

Department of the Interior

Guidance on Deferred Maintenance, Current Replacement Value and Facility Condition Index in Life-Cycle Cost Management

I. Purpose

The purpose of this Guidance is to supplement the direction provided in the Department of the Interior (DOI) Site-Specific Asset Business Plan (ABP) Guidance¹ by providing guidance to standardize terms used in measuring the condition of DOI's asset portfolio. This guidance also complements previous guidance and tools issued as components to the DOI Asset Management Plan (AMP). (See Appendix 1 of the list of Departmental asset management guidance and tools)

Using Facility Condition Index (FCI), an accepted industry metric for determining the relative condition of constructed assets, and the other performance metrics of the Asset Priority Index (API), the Facility Utilization Index (FUI), and Operations and Maintenance (O&M) costs help make informed investment decisions that drive budget prioritization and the distribution of resources. This guidance will focus on standardizing the basic elements used in cost estimating for constructed asset investments; Current Replacement Value (CRV) and Deferred Maintenance (DM). Factored together, DM divided by CRV, derives the FCI.

This Guidance, like other AMP-related guidance, is designed to ensure that DOI bureaus have the flexibility necessary to best meet their mission needs and conforms to the nature of their assets and management structure. A glossary of terms used in this Guidance is provided in Appendix 2.

II. Structure of this Guidance

This Guidance is comprised of the following components:

- I. Purpose
- II. Structure of the Guidance
- III. Defining Deferred Maintenance
- IV. Asset Valuation; the Current Replacement Value
 - a. Non-Heritage Assets
 - b. Heritage Assets
- V. Asset Condition
- VI. Systems Support
- VII. Frequently Asked Questions
- VIII. Appendices

¹ An ABP provides facility and regional managers with a micro-level view of a site's assets. The ABP projects a 5 to 10-year snapshot of the assets using the performance metrics of the Asset Priority Index (API), the Facility Condition Index (FCI), Facility Utilization Index (FUI), and Operations and Maintenance (O&M) costs to help make informed investment decisions that drive budget distribution.

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III. Defining Deferred Maintenance

Deferred maintenance (DM), which along with CRV comprise the two elements needed to calculate an FCI for an asset, is maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. Determining whether maintenance has been deferred can occur several ways. During a condition assessment, if a maintenance deficiency is observed by a skilled professional and in their judgment the deficiency or need has existed for some time the repair can be considered deferred maintenance. An example of this might be a roof that needs repairs due to missing shingles. Evidence such as deteriorated roof sheathing or water damage to structural members provides justification for classification of the work as deferred maintenance.

Similar situations arise for Heritage Assets. For instance, the roof of a Civilian Conservation Corps (CCC) era cabin may need replacement. The need for a new roof and the associated damage observed classify this as deferred maintenance. However, in this case, the replacement materials needed would have to be historically accurate materials applied using appropriate construction methods (Figure 1).



Figure 1. A heritage asset will require historically accurate materials for repair and maintenance in order to maintain the intrinsic value of the asset.

Defining deferred maintenance on a heritage asset may depend on whether the asset is intended to be used administratively as a visitor facility or as a tourist venue. In the case of the Hanging Flume in Colorado, located 150 feet above the river bottom and approximately 100 feet below the canyon rim, it is virtually inaccessible to most tourists. Because of this inaccessibility, determining deferred maintenance on this heritage asset would be defined almost exclusively with an eye towards using replacement materials that would maintain the historic integrity and accuracy of the structure. By contrast, determining deferred maintenance for the Adams House in Utah, which is being restored as a visitor center for tourists, will require consideration of

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maintaining historic integrity while accommodating potentially heavy visitor traffic and incorporating safety considerations.



Figure 2 Hanging Flume in Colorado
(BLM heritage asset)

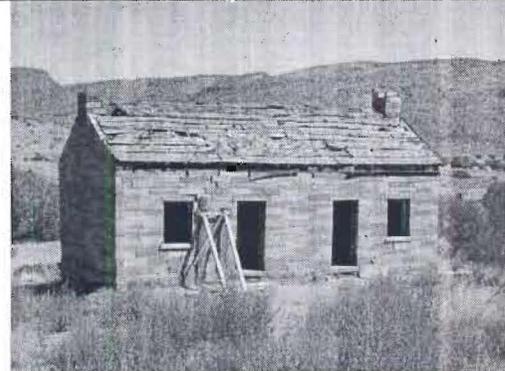


Figure 3 Adams House in Utah
(BLM heritage asset)

Other assets might best have deferred maintenance determined by the passage of scheduled work without completion. For instance, if a generator was due to have bearings replaced on a three-year schedule and a work order with a target start date was created in the maintenance management system, but the work was not completed due to time, funding or other constraints, the work should be considered deferred. In some cases, measurements of technical specifications such as remaining material thickness or variance exceeding allowed tolerances can be considered justification for classification of the work as deferred maintenance. (See Appendix 3 for a general description of condition assessments performed in the Department of the Interior)

It is very important that CRV determination and identification of DM are correlated to ensure the validity of the resultant FCI. For example, the CRV and DM for an asset should be calculated from the same industry standard cost databases, where that cost data is available. Guidance on use of cost estimating tools can be found in bureau handbooks for the condition assessment process of the maintenance management system. However, the cost data for replacing materials in kind for heritage assets is generally not available and must be calculated on a case-by-case basis.

In essence, DM is maintenance work that is deferred to a future budget cycle, or postponed until funds become available. The failure to perform needed inspections, lubrication, repair, maintenance, and renewal by normal maintenance management results in deferred maintenance. The under-budgeting of regular maintenance accumulates into a number of familiar needs: roof repairs, masonry repointing, and faulty heating, ventilation, and air

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conditioning (HVAC)² and control systems. These are familiar examples that accumulate into problems requiring major funding for correction.

Categories of maintenance may be considered to be deferred if not done when they should have been or when they were scheduled to have been done based on a target start date. The DOI standard work types include facility maintenance with similar subdivisions for corrective, recurring, component renewal and demolition. If the work is not done while the work order is classified as facility maintenance, it may become deferred maintenance based on the passage of the target start date, or on the recommendation of qualified condition assessment personnel. The categories of maintenance are as follows:

Work Type Code	Type of Maintenance	Definition
DMCM	Corrective Maintenance	Work to restore a damaged, broken, or worn-out asset, asset component, or item of equipment to normal operating condition.
DMRM	Recurring Maintenance	Planned preventive maintenance activity that recurs on a periodic and scheduled cycle of greater than 1 year, but less than 10 years that was not completed as scheduled.
DMCR	Component Renewal	Planned preventive maintenance activity that recurs on a periodic and scheduled cycle greater than 10 years that was not completed as scheduled.
DMDE	Demolition	Dismantling and removal, or surplus of a deteriorated or otherwise unneeded asset or item of equipment, including necessary clean-up work.
DMRH	Rehabilitation	Renovation of an existing asset or any of its components in order to restore and/or extend the life of the asset. Because there is no expansion or change of function the work primarily addresses deferred maintenance.
DMRP	Replacement	Substitution or exchange of one existing asset, asset component, or item of fixed, in-place equipment for another having the capacity to perform the same function.

² HVAC systems control the ambient environment (temperature, humidity, air flow, and air filtering) and must be planned for and operated along with other data center components such as computing hardware, cabling, data storage, fire protection, physical security systems and power.

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IV. Asset Valuation; Defining Current Replacement Value

The use of CRV for assets, including those that are considered to be heritage, is only for the purpose of calculating the FCI, which is an indicator of the asset's condition and serves as a performance measure for condition improvement. In doing so, overall CRVs on all assets should not be used for any other purpose (i.e., appraisal value, reproduction value, acquisition costs for capitalization and depreciation, etc.).

CRV is defined as the standard industry cost and engineering estimate of materials, supplies, and labor required to replace a facility or item of equipment at its existing size and functional capability, and to meet current regulatory codes. The CRV of assets enables managers to answer the question, "what would it cost to replace my individual assets or the portfolio?" DOI will refine its capability to evaluate each owned and operated asset to determine its CRV. CRV policies for heritage assets and non-heritage assets differ as noted below:

a. Non-Heritage Assets

CRV for non-heritage assets includes all the costs necessary to re-construct an asset as it currently exists, without modification or improvements. The value of planning/design, project management, and administrative costs must be included in the CRV. Special study costs, such as geotechnical, hydraulic, and hydrologic), permits, and applicable taxes and special assessments should also be included in the value.

The CRV should only be used as the denominator in the FCI for estimating the condition index of the asset. CRV is defined as the standard industry cost and engineering estimate of materials, supplies, and labor required to replace a facility or item of equipment at its existing size and functional capability. The CRV for condition assessment purposes is often a Class "C" estimate³. In the case of a building, a Class "C" estimate is an approximation of the construction cost based on the cost per square foot of a similar constructed building. In most instances there should be a correlation between the CRV of an asset and the cost identified to replace an asset in a maintenance budgeting and planning system.

However, in the event that an asset is to be replaced, a more detailed cost estimate to support the maintenance budgeting and planning system, including cost estimates to supporting the contracting/ bidding process may be necessary. This estimate should include a detailed time and materials estimate to replace the asset and should be of sufficient detail to insure that appropriate funding is available for completion of the project.

³ Class C Estimate is an approximation based on the square foot costs of similar construction. It does not include the cost of support utilities and structures, such as water and electrical utilities or sidewalks and conduits.

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There are three recommended methods of calculating CRV for multi-use and non-heritage assets, in order of priority.

1. For recently constructed assets that still meet code requirements and have not undergone expansion or improvement to their original configuration, CRV will be a calculation involving an inflation adjustment to the acquisition cost of the asset.

One example of the method of adding an inflation adjustment to the acquisition cost is to use the Construction Cost Indexes from the Engineering News Record (ENR-CCI) as an inflation adjustment. HOW ENR BUILDS THE INDEX: 200 hours of common labor at the 20-city average of common labor rates, plus 25 Cwt of standard structural steel shapes at the mill price prior to 1996 and the fabricated 20-city price from 1996, plus 1.128 tons of portland cement at the 20-city price, plus 1,088 board-ft of 2 inch x 4 inch lumber at the 20-city price. The ENR-CCI allows adjustment to previous years' costs data by factors that are specifically determined based on construction material and labor costs, which are averaged, nationwide.

2. For recently constructed assets that still meet code requirements and have not undergone expansion or improvement to their original configuration, but where actual acquisition cost is not available, CRV may be determined by performing a calculation involving an inflation adjustment to the recorded cost of a recently acquired asset with an identical asset type or (similar asset), comparable size, quality and capacity, in the same geographical location. For example, if a bureau site replaced in the past year a single family home used for quarters by constructing new housing or purchasing manufactured housing, the inflation adjusted cost per square foot of the most recently constructed quarters could be used to determine CRV for other housing units at that same site. The same process could be applied to other common assets such as warehouse or garage space, water wells, fencing, comfort stations, docks and piers, boardwalks, etc.
3. In the absence of acquisition cost data, or when the acquisition cost of the building does not reflect current code requirements, a cost estimate or cost model shall be developed to replace the asset at existing size and functional capability using reference cost databases such as R.S. Means or Whitestone Research. The estimate or model shall consider the building construction type, user and use categories, quality level, buildings systems and or subsystems/ components/ units, locality costs and local experience. The estimate must include costs of materials, labor, design, project management and administrative costs.

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The key issue with cost estimating for DOI is that our costs are based on industry standard cost databases. Examples of two such databases, Whitestone and R.S. Means⁴, are described in Appendix 4.

Because accurate, valid cost estimating is complicated, agencies must provide required training to allow cost estimating tools to be used properly or deploy simple-to-use cost estimating tools. When a bureau or organization is restricted to the development of cost estimates from architecture, engineering or facility management professionals, a range of tools are available. DOI bureau managers are currently using cost estimating resources ranging from books from R.S. Means, computerized tools such as Costworks, Win Estimator, or Timberline which employ R.S. Means databases of both single items and assemblies made up of required building components to develop cost estimates. These methods require construction or repair estimating knowledge normally possessed by maintenance and construction professionals.

If the cost estimating is to be done by a person without adequate training, the estimating tool must be configured using models of assets that include all required components. An example of this is a model of a house, would include assemblies for foundation, building walls windows and doors, interior finishes such as drywall, paint and carpet, electrical distribution and fixtures, plumbing systems, HVAC systems and roofing systems.

By asking basic questions about the number of square feet, number of bathrooms, quality of windows doors and roofing, a standard building can be estimated based on standard construction techniques and material requirements. An example of this is the Cost Estimating Software System (CESS) employed by the National Park Service, a specially tailored version of Timberline estimating software using R.S. Means cost data. This tool uses pre-made assemblies which removes most of the requirement of technical knowledge in cost estimating and ensures that all costs likely for the repair or replacement are included in a reliable Class "C" estimate.

b. Heritage Assets

Heritage Assets have an intrinsic value beyond the basic cost of their replacement that distinguishes them from non-heritage assets. Heritage assets are generally expected to be preserved indefinitely thereby requiring a very different life cycle management process than for non-heritage assets. In most cases, the treatment of heritage assets is governed by Historic Preservation programs, as authorized through federal law, such as the National Historic Preservation Act (NHPA) and the Archaeological Resources Protection Act (ARPA) and executive orders such as EO 13287 "Preserve America." All of these identify the

⁴ R.S. Means and Whitestone Research are provided as examples of two often-used databases. Other databases include Building News, Craftsman Book Company, and Richardson General Construction Estimating Standards.

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Federal Government's lead role in preserving, protecting, maintaining, and using its historic properties. Therefore, a Current Replacement Value, when applied to heritage assets, does not focus on the replacement of the asset, but instead focuses on maintaining integrity and historic values for the public over its lifetime.

For heritage assets, a CRV based on standard industry construction costs will not accurately reflect the cost of maintaining the asset using historically accurate materials and construction techniques. While it is very unlikely that a heritage asset could be replaced using new construction materials and techniques, rehabilitation and reconstruction of heritage assets does occur frequently and the use of a Replacement-In-Kind CRV estimate—one that captures the costs associated with using historically accurate construction techniques and materials—allows for recognition of the true costs associated with heritage asset maintenance and preservation.

These costs are rarely found in industry standards and usually must be determined on a case-by-case basis utilizing the expertise of cultural resource professionals familiar with the heritage asset being evaluated, including historic architects, archaeologists, architectural historians, and tradesmen expert in historic materials and their application. Furthermore, the costs of planning/design, pre-and post-rehabilitation documentation, project management, administration, special study costs (e.g., historic preservation compliance, geothermal, hydrologic), permits, applicable taxes, and special assessments should be included in the value.

Two examples referenced in Section III (Defining Deferred Maintenance) of this guidance are pertinent here. One example involves replacing the roof of a CCC cabin. Once the maintenance is defined, the needed materials would be identified by a professional with historical or cultural resources expertise and the items secured from an appropriate vendor. The roof is repaired in a manner consistent with roofing techniques of the era. Another example involves repointing and repairing cracks in the stone walls of an ancient pueblo structure in a national park where it is illegal to remove local sands from the park lands to create an appropriate mortar mixture. In this case, the park cultural resources experts, including tribal craftsmen, must find appropriate local materials outside the park boundaries and transport those materials into the park. As well, they must thoroughly document the archeological site prior to repair and document it after repair to facilitate monitoring in the future.

Recognition of costs associated with various types of repair and rehabilitation as noted above, in both the numerator and denominator of the FCI, is necessary to ensure that the calculated FCI for heritage assets is accurate and reflective of their unique intrinsic value.

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V. Asset Condition

Articulating asset condition enables bureau managers to address a major asset management question, "what is the condition of my portfolio?" The relative condition of owned assets is measured using the Facility Condition Index (FCI), which is an accepted industry metric for determining the condition of assets. To calculate the FCI of an asset, the deferred maintenance (DM) costs are divided by the Current Replacement Value (CRV). The CRV of assets enables managers to answer the question, "what would it cost to replace my individual assets or the portfolio?"

For roads and trails, second-tier metrics such as deferred maintenance per mile may be useful in conjunction with the FCI to properly categorize condition as acceptable and unacceptable. In addition, Facility Reliability Rating (FRR), an indicator of overall reliability, can be applied to dams as a second-tier measure in conjunction with FCI and the other metrics reported by DOI at the individual asset level in the Federal Real Property Profile (FRPP)⁵. (See Description of Second-Tier Metrics in Appendix 5.)

The FCI is to be used with a fully developed Asset Priority Index (API) that rates each existing or proposed owned and leased asset in the inventory based on its importance in carrying out the DOI mission and achieving strategic goals. (See Appendix 6 for an overview of the DOI FCI/API analysis.) With baseline FCI's established from the existing data, bureaus can prepare to answer another question, "In what condition should a particular asset be?" These FCI target ranges will vary based on asset type and bureau mission. Using the two metrics of API and FCI will help bureau managers set acceptable baseline FCI ranges.

In addition to FCI, failure of a critical system or asset component can be considered as justification for an asset investment even though the cost of repair does not render the asset in unacceptable condition. For instance, a \$2 million elevator replacement on an asset with CRV of \$100 million would result in an FCI of .02 which managers not responsible for the operations and maintenance of the asset might consider in acceptable condition and not qualify the asset or project for funding. If the failure of the elevators resulted in making the asset unusable, an asset manager would still be justified in correcting the deficiencies on this critical subsystem. Criticality of components might also play a role in asset management decision-making on other assets where a critical component represents a small portion of the assets CRV.

An asset may not have any critical or serious deficiencies (acceptable condition) but still be unacceptable because the asset does not meet functional requirements. This is usually not reflected in the "condition" of an asset, but rather in the "operational status" of the asset. For example the adaptive use of an office building as a maintenance facility may not meet the functional requirements for a maintenance operation even though the FCI of the building is acceptable.

⁵ Performance metrics reported into the FRPP are FCI (or condition index), mission dependency, annual operating costs and utilization. These metrics, reported into the FRPP by all Federal agencies are referred by the Federal Real Property Council as first-tier metrics. Second-tier metrics are agency-level based measures to be used in conjunction with the first-tier metrics to measure asset performance.

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However, when considering heritage assets, the alternate to a condition assessment based on FCI is the use of condition assessments and evaluation processes that take into account the intrinsic value of the asset. Such a process emphasizes the unique needs of the heritage asset with respect to the need to maintain them indefinitely. It also emphasizes the use of historically accurate materials and construction techniques when rehabilitation, restoration, or reconstruction is necessary for long-term maintenance. The condition values are determined through a consistent and qualitative approach by professional cultural resource specialists using standards that are updated on a regular basis. This approach is much more appropriate than a quantitative approach using metrics and standards that apply to non-heritage assets. The Department will continue to work with bureaus to refine the approach to assess condition for heritage assets.

VI. Systems Support

Data on FCI and CRV will be formulated and maintained utilizing the Facility Maintenance Management System (FMMS) and the Financial and Business Management System (FBMS)⁶. These web-based information systems allow bureau staff to store and manipulate data about each asset and each asset type in the real property inventory. FMMS will interface with the FBMS and will provide the bureaus and Department with a method to collect and analyze comparable facility information in a fast and efficient way. The FMMS and FBMS will be automatically linked with asset inventory information; performance measures data, and financial and accounting information.

The FMMS, a standardized single-platform Departmental solution for facilities management, is a cornerstone in the strategy for improving the management of the Department's constructed assets. This system is an important tool for improvement of the overall condition of the constructed assets, better allocation and utilization of the limited resources dedicated to maintaining those assets, and providing accurate and timely information to the Office of Management and Budget, the Congress, and the public. The core functions of the FMMS include the following: (See Appendix 7 for an overview of the standardized single platform FMMS.

- The ability to capture cost of current and deferred maintenance as well as capital improvement costs for all constructed assets and relate them back to unique asset numbers assigned from FBMS. Each work order, upon completion, will contain materials, contract, and burdened labor costs to enable capture of the full costs of activities. This capability will allow the DOI, bureau and field sites to develop asset-based maintenance histories on all constructed assets.

⁶ The FBMS is a single, integrated tool that will help Interior's bureaus to manage their many unique missions. FBMS will help bureaus to manage a variety of administrative functions, including: Accounts Receivable, Accounts Payable and Project Systems, Budget Formulation, Budget Execution, Personal Property, Real Property, Fleet, Core Financials, Acquisition, Travel, Financial Assistance, and Enterprise Information Management. FBMS will also interface with the Federal Personnel and Payroll System (FPPS), the Bankcard system, and the Quarters Management Inventory System (QMIS).

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- The ability to record the complete history of maintenance and capital improvement activities accumulated over time for each individual constructed asset to enable documentation of full life-cycle costs.
- The ability to record individual components of constructed assets identified in FMMS so that component renewal costs can be planned and monitored.
- The ability to record maintenance deficiencies identified through condition assessments in FMMS in the form of work orders. Scheduling of condition assessments may also be accommodated within the FMMS.
- The ability to calculate the Facility Condition Index for individual constructed assets through comparison of Deferred Maintenance Costs with Current Replacement Values.
- Accumulate Deferred Maintenance and Capital Improvement needs information in such a way as to allow preparation of Five-Year Deferred Maintenance Plans and Five-Year Capital Improvement Plans as required by Attachment G to DOI budget guidance.
- Provide Five-Year DM & Capital Improvement Completion Reports as required by Attachment G to DOI budget guidance.
- Provide a mechanism to store job plans and associated materials needed to implement a preventative maintenance program.
- Provide data standardization to assist in the utility of FMMS and, to the extent feasible, data sharing (e.g., job plans, standardized definitions, value lists, and business processes associated with the data standardization).
- Ensure the use of the Standard DOI Asset List and the standard definitions and codes for Work Types and Work Status.
- Provide a Cost Estimating linking capability.

The FMMS will have the electronic capability to report all required data elements for DOI-owned buildings and structures portion of the government-wide Federal Real Property Profile (FRPP) to the FBMS. The FBMS is the system of record for completing this report; however, data elements will be drawn from FMMS.

The FBMS will contain all fields necessary for government-wide real property inventory reporting. Data elements for property records in the FBMS include key fields on the number, size, location, use, type, occupants, and age of the assets. The FBMS will be the system of record for the 23 FRPP data elements developed by the FRPC that DOI and other Federal agencies will report for their real property assets. Inventory data for DOI-constructed assets (i.e., those maintained by DOI), including the assets associated FCI rating, will be uploaded to FBMS from the FMMS.

Because of the integration of financial and asset management functions within the FBMS, the real estate module will directly accrue all financial information associated with a facility, asset, or rental unit, including labor, contracts, rental income, materials, supplies and utilities. In addition, once the interface with the single-platform FMMS is complete, the system will be able to collect all costs associated with work orders generated in the FMMS.

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This capability will allow DOI to understand and provide a brief description of each owned and operated asset, current use, location, major subsystems and components, and other general information. The extent of information required will be appropriate to the size of the investment, management, and reporting requirements. This information will be required for new assets that are evaluated as part of portfolio management.

VII. Appendices

- Department of the Interior Issued Asset Management Guidance and Tools
- Glossary
- Overview of the Condition Assessment Program in the Department of the Interior
- Examples of Industry Standard Cost Databases
- Second-Tier Metrics
- Overview of the DOI FCI/API Analysis
- Overview of the Department's Standard Platform Facility Maintenance Management System
- References

Department of the Interior Issued Asset Management Guidance and Tools

- [Asset Management Plan](#)  Issued June 2005
The Plan presents DOI's strategic vision and plan of action for compliance with the President's executive order and the methodology of asset management for:
 - Owned and leased buildings;
 - Structures;
 - Linear assets;
 - the Motor vehicle fleet; and
 - Non-Stewardship land used for administrative purposes.⁷
- [Operations and Maintenance Costs Methodology](#)  Issued July 2005
The Methodology provides guidance on identifying annual recurring maintenance and repair costs that are currently captured by the Interior bureaus at the constructed asset level.
- [Sustainment Cost Template for Constructed Assets](#)  Issued August 2005
The Template is an aid in developing their Deferred Maintenance and Capital Improvement 5-Year Plans. The completed template for a constructed asset will give an overall picture of whether a particular asset should be repaired, renewed or disposed.
- [Asset Management Plan Template](#)  Issued September 2005
The Template provides guidance on the components to be addressed in the bureau Asset Management Plan (AMP). The Bureau AMP, prepared by each bureau, will provide a framework, strategic vision and plan of action for effective bureau facility management. It will be a succinct document to be used by field and management staff for implementing the DOI Asset Management Plan.
- [Asset Priority Index Guidance](#)  Issued September 2005
The Guidance establishes the standard for developing an API framework, determining an API score, interpreting an API score and validating scores.
- [DOI Utilization Guidelines](#)  Issued October 2005
The Guidelines are to provide assistance to asset managers in determining the utilization value of assets to be captured in the Federal Real Property Profile (FRPP) in FY 2006. This guidance covers four predominant use categories of constructed assets:⁸ (Offices, Warehouses, Housing, and Laboratories)
- [Site-Specific Asset Business Plan \(ABP\) Model Format Guidance](#)  Issued December 2005
The Guidance is to aid the bureaus' asset managers in structuring the requirements of the ABP that best support the Bureau Asset Management Plan (AMP). The model format is a tool that defines the general criteria that needs to be reflected in an ABP.

⁷ Non-stewardship land is considered to be the land associated with constructed assets such that it would be impractical to try to separate for sale.

⁸ Hospitals are a fifth category of constructed assets for which utilization is to be reported. DOI does not have hospitals in its inventory,

Glossary

Acceptable/Unacceptable. An acceptable level of condition for an asset is when all of an asset's critical systems deferred maintenance deficiencies rated critical or serious have zero deferred maintenance; non-critical systems deferred maintenance will still exist. Acceptable condition may vary by asset type. An unacceptable level of condition for an asset is when an asset's critical systems have deferred maintenance deficiencies rated critical or serious. The threshold used to determine acceptable and unacceptable will vary based on the mission and type of asset.

Archaeological Resource Protection Act (ARPA). ARPA (16 U.S.C. 470aa-470mm; Public Law 96-95 and amendments to it) was enacted to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals (Sec. 2(4)(b)). The primary impetus behind ARPA was the need to provide more effective law enforcement to protect public archeological sites.

Assets. For the purposes of this policy, "asset" refers to Federal real property assets only. Federal real property is defined as any real property owned, leased, or otherwise managed by the Federal Government, both within and outside the United States, and improvements on Federal lands.

Asset Management. A systematic process of maintaining, upgrading, and operating physical assets cost-effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized logical approach to decision making, providing a framework for handling both short- and long-term planning.

Asset Management Plan (AMP). A documented plan of business to promote a proactive management approach to effectively address and articulate the requirements for effectively managing a portfolio of assets.

Asset Priority Index (API). An asset evaluation process that quantifies the value of an asset in relation to the mission of the Bureau or Office. The API ranks assets according to rating system.

Asset Priority Index/Facility Condition Index Analysis. The use of API and FCI in order to help managers focus attention on the importance of an asset to the mission and the state of its condition, providing information that leads to improved investments of scarce resources.

Capital Improvements (Alterations) – Changes to the interior arrangements or other physical characteristics of an existing facility or installed equipment so that it can be used more effectively for its currently designated purpose or adapted to a new use. Alterations may include work referred to as improvement, conversion, remodeling, and modernization. Such alterations are not maintenance.

Class "C" Estimate. It is an approximation based on the square-foot costs of similar construction. It does not include the cost of support utilities and structures, such as water and electrical utilities or sidewalks and conduits.

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Component Renewal (CR). Also known as Recapitalization. The planned replacement of a component or system that will reach the end of its useful life based on condition and life cycle analysis within the facility's lifetime. Examples of component renewals include roof systems, utility components, pavement, and other major dynamic equipment.

Condition Assessment – The inspection and documentation of the condition of the features of an asset as measured against the applicable maintenance or condition standards. It provides the basis for long-range maintenance planning, as well as annual work plans and budgets.

Constructed Asset. Term used to describe a real property asset that was constructed on the land and owned by DOI, such as a building, house, shed, structure, etc., as opposed to a real property asset that is leased.

Cost Estimate. An educated guess as to what an item costs to repair or replace. The estimate is based on previous experience with like assets in similar condition and/or developed using a cost estimating program.

Cost Model. A cost model is a set of mathematical relationships arranged in a systematic sequence to formulate a cost methodology in which outputs, namely cost estimates, are derived from inputs. These inputs include quantities and prices. Cost models can vary from a simple one-formula model to an extremely complex model that involves hundreds or even thousands of calculations. The consistency of response inherent in cost models enables the comparisons among alternatives. Identical inputs are treated alike and that the differences in cost estimates (outputs) are based on differences in inputs. The ability to compare on a consistent basis is one of the most attractive features of cost models. However, the outputs are only as good as the assumptions of the model and the input data permit.

Current Replacement Value (CRV) – Standard industry costs and engineering estimates of materials, supplies, and labor required to replace asset at existing size and functional capability. This cost includes current costs for planning/design, construction, and construction management. CRV is the same as Functional Replacement Value (FRV) for non-heritage assets.

Deferred Maintenance (DM). DM is comprised of existing maintenance repairs and required replacements (capital renewal), not accomplished when they should have been, not funded in the current fiscal year or otherwise delayed to the future. DM is typically identified by a comprehensive facilities condition assessment/audit of buildings, grounds, fixed equipment and infrastructure. These needs have not been scheduled to be accomplished in the current budget cycle. Thereby, these needs are postponed until future funding budget cycles. The projects have received a lower priority status than those to be completed in the current budget cycle.

Deferred Maintenance and Capital Improvement 5-Year Plan. These plans, prepared annually by each bureau, are the prioritized lists of deferred maintenance and capital improvement projects, reviewed and approved by the bureau investment boards and bureau head, for maintenance and construction budget line items over a five-year period. The annual update presents the opportunity for the bureaus to adjust their project priorities based on newly identified needs or previously identified needs that have become critical during the past year.

Glossary

Deficiency. A facilities defect that occurs because of normal deterioration or as the result of nature/external forces impacting the condition of the facility, or when maintenance and repair tasks are not performed in a timely manner. Deficiencies may not have immediately observable physical consequences, but when allowed to accumulate uncorrected, they inevitably lead to deterioration of performance, loss of asset value, or both. An accumulation of such uncorrected deficiency is a backlog that represents a liability (in both physical and financial terms) for an asset.

Disposition. Disposition generally means finality of a transaction. This connotes some action that was taken, such as:

- Transfer;
- Sale;
- Abandonment, Destruction, or Donation;
- Off-Site Removal;
- Demolition;
- Deconstruction;
- Exit of Commercial Lease Agreement; and
- Redefine Asset Mission.

"Disposition," as used in the OMB disposition algorithm, means the outcome of the diagnostic process. Thus, when an agency's portfolio is taken through the matrix (checked against financial data) it will yield what properties are Mission Critical and what properties are no longer needed (non-Mission Critical).

Facility Utilization Index (FUI). The FUI is a first-tier performance metric for assets established by the Federal Real Property Council. The FUI tracks the percent of office space occupied versus the design amount. The vacancy rate derived from this calculation is tracked on an asset level and used as a part of an agency's annual performance measures.

Facility Condition Index (FCI). A measure of a facility's relative condition at a particular point in time compared to similar facilities. The FCI rating is a ratio of the cost of repair of an asset's deficiencies (deferred maintenance, recurring maintenance that has been deferred, component renewal that has been deferred divided by the current replacement value for the asset. For example, a building with a current replacement value of \$10 million and deferred maintenance of \$1.2 million would have an FCI of 12 percent (\$1.2 million divided by \$10 million).

Facility Maintenance Management System (FMMS). The FMMS is an electronic system for planning and tracking facilities management, with baseline information on facility conditions. It is used in part to list maintenance needs, assign repair work, and identify completed maintenance projects.

Federal Real Property Profile – Internet Application (FRPP). An automated system under the purview of GSA that is used to capture and report on the FRPC-defined 23 mandatory data elements for each individual real property asset owned by the executive agencies of the Federal government. The FRPP contains 19 static data elements and 4 performance metric data elements.

Glossary

Financial and Business Management System (FBMS). The FBMS is an electronic major enterprise management initiative to integrate financial management, procurement, property management and other subsidiary systems and revamp administrative processes throughout the Interior Department. The FBMS will provide the system and process structure for the Department to modernize its operations. Once operational, this financial and business management system will provide complete, accurate and timely information on financial activities, including budget execution, acquisition, grants, property management, core accounting, and performance that will enable Interior's employees and managers to make better informed decisions about their programs

Heritage Assets. Property, plant and equipment that possesses one or more of the following characteristics: (1) historical or natural significance; (2) cultural, educational or aesthetic value; or (3) significant architectural characteristics. Heritage assets include assets that are National Historic Landmarks, listed in the National Registry of Historic Places (NRHP), or eligible for listing in the NRHP.

Industry Standard Cost Databases. Tools used to aid managers estimate current replacement value (CRV) and deferred costs. Such databases include, but are not limited to, Building News, Craftsman Book Company, Richardson General Construction Estimating Standards, R.S. Means and Whitestone Research.

Lifecycle Asset Management. Systematic process of maintaining, upgrading, and operating physical assets cost effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools to facilitate a more organized, logical approach to decision-making. In the broadest sense, life-cycle asset management is a strategic approach to managing physical infrastructure.

National Historic Preservation Act (NHPA). NHPA requires Federal agencies to take into account the effects of their actions and programs ("undertakings") on historic properties such as buildings, structures, archaeological sites and other places. The law is intended to avoid unnecessary adverse effects on important historic properties such as buildings, archaeological sites, and other places. Enacted in response to severe disruption of central cities that was caused by Urban Renewal programs of the 1950's and early 1960's, the Act created the executive-level Advisory Council on Historic Preservation ("Council") and chartered the Council to review national historic preservation policies and develop uniform regulations and procedures to carry out the Act.

The Council also is required to review, resolve disputes about, and comment on the effects of specific agency undertakings on historic properties. In addition to the Council, the Act created state- and tribal-level government offices to review Federal agency undertakings; the chief officer is designated "State (or Tribal) Historic Preservation Officer" ("SHPO" or "THPO"). The SHPOs or TRPOs administer funds provided for operation of their offices under the authority of the NHPA.

Performance Metrics. A performance metric is a standard used to evaluate and communicate performance against expected results. Performance metrics are designed to gauge progress toward effective implementation of the organization's strategy and track achievement of organizational objectives, which are aligned with the strategy. Below are the four performance

Glossary

metrics tracked through the FRPP also referred to as first-tier metrics by the Federal Real Property Council.

FRPP Terms and Acronyms	Related DOI Terms and Acronyms
Mission Dependency (MDI)	Asset Priority Index (API)
Condition Index (CI)	Facility Condition Index (FCI)
Annual Operating Costs	Annual Operating and Maintenance Costs (O&M)
Utilization (FUI)	Utilization

These first-tier metrics are reported into the FRPP by all Federal agencies. Second-tier metrics are agency-level based measures to be used in conjunction with the first-tier metrics to measure asset performance. (See Appendix 5 for types of second-tier metrics)

Preserve America, Executive Order 13287. The EO directs Federal agencies to take the lead in identifying, preserving, and creating beneficial use of historic properties in order to contribute to the economic vitality of the Nation's communities. It also directs each agency with historic properties to manage them as assets that can support department and agency missions and to assess and evaluate the suitability of the agency's types of historic properties to contribute to community economic development initiatives, including heritage tourism, taking into account agency mission needs, public access considerations, and the long-term preservation of the assets.

Preventive Maintenance (PM). PM consists of scheduled servicing, repairs, examinations, adjustments, and replacement of parts that result in fewer breakdowns and fewer premature replacements and achieve the expected life of facilities and equipment. These activities are conducted with a frequency of 1 year or less.

Real Property. Real Property is land, or improvements to land such as buildings and structures owned, leased or otherwise managed by the Federal government both within and outside the United States. Real property is defined as any interest in land, together with structures and fixtures, appurtenances, and improvements of any kind located thereon. The term "real" should be associated with realty, land, or something attached thereto. For purposes of this DM, any Interior commercially leased space, excluding GSA provided space, shall be considered as DOI real property.

Recurring Maintenance (RM) (Cyclic in nature). Work activities that recur based on normal wear patterns on a periodic cycle of greater than one year and less than 10 years. Typical work Includes: painting, caulking, sealing, and carpet replacement. *Note:* A few RM activities may have cycles greater than 10 years, such as repointing of bricks.

Rehabilitation. Rehabilitation is the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

Replacement-in-Kind. Replacement of existing material on historic properties that is constructed, manufactured, and installed in the same manner and with something equal in substance having a similar or identical effect.

Glossary

Repair(s). Work that is performed to return equipment to service after a failure, or to make its operation more efficient. The restoration of a facility or component thereof to such condition that it may be effectively utilized for its designated purposes by overhaul, reprocessing, or replacement of constituent parts or materials that have deteriorated by action of the elements or usage and have not been corrected through maintenance.

Site-Specific Asset Business Plan (ABP). A documented plan of business to promote a proactive management approach to effectively address and articulate the life-cycle issues and characteristics of a site's asset portfolio, as in a site-specific ABP, covering all assets reporting in the FRPP and all GSA assigned facilities. An ABP provides facility and regional managers with a micro-level view of a site's assets. The ABP projects a 5 to 10-year snapshot of the assets using the performance metrics of the Asset Priority Index (API), the Facility Condition Index (FCI), Facility Utilization Index (FUI), and Operations and Maintenance (O&M) costs to help make informed investment decisions that drive budget distribution.

Utilization. The state of having been made use of, i.e., the rate of utilization. The utilization rate is a performance measurement that is required input to the FRPP for real property assets defined as office, hospitals, warehouses, laboratories, and housing.

Condition Assessments in the Department of the Interior

DOI has developed, is using, and continues to refine asset condition assessment processes that rigorously support the best possible investment strategy for improving and maintaining bureau portfolios. The condition assessments identify and validate the condition of facilities and result in the identification of maintenance requirements. This tool or process assists managers in establishing maintenance schedules, estimating budgetary requirements for recurring, component renewal and deferred maintenance.

The condition assessments create the ability to plan, schedule and conduct maintenance and to properly define the scope and cost of repair, improvement, replacement operations, recurring and preventive maintenance (condition assessments should ideally be conducted as an integral part of preventive maintenance activities) and component renewal activities in the future.

Condition assessments begin with verification and existence of the asset and then proceed to examination of its condition. There are two required types of condition assessments; Annual and Comprehensive with the preponderance of assets examined during the Annual Condition Assessments.

a. Annual Condition Assessments

Annual Condition Assessments are conducted on all DOI-owned constructed assets with a CRV over \$5,000. The goal of an annual assessment is to verify existence and update documentation of maintenance needs and accomplishments in FMMS. Bureaus and their constituent Field Operating Units will determine the Annual Condition Assessment schedules, so that all respective assets get their required assessment. This assessment can result in updating work orders and costing information derived during the comprehensive condition assessment. It is important to set up quality assurance/quality control processes to avoid duplication of cost data and work orders.

b. Comprehensive Condition Assessments

Comprehensive Condition Assessments are conducted at least every five years on DOI-owned constructed assets with a CRV over \$50,000. Inspection findings will be integrated into the FMMS to ensure that required corrective actions are included in budget requests as appropriate. At the end of FY 2005, this program will have concluded its fourth year of a Five-Year program to assess all constructed assets with CRV over \$50,000.

Different types of assets require different frequencies of comprehensive assessment inspections as required by public law or regulations. For example, all public bridges, BIA schools, and BOR dams and power generation facilities are required by public law, regulation or policy to conduct comprehensive condition assessments more frequently than the DOI standard of every five years. Bureau-level asset management plans will define the specific condition assessment schedules by asset type.

Comprehensive condition assessments may include examination of assets for issues related to non-functioning building components and equipment, accessibility, deferred maintenance, historic preservation, structural fire, energy conservation, environmental code and life safety code compliance. The desired outcome for the condition assessment program is to facilitate integrated, collaborative data collection that provides information on all necessary facets of asset management requirements.

Examples of Industry Standard Cost Databases¹

Whitestone Cost Data Reference:

The Whitestone Building and Maintenance Repair Cost Reference:

2005-2006Used annually by thousands of government and private sector decision-makers, this reference is an indispensable resource for M&R budgeting and financial benchmarking. Building maintenance 50-year cost profiles are shown for over 50 building types and identify most cost repair tasks and costs by building system. Based on life cycle cost modeling, Whitestone cost profiles draw on a unique collection of data including contract and in-house labor rates by trade for 210 metro areas, climatic effects, unscheduled maintenance costs, and a complete library of life cycle tasks for hundreds of individual components. The *Whitestone Building and Maintenance Repair Cost Reference* is frequently used together with *R.S. Means Square Foot Cost Data* to estimate both new construction and maintenance costs.

R.S. Means Cost Data References:

Means Building Construction Cost Data 2006 Book, 64th Edition

The most used, quoted, and respected unit price guide available to the construction industry. It is the professional estimator's first choice of reliable price data for accurate budgeting and estimating.

Means Square Foot Costs 2006

This reference is useful to anyone who needs rapid budget cost estimates-whether in the office, with a client, or in the field. This is a valuable, time-saving tool that gives you clear descriptions and illustrations of hundreds of residential, commercial, industrial, and institutional buildings.

Means ADA Compliance Pricing Guide

The most often-asked questions about making a building accessible are: "What do I have to do?" and "How much will it cost?" This new second edition answers both—with professional guidance on the revised 2004 ADA guidelines and cost estimates for the most commonly needed building modifications.

Means Assemblies Cost Data Reference

Using the UNIFORMAT II numbering system as a guideline for consistent estimating and reporting, *Means Assemblies Cost Data 2006* enables you to easily price and compare various building assemblies. Use the manual's complete examples and references to build your own assembly cost data file. Very useful for those not fully trained in cost estimating.

Second- Tier Metrics

System Criticality

System Criticality is a methodology used in determining acceptable levels of condition and therefore, acceptable facility condition index (FCI) levels) based on deferred maintenance associated with an asset's critical systems. System criticality is applicable to all asset types. Varying methods of identifying and defining system criticality can be employed; the emphasis is that all Deferred Maintenance is not the same. For example, a building's roof (a critical system) could have leaks that, if not repaired, will damage the interior systems of the asset. The roof leak should be repaired prior to consideration of any interior repairs. Another example would be where spillway gates on a dam have deteriorated to the point where reliable operation is not assured. The cost of the repair may not indicate a significant change in the FCI, but could have significant consequences in not allowing flood discharges to pass and thus subjecting the dam to possible overtopping/failure of the dam, if the gates are not repaired.

Dams

In addition to overall facility condition, the Department of the Interior uses other performance metrics for measuring the condition of dams, power plants, and irrigation and drainage systems. One example is the Technical Priority Rating (TPR). The TPR is based on the technical condition of the dam, as determined by a physical inspection of the dam, analysis of the inspection report, flood hydrology, seismic and other data. Several bureaus use this method for condition, ranking and funding metrics. The Bureau of Reclamation (BOR) has been using a risk-based approach for the ranking of its dams. The Department's Working Group on Dam Safety and Security is reviewing the risk-based metric to determine if the risk-based approach would be applicable to all DOI bureaus. Currently, the BOR and Bureau of Indian Affairs use the Facility Reliability Rating (FRR) performance measure to determine the reliability of their dams.

The FRR is more effective than the FCI as an indicator of the overall reliability of this asset type. It uses a scoring system that considers maintenance and other criteria, such as operational and management factors. This performance measure, if properly weighted in its scoring criteria, can serve as a meaningful indicator of these assets' continued reliability. It can also serve as a meaningful management tool in determining where applicable increases in staffing or budgeting resources may be warranted to improve a particular asset's reliability condition (including major rehabilitation or replacement), or to justify its disposal or decommissioning. The use of the FRR on these types of assets does not preclude the FRPP requirement to compute a separate FCI for these assets.

Roads and Trails

The FCI is an accepted industry metric for vertical assets such as buildings; however, for linear assets, such as roads and trails, the FCI may be difficult to apply independently. For example, some roads and trails were never originally designed; therefore, CRV cannot be realistically determined, or if determined, is such a large value that the calculated FCI is difficult to interpret. For these assets, second-tier metrics such as deferred maintenance per mile may be useful in conjunction with the FCI to properly categorize condition as acceptable or unacceptable.

For many roads and bridges, a Service Level Index can be used to track their condition based on a 5 level condition rating index and measure the extent to which the road or bridge satisfies

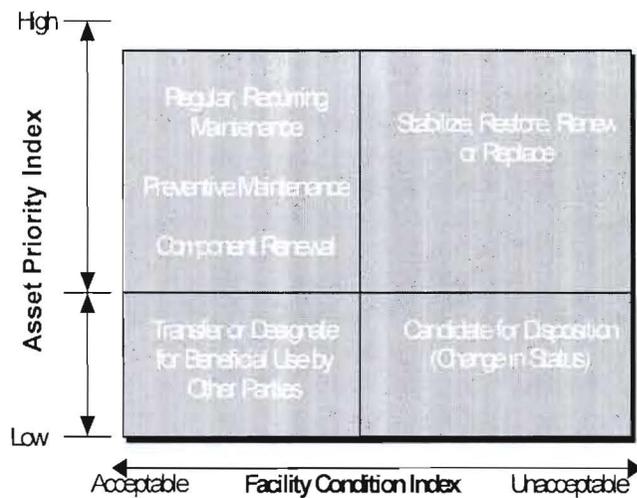
Second Tier Metrics

user requirements. The index is based on similar rating systems used by most state Departments of Transportation. It reflects a wider range of ratings for low volume roads, using a visual basis for consistency purposes to determine whether it is operational or if users experience delays

Overview of the DOI FCI/API Analysis

The move to incorporate API into the Department’s life cycle and portfolio-based approach ensures that the highest priority mission critical assets are incorporated into the five-year plans. This system will maximize spending upon bureau mission critical assets at the most important periods in the assets life cycle. Under this procedure, bureaus will first sort assets into four categories, high API/acceptable FCI, high API/unacceptable FCI, low API/acceptable FCI, and low API/unacceptable FCI:

- Assets with high API and acceptable FCI should be maintained with practices that protect the government’s investment;
- Assets with high API and unacceptable FCI should be considered for stabilizing, restoration, rehabilitation and repair. The asset can be replaced if the asset’s FCI is in unacceptable condition and another asset can be substituted for it. However, if the FCI is high principally because of its historical significance repair and rehab activities will be the priority;
- Assets with low API and acceptable FCI should be considered candidates for transfer or beneficial use by other parties; and
- Assets with low API and unacceptable FCI should be considered for disposal.



Managers of owned assets would use the API and the FCI to help make resource allocation decisions (see the adjacent Diagram). For GSA or leased space, managers would use API in conjunction with other metrics such as utilization and/or cost per square foot to ensure that non-owned assets are being utilized effectively.

These indices will be used to determine the prioritization for projects to be included in DOI’s Five-Year Deferred Maintenance and Capital Improvement Plan. This will accomplish the following:

- Assist in directing resources where they are needed most, based on mission need and strategic goals;
- Assist in identifying lower priority assets that should be considered for excess if they no longer support the DOI mission;

Overview of the DOI FCI/API Analysis

- Effectively manage the life-cycle of every asset;
- Assist in maturing the Department's focus from project formulation and execution to one of life-cycle asset management where the planning focus is not about projects and project funding, but rather the effect the project will have on the asset throughout its life-cycle; and
- Adopt and utilize other performance measures that will enhance the Department's ability to be predictive regarding future management of the asset portfolio, e.g., component renewal index (CRI) and/or dollar per square foot (\$/SF) for operations and maintenance.

The application of FCI and API along with other metrics will enable a site to prioritize deferred maintenance projects and ensure that scarce funds are invested in the most important or mission critical assets at the site.

Overview of the Department's Single Platform Facility Maintenance Management System (FMMS)

The Department of the Interior (DOI) will combine MAXIMO™ database applications from the multiple bureau instances into a single platform MAXIMO™ application designated the Facility Maintenance Management System (FMMS) or referred to as Single Platform MAXIMO™ (SPM). This application will have the following features:

- Single data warehouse.
- Single location, centrally managed, application server and configuration, hosted by the National Business Center.
- Version 6.0 (or higher) of MAXIMO™.
- Fully Certified and Accredited
- Single interface to the Financial and Business Management System (FBMS)
- Each bureau will be a separate organization as defined in MAXIMO™ application logic
- Implementation of a Departmental standard Configuration Management process

The FMMS must provide an efficient and effective mechanism for meeting both central office reporting requirements and end user business needs. Within that framework, requirements and objectives for the FMMS are described as follows:

- Single interface with the system of record, FBMS.
- Standardized business processes.
- Standardized data collection, interpretation and format.
- Standardized report formats and enhanced reporting capabilities.
- Common (MAXIMO™ system) user interface, methodology and procedures.
- Provide a reliable and functional system at the lowest possible cost.
- Provide accurate data in support of investment decisions.
- Provide accurate inventory data of real property and other facility management information as required to support the Financial Business Management System (FBMS), which will be the official system of record. An interface with MAXIMO™ will allow data to be exchanged between the two systems in support of property inventory and maintenance activities by each bureau.
- Manage asset condition assessment scheduling and results.
- Provide underlying data needed to develop Five-Year Deferred Maintenance and Five-Year Capital Improvement Plans.

The FMMS is the cornerstone tool for implementing the DOI and Bureau Asset Management Plans (AMP) and Site Specific Asset Business Plans. The recently completed AMP describes a comprehensive strategy for managing DOI assets.

Core functions of FMMS are:

- 1) The ability to capture cost of current and deferred maintenance as well as capital improvement costs for all constructed assets and relate them back to unique asset numbers assigned from FBMS. Each work order upon completion will contain materials, contract, and burdened labor costs to enable capture of the full costs of activities. This capability will allow the DOI, Bureau and Field Sites to develop asset-based maintenance histories on all constructed assets.

**Overview of the Department's Single Platform
Facility Maintenance Management System (FMMS)**

- 2) The ability to record the complete history of maintenance and capital improvement activities accumulated over time for each individual constructed asset to enable documentation of full life-cycle costs.
- 3) The ability to capture individual components of constructed assets identified in FMMS so that component renewal costs can be planned and monitored.
- 4) Record maintenance deficiencies identified through condition assessments in FMMS in the form of work orders. Scheduling of condition assessments may also be accommodated within the FMMS.
- 5) Calculate the Facility Condition Index for individual constructed assets through comparison of Deferred Maintenance Costs with Current Replacement Values.
- 6) Accumulate Deferred Maintenance and Capital Improvement needs information in such a way as to allow preparation of Five-Year Deferred Maintenance Plans and Five-Year Capital Improvement Plans as required by attachment G to DOI budget guidance.
- 7) Provide Five-Year DM & CI Completion Reports as required by attachment G to DOI budget guidance.
- 8) Report all required data elements for DOI owned buildings and structures portion of the government-wide Federal Real Property Profile to FBMS. The FBMS is the system of record for completing this report; however, some of the data elements likely will be drawn from FMMS.
- 9) Provide a mechanism for storing linked or attached documents such as drawings, technical specifications, photos, inspection reports, etc.
- 10) Provide a mechanism to store job plans and associated materials needed to implement a preventative maintenance program.
- 11) Provide data standardization to assist in the utility of FMMS and, to the extent feasible, data sharing (e.g. job plans, standardized definitions, value lists, and business processes associated with the data standardization).
- 12) Ensure the use of the Standard DOI Asset List and the standard definitions and codes for Work Types and Work Status.
- 13) Provide standard DOI software to supplement the Actuate software built into the standard MAXIMO™ product. The ability to generate reports from within as well as outside the MAXIMO™ application is required.
- 14) Explore a GIS linking capability to enable mapping of the physical location of assets (Only if this function is not provided in FBMS).
- 15) Provide a Cost Estimating linking capability.
- 16) Provide the ability to input data from portable hand-held devices used as a mechanism to enhance field deployment.
- 17) Provide the optional capability to capture time and attendance information using FMMS or a bolt-on application (e.g. Quicktime).

Bureau functions of FMMS are:

- 1) Individual bureaus will refine business processes and maintain a close connection with the software users. FMMS will involve standard business practices to the maximum extent possible but flexibility may be granted through the Configuration Management process to allow bureaus to effectively fulfill mission requirements.
- 2) Provide training programs tailored to individual bureau needs.

**Overview of the Department's Single Platform
Facility Maintenance Management System (FMMS)**

- 3) Provide analysts to work with users to assure that budget, planning, and performance goals can be effectively managed within the FMMS database.
- 4) Provide system administrators, which include user access security.
- 5) Provide report writers.
- 6) Provide any report servers that are needed, at whatever locations, and establish a standard report library.
- 7) Provide adequate Internet connectivity to geographically dispersed field stations that are often remotely located and lack high-speed Internet capabilities.

The actual requirements, roles and responsibilities of DOI, bureau, and end users will be clarified through the establishment of a Service Level Agreement between all parties involved in the use or maintenance of the FMMS.

Frequently Asked Questions

1. What asset management issues are unique to heritage assets (vs. non-heritage assets), and who should be involved in resolving them? Heritage assets, like non-heritage assets, possess management needs that are similar to other agency Property, Plant, and Equipment (e.g., deferred maintenance). However, because of their unique historical characteristics, once a management issue is identified, it cannot be handled following non-heritage asset methods. The asset manager must reach out to the agency cultural resource experts who can assist in determining the best management solution (e.g., use of historical building materials to maintain the historic integrity of the asset).

Heritage assets by definition represent a blending of needs, some unique and others very similar to those facing other Property, Plant, and Equipment. It follows that a connection must also therefore exist between those individuals charged with maintaining these assets.

2. What is the process that would follow for resolving heritage asset management issues? Once contacted the cultural resource expert can suggest a course of action. This could entail such things as conducting a condition assessment for the specific heritage asset or assistance in identifying a vendor for historically accurate materials. The asset manager would then proceed with the maintenance action following these recommendations.

3. How is deferred maintenance calculated for heritage assets? Deferred maintenance for heritage assets is calculated in the same manner as that for regular agency Property, Plant, and Equipment; however, for heritage assets replacement-in-kind must be considered, and other factors that may be unique to a building or structure that is historic in nature. As a result, standard industry maintenance/construction manuals may not provide the truest source for identifying deferred maintenance costs, and other sources or assets specific inspection and calculation should be considered.

4. What is the value of my asset portfolio? The value of your portfolio can be determined by totaling the Current Replacement Value (CRV) for all the assets. CRV is the standard industry costs and engineering estimates of materials, supplies, and labor required to replace facility at existing size and functional capability. This cost includes current costs for planning/design, construction, and construction management. CRV is the same as Functional Replacement Value (FRV) for non-heritage assets.

5. Is the CRV the same as the replacement cost for an asset? No, the Current Replacement Value (CRV) is most often a "Class C" cost estimate. This estimate is not based on design, drawings and technical specifications. It is often based on unit or square foot costs and is used in calculating the Facility Condition Index (FCI) for an asset. It is an approximation based on the square-foot costs of similar construction. It does not include the cost of support utilities and structures, such as water and electrical utilities or sidewalks and conduits.

6. If an asset component is due to be replaced, but has no deficiencies, is it considered deferred maintenance (DM)? No, if the component has no deficiencies, it is not considered deferred.

7. Is a code compliance deficiency necessarily considered deferred maintenance (DM)? No, in most cases, code compliance issues are considered a Capital Improvement.

Frequently Asked Questions

8. How can the FCI be used with the API to help a manager make a better business decision? The Facility Condition Index (FCI) provides a manager with a measure of a facility's relative condition at a particular point in time compared to similar facilities. FCI is used with other metrics most commonly, the Asset Priority Index (API) that rates each existing or proposed owned and leased asset in the inventory based on its importance in carrying out the bureau's mission and achieving strategic goals. The FCI/API Analysis described in Appendix 6 of this Guidance provides a useful tool for managers. However, for some categories of assets, second-tier metrics can be effective indicators of the overall reliability of this asset type. Please refer to Appendix 5 concerning these second-tier metrics.

9. When should the CRV cost be re-estimated? The CRV cost should be re-estimated when there is a significant change in the value of an asset, i.e., increase in the square footage such as an addition of a gymnasium to school, additional miles to a road, etc.

10. Can a global inflationary factor be applied to all CRV's for existing assets? At least once a year both the DM and CRV should be updated simultaneously using the latest industry standard cost guides or a consistently established annually inflationary factor.

11. What is the condition of my asset portfolio? The relative condition of owned assets is measured using the Facility Condition Index (FCI), which is an accepted industry metric for determining the condition of assets.

12. Which assets are the highest priority in terms of your organization's mission and where should your bureaus focus limited resources? To assist you and your organization determine highest priority you should use the Asset Priority Index (API). Guidance on API can be found in the [Asset Priority Index Guidance](#), issued in September, 2005. The Guidance establishes the standard for developing an API framework, determining an API score, interpreting an API score and validating scores. To supplement the use of this metric, you should consider the application of the other first-tier metrics and appropriate second tier metrics.

13. Why is asset prioritization important? One of the benefits of life cycle business practices is to be able to articulate and make the case for smarter investment decisions. One simple way to do that is to use the Asset Priority Index (API). Use of the API in prioritizing spending decisions helps managers identify the most important assets, and provides a logical continuum with which to direct limited funding.

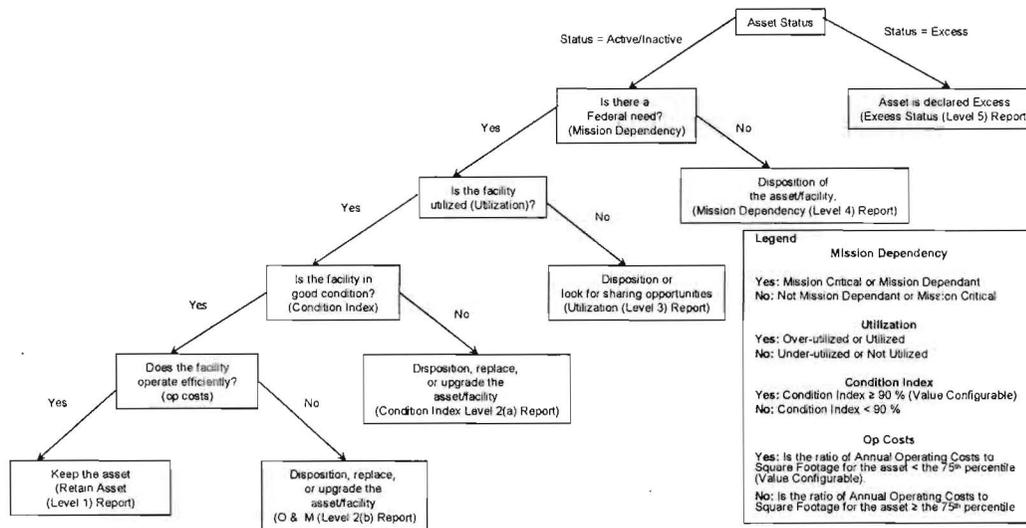
14. How does a manager identify potential asset disposal candidates? As noted in the Department of the Interior's Disposition Policy for Real Property (Chapter 2 on Planning for Disposition of Real Property Assets), managers are to continuously assess the need for and condition of assets throughout their life-cycle basically following the following process.

- Conduct condition assessments (as described in Appendix 3 of this Guidance) updating information in the Facility Maintenance Management Systems (FMMS) on the utilization, annual operating costs, FCI, and API. This will provide information to alert managers that an asset may be a candidate for disposition, replacement, or upgrade.

Frequently Asked Questions

- Combine input from condition assessments with a sound methodology and analysis. Bureau portfolio-level analysis relies on the API and FCI. Assets with low API (not Mission Dependent or Mission Dependent Not Critical) and a high FCI (unacceptable condition) are considered to be prime candidates for disposition.
- Use the API and FCI analysis to identify potential candidates and exclude incorrectly identified assets as candidates for disposition.
- As a follow-up to the API/FCI assessment, bureaus/offices are responsible for determining what assets are eligible for disposition, using the following Disposition Decision Tree Analysis⁹ and other management tools and processes. The FRPC Performance Measurement Committee developed the criteria for the disposition decision tree model, utilizing inventory and performance measure data to better target assets for disposal, investment, or other management attention.

Federal Real Property Council
Disposition Decision Tree



⁹ To use the Decision Tree Analysis, Bureaus/Offices are responsible for ensuring that they have accurately compiled the asset performance measures of API, FCI, utilization and operation and maintenance costs and other required data elements, as specified in the FRPP.

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