



**A New View on Deferred
Maintenance and Repair**

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Introduction

Regardless of mission or function requirements, government agencies must respond to both internal and external pressures (e.g., stakeholder expectations, inconsistent funding, regulatory requirements) on a consistent basis. When agencies frequently shift focus from one pressure to another, they may be at risk of overlooking key areas with broader consequences. Deferred maintenance is one such area related to asset management.

Between fiscal year (FY) 2009 to 2014, the Department of Defense (DoD) reported roughly \$100 billion¹ in deferred maintenance and repairs (DM&R), in addition to the \$14 billion² DM&R reported from civilian agencies. Historic budgets indicate funding required to fully cover facility sustainment and maintenance, as well as pay down existing DM&R, is unlikely. Therefore, a different strategy is necessary to help address DM&R.

¹ Government Accountability Office. (2016). Report to Congressional Committees: Defense Facility Condition, Revised Guidance Needed to Improve Oversight of Assessments and Ratings. Report Available at <https://www.gao.gov/products/GAO-16-662>

² Vincent, C. H. (2017). Deferred Maintenance of Federal Land Management Agencies: FY2007 – FY2016 Estimates and Issues. Report Available at: <https://fas.org/sgp/crs/misc/R43997.pdf>

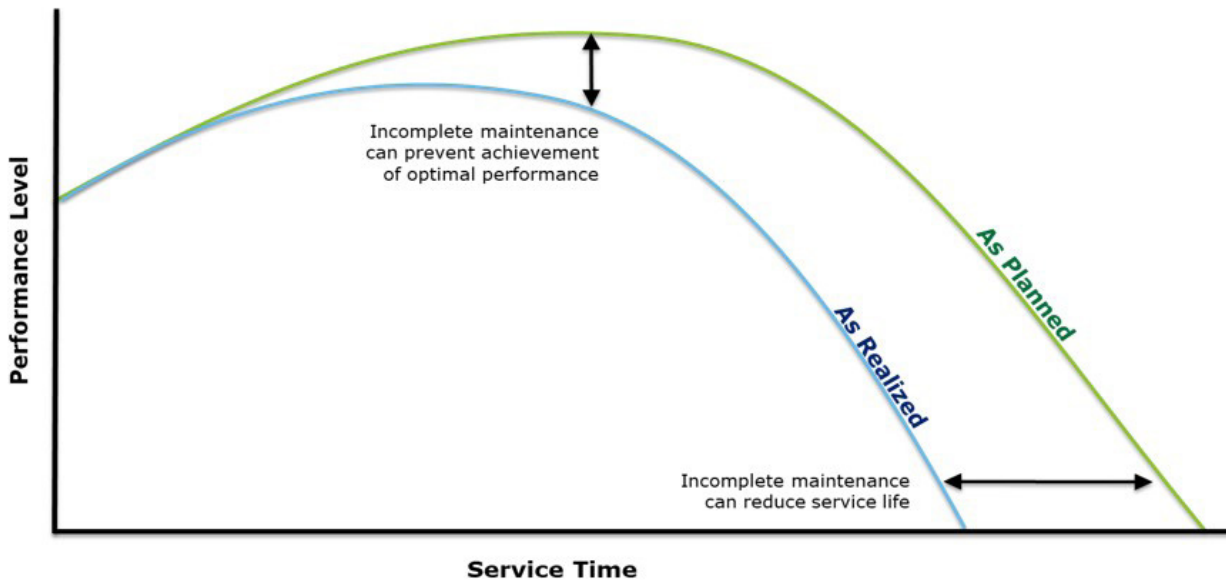
Current Deferred Maintenance and Repair Processes

Issued in 2012 and effective as of 2014, the Federal Accounting Standards Advisory Board's (FASAB) Statement of Federal Financial Accounting Standards (SFFAS) 42: Deferred Maintenance and Repairs: Amending Statements of Federal Financial Accounting Standards 6, 14, 29 and 32, described DM&R as actions directed toward keeping fixed assets in an acceptable condition, but not performed when planned or scheduled and therefore delayed for a future period. The maintenance types include:

- preventive maintenance;
- replacement of parts, systems, components; and
- other activities designed to maintain the asset at an acceptable performance level.³

As distinguished from capital improvements, DM&R excludes activities directed toward expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than, its current use.

Industry organizations, facility professionals, and equipment manufacturers work together to determine the frequency of repair and actions associated with each maintenance activity. In an ideal operating environment, agencies perform maintenance on time and as specified. Most agencies cannot meet these requirements whether due to financial or resource limitations. The deferred maintenance backlog then expands from these missed maintenance activities, but the real impact may be an asset's deteriorated performance and longevity, as shown in the graphic below.



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³ FASAB, SFFAS 42: Deferred Maintenance and Repairs: Amending Statements of Federal Financial Accounting Standards 6, 14, 29 and 32. Report Available at: <https://fasab.gov/accounting-standards/document-by-chapter/>

⁴ National Research Council. 1998. Stewardship of Federal Facilities: A Proactive Strategy for Managing the Nation's Public Assets. Washington, DC: The National Academies Press. <https://doi.org/10.17226/6266>.

SSFAS 42 currently provides two methods for determining the level or value of DM&R:

- A. Performance of a condition assessment, through visual inspection to professionally evaluate the property's current condition and estimate the cost to correct deficiencies; or
- B. Use of a lifecycle costing model, comparing the cost of performed maintenance versus planned maintenance, where the difference between the two is the DM&R.

Condition assessments pose potential challenges for many agencies. Maintenance and engineering staff may not be formally trained on condition assessments, standard policies and processes for conducting condition assessments may not have been established, and systems for collection and analysis of data may not be available or used consistently. Agencies without the internal resources to perform condition assessments commonly default to using contractor support, expending already limited funds to document, but not necessarily correct, facility deficiencies.

Regarding the second method, lifecycle cost analysis (LCCA) generates an estimate of the recurring/non-recurring, fixed/variable, and direct/indirect costs associated with each type of maintenance performed over the design life. The LCCA estimate is typically developed using the manufacturer or industry recommendations. One shortcoming of using the lifecycle costing model for DM&R calculations is though the model captures missed maintenance items, it does not account for any additional damage. This wear can shorten the overall service life of the asset, so accounting for potential performance degradation over time becomes an important management consideration.

Impacts of Deferred Maintenance and Repair

DM&R affects short-term efficiency and long-term sustainment. In the short-term, failure to perform maintenance can lead to reduced efficiency and performance which can result in higher operational costs. Over time, the suboptimal performance can drastically increase operational costs and shorten the expected life of the asset, which may lead to unplanned capital improvements. This ultimately affects an agency's ability to fund and manage the existing facility as well as plan and budget for future capital investments.

Agencies must recognize facilities are a system of inter-related assets; these individual parts must function properly to meet asset objectives and manage costs. Deterioration of a single component can lead to cascading issues. A seemingly insignificant issue may result in expensive repairs, environmental hazards or impairments to ancillary operations. In conjunction with disrupting normal operations, DM&R yields considerable financial- and mission-oriented setbacks.

Financial

Enterprise-wide costs exponentially increase as agencies continue to defer maintenance and repairs. For example, emergency or breakdown maintenance (e.g., fix-at-failure)⁵ typically costs 3-5 times more than preventive maintenance. These emergencies or breakdowns may consequently result in losses from disruptions, rental of equipment to support continued operation, or cost for maintaining multiple redundant systems to ensure continuity of operation. Additionally, DM&R may result in adverse opportunity costs and lower staff productivity based on longer durations to perform corrective maintenance actions.

Mission

DM&R can also influence an agency's mission. Most agencies acknowledge^{6,7} the importance of their facilities and its role as a "mission enabler", yet many do not translate this recognition into practice. For example, a floor failure at Malmstrom Air Force Base resulted in suspended training of its nuclear technicians for six months⁸. Conversely, the United States Marine Corps (USMC) Commandant issued an Infrastructure Reset program in 2016, which noted "[t]he state of facilities is the single most important investment to support training, operations and quality of life". While still ongoing implementation, the Infrastructure Reset clearly establishes the dependency between the USMC's ability to perform its mission and the health of its facilities and infrastructure.

⁵ Hupje, E. (2010). 9 TYPES OF MAINTENANCE: HOW TO CHOOSE THE RIGHT MAINTENANCE STRATEGY Available at <https://www.roadtoreliability.com/types-of-maintenance/>

⁶ National Research Council 2005. Key Performance Indicators for Federal Facilities Portfolios: Federal Facilities Council Technical Report Number 147. Washington, DC: The National Academies Press. <https://doi.org/10.17226/11226>.

⁷ Government Facilities Sector. (n.d.). Retrieved May 5, 2020, from <https://www.cisa.gov/government-facilities-sector>

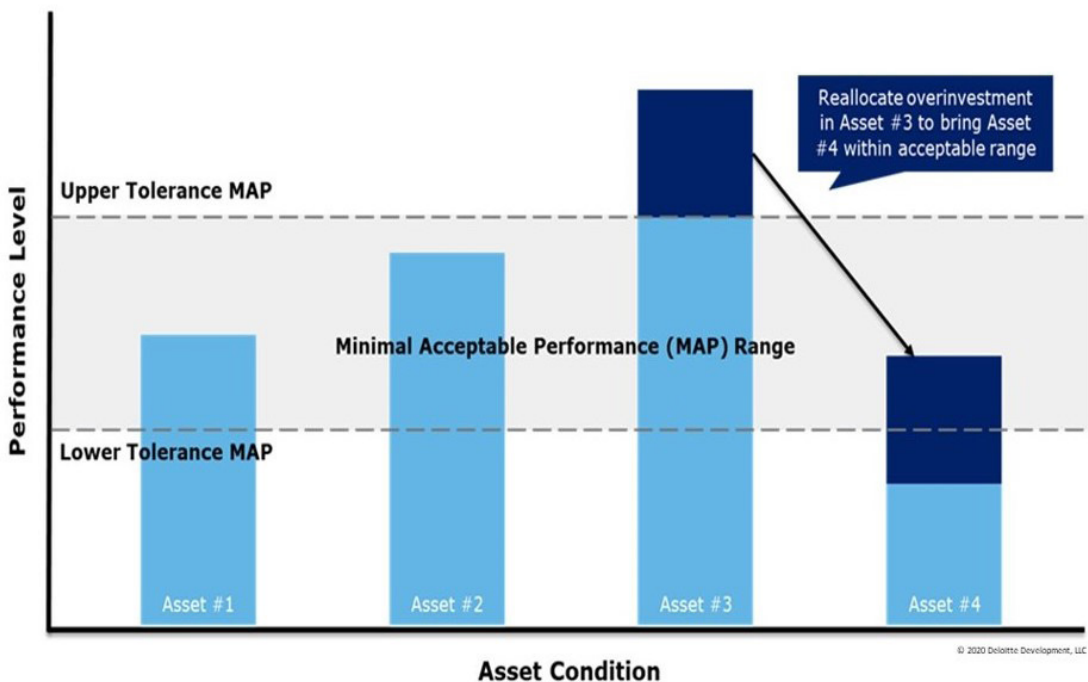
⁸ Serbu, J. (2016). Air Force 'waiting for things to break' in lieu of preventive maintenance. <https://federalnewsnetwork.com/air-force/2016/01/air-force-waiting-things-break-lieu-preventative-maintenance/>

Traditional Deferred Maintenance Method

Without the tools or systems to monitor performance, traditional methods typically involve tracking the asset's design life (i.e., the anticipated lifespan asset was designed against [e.g., 40 years for a building]) and service life, as established by manufacturer and industry standards. Both the design life and the service life are predicated on performance of normal or periodic maintenance. As such, failure to perform normal or periodic maintenance will not only result in DM&R, but also reduce the asset's design life and service life. When agencies lack the resources, expertise, tools, processes, or analytical methods to assess asset-related performance, modifying the asset's design life or service life becomes increasingly difficult.

Transition to Performance-Based Deferred

The transition from the traditional (time-based) deferred maintenance to performance based must be a planned event, with consideration of Service Criticality and Performance Metrics (SCPM). Each asset should be evaluated to determine its importance to the agency's mission. This helps in prioritizing funding for equally-needed repairs on unequal systems. Establishing a Minimal Acceptable Performance (MAP) range shifts away from the time-based traditional approach to identify the points at which corrective action must be taken to reduce or eliminate risk of failure. As seen in the example graphic below, this range can help Chief Financial Officers (CFOs) identify where over- and under-investment may be occurring. This moves the conversation from purely technical, focused on returning each asset to a new or like-new performance, to the more practical approach of prioritizing limited budgets to achieve optimal performance results.



Conclusion

The continued growth and expansion of DM&R backlogs creates a significant technical, financial, and mission risk for government and public sector agencies. An inability of owner agencies to stay ahead of their maintenance requirements has resulted in a potentially insurmountable problem. It is clear traditional approaches to estimating and budgeting DM&R are not able to effectively address the situation, and therefore a new approach is necessary to address deferred maintenance. Shifting toward a focus on asset criticality and MAP thresholds can help enable CFOs to better distribute and allocate limited funds to the most pressing agency needs, while maintaining necessary quality and performance standards.

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