two-thirds of all square footage , it is more desirable that all buildings undergo individual audits. This will be more time consuming, but it will lead to accurate data that can be used in the policy making process.

Conclusions

There is bad news and good news to report on the State's total maintenance backlog. The bad news is that there can be no doubt that buildings in the state of Utah have an enormous backlog of maintenance needs. Without consideration of seismic retrofits, an estimate of $400 million in deferred maintenance, capital renewal needs and obsolescence would be a conservative estimate of the current backlog. If one wanted to add seismic needs, the figure will at least double. To make bad news worse, actual audited data is not readily available from most state agencies and institutions. Even at the University of Utah and Utah State University - where the most comprehensive audits have been completed - definitions are not uniform and total institutional needs rely on extrapolations of audited data. Agencies and institutions that are committed to taking care of deferred maintenance, capital renewal and obsolescence remediation needs will have clear, audited data to bring forward when they request funds for these projects.

George Washington's Valley Forge HQ. Obsolete, but perfectly maintained.

The good news, however, is that the Legislature and the Executive Branch are already implementing solutions to fix the problem. The $33.5 million appropriated by the Legislature for capital improvements in FY 2000 continues a long term Legislative commitment to taking care of major repair issues. The Executive Branch, through the state building manager (DFCM), has hired competent professionals who are committed to proper maintenance of State facilities. DFCM is properly proud of the strides they have made in improving the building inventory of the state but still strive to perform at an even higher level. State agencies now realize that they must be more accountable for their facilities and higher education is continually finding creative solutions to address

their problems. Public facilities nationwide are aging and in need of immediate attention. The State of Utah now has an opportunity to be an example to other government entities in demonstrating a long term commitment to facility maintenance.

1. The full Building Board definition, which includes clarification of key terms, is attached as Appendix C.

2. van der Have, P.J. (1999). USHE Facilities: A source of pride, a cause for concern. Salt Lake City: Utah Association of Physical Plant Administrators.

3. Armstrong, James E. (1996). Deferred maintenance. In Greene and Plotner (Eds.), *Cost Planning and Estimating for Facilities Maintenance.* Kingston, MA: RS Means Company, Inc. (pp. 297-298).

4. Armstrong, James E. (1996). Deferred maintenance. In Greene and Plotner (Eds.), *Cost Planning and Estimating for Facilities Maintenance.* Kingston, MA: RS Means Company, Inc. (pp. 298-299).

5. Lane, Jr., R., Langford, M., and Procter, M. (1984). Capital renewal and replacement/deferred maintenance. In Evans (Ed.) Facilities Management: A manual for Plant Administration. Washington, D.C.: Association of Physical Plant Administrators of Universities and Colleges.

6. Islin, Donald G. and Lemer, Andre C. (1993). The Fourth Dimension in Building: Strategies for Minimizing Obsolescence. Washington, D.C.: National Academy Press. (p. 11).

7. Islin, Donald G. and Lemer, Andre C. (1993). The Fourth Dimension in Building: Strategies for Minimizing Obsolescence. Washington, D.C.: National Academy Press. (p. 6).

8. Adapted from the DFCM Internal Service Fund Annual Report, Section 2, page 1. Initial audits are used here because follow-up audits are not complete and may skew numbers due to the small divisor in the average calculation.