

WHITE PAPER



DEFERRED MAINTENANCE CRISIS

PREDICTING NEGATIVE EFFECTS

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“If deferred maintenance is left unresolved for eight years or more, taxpayers across Georgia will face facility replacement costs of \$130 billion in today’s dollars.”

One of the first victims of a recession is the delivery of facility maintenance services to our public facility infrastructure. Proactive maintenance in local and state facilities has been deferred at an unprecedented rate. This trend is especially alarming in mission critical infrastructure buildings, such as jails and prisons.

The practice of deferring preventive maintenance has led to a crisis in local jails and state correctional facilities across the country valued somewhere between \$16 billion and \$32.5 billion. The deferred maintenance crisis is exacerbated by the “pay as you go” policy employed by many state and local governments to fund on-going and capital maintenance.

Without proper funding and a policy correction, the cost of deferred maintenance will double every five years. If left unresolved for eight years or more, taxpayers will face facility replacement costs of \$130 billion in today’s dollars.



MISSION CRITICAL FACILITIES

The public expects and requires certain services to be provided by government agencies. These services help define the mission of government and are not typically provided by private-sector vendors. The facilities that house these mission-critical services must function as intended in order to provide efficient and effective services to the public.

Some examples of Mission-Critical Facilities include:

- Fire Stations
- Emergency Operations/911 Centers
- Jails & Prisons
- Courthouses
- Hospitals
- IT Infrastructure/Data Centers

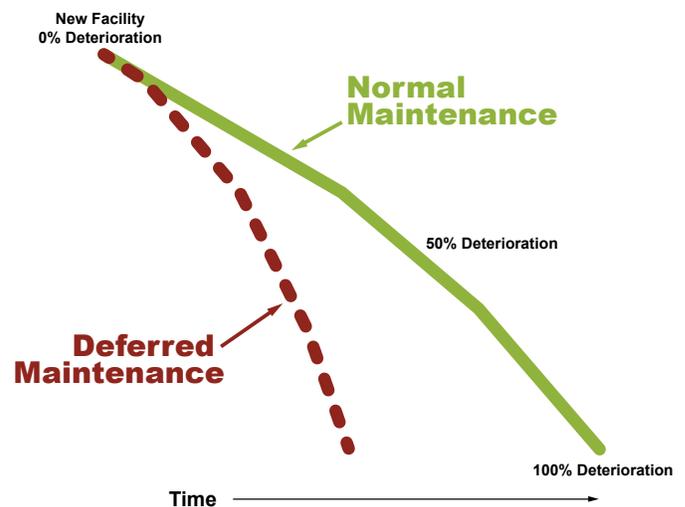
DEFERRED MAINTENANCE

Deferred Maintenance is the total of systems that do not function or have gone without upgrade or replacement beyond their useful life. Some of the most common examples are computer based electronic security systems (seven year life cycle); Roofs (20 year life cycle) and Heating, Ventilation and Air Conditioning Systems (eight to 20 year life cycles).

The cost to resolve deferred maintenance has been identified through formal and informal surveys. The surveys

indicate a cost range of \$30-65 per square foot which sounds reasonable compared to new facility construction costs of \$200-300 per square foot. However, this magnitude of deferred maintenance can have a profound effect on the secure and safe operation of a detention or correctional facility. For example, upgrading a touch screen electronic security system - the eyes, ears and control of a jail facility - costs about \$10 per square foot. Obviously, non-working controls pose security issues to staff and inmates. If the deferred maintenance cost is three to six times that amount then it is practical to say that there are critical systems that do not function.

In today's economic reality, local governments cannot afford to perform 100 percent of all required maintenance in public facilities, which leads to a large volume of deferred maintenance. This not only effects short-term operations, but, if left unresolved, also significantly shortens the life of the building.



DEFINING THE EFFECTS OF DEFERRED MAINTENANCE

The industry standard scientific approach for defining the current condition of a building or fixed asset is the Facility Condition Index (FCI). The FCI was first developed in 1991 by the National Association of College and University Business Officers to provide a benchmark to compare the relative condition of a group of facilities. The formula was first published in *Managing the Facilities Portfolio*:

$$FCI = \frac{DM}{CRV}$$

where:
DM = the cost of maintenance deficiencies, or Deferred Maintenance, and

CRV = the total cost of complete facility replacement, or Current Replacement Value

Managing the Facilities Portfolio uses the FCI ratio as a ratings system to indicate the relative facility condition:

- < 0.05 = Good
- 0.05 to 0.10 = Fair
- > 0.10 = Poor
- > 0.5 = Replacement

For a real example, the FCI ratios for a county that has a total of 800,000 square feet of facility space indicate how much deferred maintenance the county can bear and still have facilities in good condition.

Assuming a replacement construction cost of \$250 per square foot, the Current Replacement Value of 800,000 square feet is \$200 million. Given that value, the FCI ratios show the potential value of all deferred maintenance in the county:

- Good < \$10 million

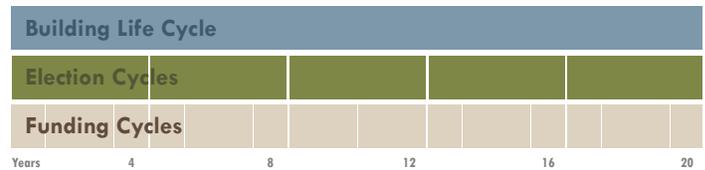
- Fair = \$10-\$20 million
- Poor > \$20 million

THE CAUSES OF DEFERRED MAINTENANCE

Economics: The reduction in tax rolls over the past four years has made it difficult for local governments to pay for the personnel and materials in order to keep up with building maintenance requirements.

Though economics are the root cause for the deficiencies caused by deferred maintenance, there are also other factors that lead to economic deficiencies.

Time Cycles: The cycles that effect the proper performance of maintenance in county facilities often do not coincide.



The overall life cycle of the building must be planned for when the building is in construction. However, that cycle, at 20-50 years, is much longer than most government officials remain in office. The four-year election cycle does not promote consideration of the building's life cycle and the total cost of ownership.

Beyond election cycles, county officials must reconsider how to fund building maintenance on a yearly budget cycle. This yearly reconsideration of funding may change the priorities of maintenance funding without consideration of the Total Cost of Ownership. Rather than considering the life cycle cost of the facility, yearly budgets may shift with economic conditions or the political climate. This may lead to continuous shifts in priorities and an increase in maintenance backlog

Budgets: Especially in today's environments, budgets cannot keep up with the maintenance needs of modern

mission critical facilities. When Counties must make the choice between providing public-facing services like public safety and human services and background services like facility maintenance, the day-to-day safety and operation of the County will win. In an environment where it can be difficult to keep firefighters employed, county maintenance personnel are put at risk. Reducing maintenance personnel leads to increased deferred maintenance.

Construction Conditions: Without consideration of maintenance and operations during the construction process, counties are forced to deal with less-than-ideal maintenance conditions. Input from the county, as the building’s owner, is critical for the designers and constructors to understand the county’s ability to maintain the building over it’s entire life. Without the county’s input, construction may not match the county’s ability to maintain its facilities.

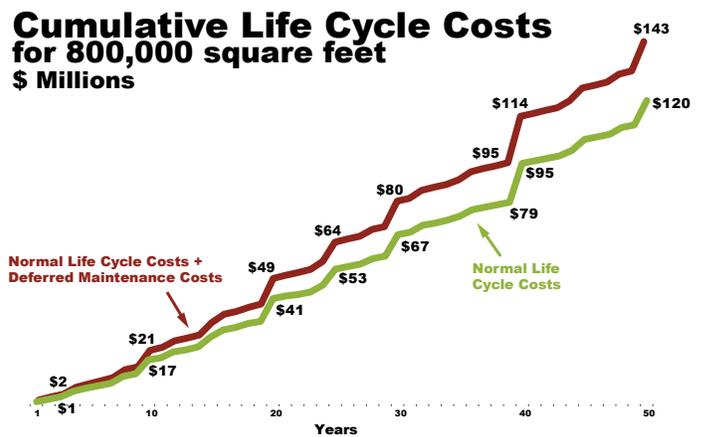
Personnel & Qualifications: Unskilled, underqualified or understaffed personnel cannot properly perform the necessary maintenance for the county. For example, in a county jail, an electronics technician or certified electrician is needed on-site to ensure security systems, such as locking systems and CCTV cameras, function as intended. However, many counties cannot afford to employ their own dedicated and licensed electrician. Counties will either hire an outside contractor (at added expense) or work with



existing resources; i.e., underskilled staff. This inability to perform maintenance as required increases the backlog of maintenance. More importantly, this under performance of maintenance may also lead to poor or unsafe conditions.

TOTAL COST OF OWNERSHIP

All of these factors have a negative effect on the Total Cost of Ownership. When maintenance is deferred, the cost of maintenance increases by approximately 20% every year.



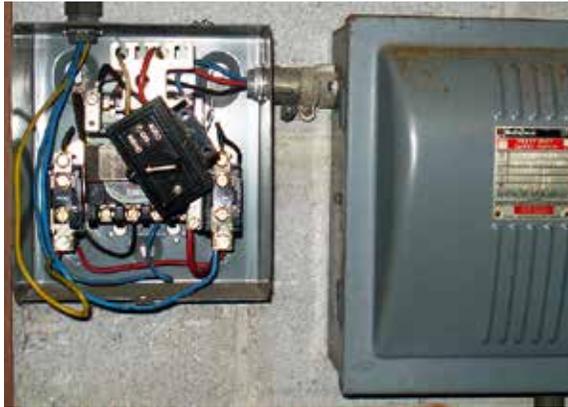
In other words, deferring maintenance may solve short term issues, but creates new long-term issues - including the premature failure of county equipment and facilities.

THE IMPACTS OF DEFERRED MAINTENANCE

While putting off facility maintenance allows counties to solve short-term funding issues, there is a cascade effect of potential problems that may impact the counties:

Inflation: With an annual average inflation rate of 4%-6%, maintenance that is put off today will cost more to catch up tomorrow.

Inefficient Energy Use: Equipment that is not maintained does not perform as intended. By not performing to design standards, equipment requires more energy to run properly, resulting in higher utility costs for the county. Energy



normally costs \$3-\$5 per square foot; but, with poorly maintained equipment, that cost increases by 5%-10%.

Unreliability and Unavailability: Unmaintained or undermaintained buildings and equipment lead to unavailable equipment and room spaces. Without reliable equipment and space, day-to-day county activities cannot happen as planned, leading to lost productivity and inefficient operation.

Collateral Damage: Counties may incur added maintenance costs when building systems fail. For example, roof leaks damage ceilings, walls electrical systems and other building components. When HVAC filters are not changed, coils get damaged and require cleaning and repair. All of these unnecessary repairs negatively impact the cost of maintenance for the county.

Code and Regulatory Compliance: Local building codes have very specific requirements for safety and operation. Deferring maintenance or using unskilled labor to perform maintenance may lead to violations of local codes and ordinances. Improper or non-performance of maintenance may also jeopardize compliance with regulatory standards.

Increased Risks: When maintenance does not perform as intended, the risks to staff and personnel increase. The risk of early building failure also becomes a reality. However, there are other, less tangible risks increases, such as insurance risk and liability. These risks increase the cost of ownership and the overall ownership burden on the county.

Overburdened Maintenance Staff: By deferring maintenance, the county requires that maintenance staff perform more work and work they may not be trained to perform in an attempt to achieve more work from fewer personnel. However, this practice overburdens maintenance technicians and reduces the quality of their work, requiring rework and increasing equipment liability.

Excessive Repair Costs: The true impact of deferred maintenance is in the increased cost to perform standard maintenance activity. By putting off maintenance or using subcontractors to perform maintenance, counties are actually spending more, especially over the life of the building.

SOLVING AND PREVENTING DEFERRED MAINTENANCE

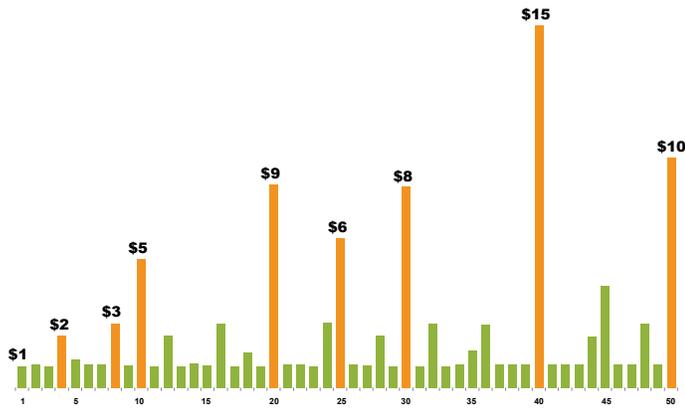
Reform the budget process to recognize the total cost of ownership: By understanding and incorporating the Total Cost of Ownership of county buildings and facilities into yearly budget discussions, counties can prevent deferring maintenance and, over the long term, better manage the costs to own and operate its assets.

Establish either the preventive maintenance or the predictive maintenance model: By addressing maintenance before failures improves the maintenance staff's ability to respond to maintenance and keep costs down. Preventive and predictive maintenance programs are meant to prevent failures, limiting and avoiding the added cost of break-down repairs.

SOLVING AND PREVENTING DEFERRED MAINTENANCE

Going forward, counties can minimize the impact of deferred maintenance by:

- Planning to fund maintenance using the Total Cost of Ownership Model and providing a vehicle for long-term maintenance funding
- Ensuring technical maintenance staff is qualified and not overburdened.
- Implementing a preventive or predictive maintenance model to limit or eliminate failures and unnecessary repair costs.
- Partnering with the private sector to lower costs and improve performance.



Maintenance costs (\$ millions) per year over the 50-year life span of 800,000 square feet.

Establish a reserve fund for each building: A Maintenance Repair and Replacement fund - a kind of maintenance escrow account - gives the county a vehicle to plan for future maintenance needs without disruption of normal county budgeting procedures. This fund also allows for needed capital replacements at specific intervals, therefore lessening the burden on the county when equipment or building replacement needs arise.

Transfer ownership and risk of ownership to the private sector: Counties can shift the risks of ownership to the private sector through public-private partnerships, such as sale-lease back programs. By transferring ownership or management to a private owner, the county is guaranteed through a contract that maintenance on county building will be performed as intended throughout the building's life.