



OFFICE OF
INSPECTOR GENERAL
U.S. DEPARTMENT OF THE INTERIOR

The National Park Service Faces Challenges in Managing Its Deferred Maintenance

This is a revised version of the report prepared for public release.

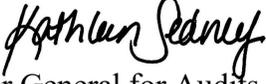


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INSPECTOR GENERAL
U.S. DEPARTMENT OF THE INTERIOR

SEP 13 2023

Memorandum

To: Charles F. Sams III
Director, National Park Service

From: Kathleen Sedney 
Assistant Inspector General for Audits, Inspections, and Evaluations

Subject: Final Evaluation Report – *The National Park Service Faces Challenges in Managing Its Deferred Maintenance*
Report No. 2020–CR–066

This memorandum transmits our evaluation report on how the National Park Service identifies and manages deferred maintenance.

We will track open recommendations for resolution and implementation. We will notify Congress about our findings, and we will report semiannually, as required by law, on actions you have taken to implement the recommendations and on recommendations that have not been implemented. We will also post a public version of this report on our website.

If you have any questions about this report, please contact me at aie_reports@doioig.gov.

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Results in Brief

What We Evaluated

When prioritizing its financial resources each year, the National Park Service (NPS) assesses the condition of its infrastructure and calculates how much it would cost to address needed repairs. As of September 2021, the NPS reported that it had accumulated more than \$23 billion in deferred maintenance—which the NPS considers as maintenance that has not been completed on schedule and is delayed for a future period. The reported dollar value of the NPS’ deferred maintenance has increased by \$12 billion since fiscal year (FY) 2016. We evaluated how the NPS identifies and manages deferred maintenance.

What We Found

We found that the NPS was unable to effectively identify and manage its deferred maintenance, in large part due to inaccurate and unreliable data in the NPS’ Facility Management Software System (FMSS).¹ These deficiencies cast doubt on the NPS’ deferred maintenance estimates—possibly underestimating the figures in some cases and overestimating in others. For example, we identified approximately 214,000 work orders that were 3 years or older that were not classified as deferred maintenance, resulting in a potential \$2.6 billion underestimation of the NPS’ deferred maintenance. We also identified a total of 3,667 open work orders that included a “finished date” in the FMSS, resulting in a potential \$364 million overestimation of the NPS’ deferred maintenance. Furthermore, the NPS applied a blanket 35-percent markup to its FY 2021 deferred maintenance resulting in a \$3.7 billion increase in just 1 year. We found, however, that there was not sufficient documentation demonstrating whether the amount of the markup was reasonable. We also found that the NPS’ broad application of the markup may lead to inaccurate estimates depending on whether work is completed by staff or contractors. Without accurate data, the NPS will not have the quality information required to make informed decisions as defined in the U.S. Government Accountability Office’s (GAO’s) *Standards for Internal Control in the Federal Government*.

In addition to data challenges, we identified 29 critical Health, Life, and Safety work orders—which are aimed to address immediate danger to life, health, property, or infrastructure—that were not consistently monitored for a timely completion and closure. For example, a series of critical work orders related to mold found in multiple buildings at an NPS park. The buildings were deemed unsafe to occupy and were closed in 2014 as an interim control measure. The mold, however, was not addressed, resulting in larger deferred maintenance costs and an extended lack of public access to the buildings. These issues occurred as a result of a lack of guidance for monitoring or verifying the ongoing status of critical work orders.

¹ According to the FMSS Training Desk Reference, the system is a work identification, management, and analysis program that allows the NPS to track all aspects of work (e.g., planning and design, construction, operations/maintenance, and rehabilitation or removal) related to a specific asset at the individual park level.

In its response to our draft report and in related discussions, the NPS stated that challenges identifying and managing its deferred maintenance needs were caused by the labor-intensive process of identifying deferred maintenance, outdated work order estimates, and duplicated work orders. Additionally, the NPS stated that a lack of funding for annual maintenance needs led to deterioration across its asset portfolio and an increase in deferred maintenance. The NPS also reported that it had begun implementing a new asset condition assessment process in FY 2022. NPS staff stated that this new process would allow parks to quickly assess the condition of each asset to produce modeled deferred maintenance estimates² based on asset condition and current replacement value; however, the NPS also acknowledged that the new process will not be fully implemented until FY 2024 and that a portion of its deferred maintenance work orders are still included in its deferred maintenance estimate. The NPS stated that, once the new process is fully implemented, the process of estimating deferred maintenance will be separate from the process for managing deferred maintenance work.

We acknowledge the NPS' efforts to make improvements to its approach and that some changes have, in fact, already been implemented. As we discuss in more detail throughout this report and in our analysis of the NPS' responses, though this new methodology will reportedly separate the process of estimating deferred maintenance from work orders, the information we have received to date suggests that the NPS remains at risk of not effectively managing its deferred maintenance if it does not ensure that work orders still included in its deferred maintenance estimate are accurate. Additionally, similar to the issues we identified with open work orders, if the NPS does not close work orders and update its condition assessments as projects are completed, deferred maintenance estimates will still be inaccurate. With respect to the 35-percent markup, although the NPS stated that this markup is consistent with the U.S. Department of the Interior (DOI) Acquisition, Arts, and Asset Policy 183, *DOI Policy on Standardizing Cost Estimating Allowance for Reporting of Construction Cost in the Asset Management Program*, issued in July 2022, the NPS also acknowledged that this markup likely overstates deferred maintenance in some cases and underestimates them in others. Additionally, the NPS still has not clearly articulated how this markup applies to all deferred maintenance projects. In short, we believe that, even after implementation of the revised approach, the NPS will need to address a number of potential concerns relating to its deferred maintenance projects.

Why This Matters

The NPS manages some of the Nation's most treasured resources and irreplaceable cultural and historical sites, scenic byways, and monuments. However, the NPS has struggled to keep up with its growing maintenance needs, and its self-identified deferred maintenance has nearly doubled since FY 2016 despite its number of assets remaining relatively unchanged. Delayed or deferred maintenance can affect visitor experiences at parks due to a wide range of effects, including, for example, building or bridge closures, trail limitations, and facility disrepair. In addition,

² According to the NPS, models within the "parametric scoring tool" convert the assessed condition scores into "deferred maintenance and repairs" (previously deferred maintenance) estimates. According to the NPS, these models were developed based on real cost data from park calculations, the current replacement value calculator, or developer modeling based on a database of current construction cost estimates for nearly every facet of a construction project, including materials, labor, storage, etc. The NPS stated that these "parametric results" are or will be combined with existing inspection data for concessionaire-occupied assets and the Federal Highway Administration-inspected assets to produce total deferred maintenance and repairs for the NPS portfolio. *Parametric Condition Assessment Guide*, dated March 2022.

deferring maintenance may result in significantly higher maintenance and operating costs or, in some cases, premature asset replacement.

The issues we identified resulted in inaccurate deferred maintenance estimates. We note that this has been a longstanding concern, and our office reported on weaknesses in the NPS' deferred maintenance estimates in its financial statements as long ago as 1999.³ According to the GAO, quality data are essential to the NPS' decision making process, and unreliable data can affect its ability to achieve its mission. Particularly given the influx of funding from the Great American Outdoors Act (up to \$1.3 billion per fiscal year for 5 years through FY 2025) and the Inflation Reduction Act (up to \$200 million through FY 2026), the NPS must have an accurate calculation of its deferred maintenance needs to plan and prioritize work. Without reliable deferred maintenance data and standardized policies and procedures, the NPS cannot appropriately prioritize its deferred maintenance projects, which hinders its ability to effectively manage its deferred maintenance.

We acknowledge that, during the initiation of our evaluation, the NPS told us it had begun developing a new asset condition assessment process to estimate its deferred maintenance. At that time, this new process was in the planning phase, and it has yet to be fully implemented as of the date of this report. Regardless, our recommendations will assist the NPS in continuing to more accurately identify and manage its deferred maintenance portfolio because, even when using its new methodology, the NPS will still be at risk of not effectively managing its deferred maintenance if it does not (1) implement controls to ensure that work orders are closed and condition assessments are updated as deferred maintenance projects are completed; (2) ensure that the 35-percent markup is added to project estimates only where the NPS can clearly articulate the rationale for its application; and (3) timely address Health, Life, and Safety workorders.

What We Recommend

We make eight recommendations that, if implemented, will help the NPS improve how it identifies and manages its deferred maintenance.

³ *Deferred Maintenance, National Park Service* (Report No. 99-I-959), dated September 1999.

Introduction

Objective

Our objective was to determine how the National Park Service (NPS) identifies and manages deferred maintenance.

See Appendix 1 for our scope and methodology.

Background

The NPS' mission is to conserve the natural and cultural resources of the National Park System for the enjoyment, education, and inspiration of this and future generations.⁴ These areas include some of the Nation's most treasured resources and irreplaceable historical sites, scenic byways, and monuments, which collectively draw more than 318 million visitors each year. The NPS manages approximately 400 park units—commonly referred to as “parks”—that include more than 75,000 assets. For deferred maintenance purposes, the NPS defines an asset as real or personal property that it tracks and manages as a distinct and identifiable entity. Assets may be physical structures or groupings of structures, land features, or other tangible property with a specific service or function. Examples include farms, cemeteries, campgrounds, marinas, and sewage treatment plants.⁵ For example, in fiscal year (FY) 2020, Yellowstone National Park was identified as having more than 2,800 assets, including the Lewis Lake Campground, Snake River Canyon Trail, Mammoth Amphitheater, Grant Village Marina, ranger stations, bunkhouses, the historic Albright Visitor Center, and a historic blacksmith shop.

NPS Deferred Maintenance

The NPS receives funding to maintain its assets through a variety of programs in its annual appropriations. The NPS relies on discretionary appropriations, allocations from the U.S. Department of Transportation, park entrance and concession fees, donations, and other funding sources to repair and maintain its more than 75,000 assets. Maintenance refers to day-to-day repair activities and planned work required to preserve facilities in such a condition that they may be used for their designated purpose over an intended service life. Under the NPS' policies and procedures, deferred maintenance is considered a subset of the NPS' asset maintenance. The NPS defines⁶ deferred maintenance as “[m]aintenance that was not performed

⁴ See <https://www.nps.gov/orgs/1955/our-mission-and-role.htm>.

⁵ The NPS' Facility Management Program Glossary of Terms.

⁶ *Id.*

when it should have been or was scheduled to be and which, therefore, is put off or delayed.”⁷ As noted previously, delayed or deferred maintenance can affect visitor experiences at parks due to building or bridge closures, trail limitations, and facility disrepair. In addition, deferring maintenance may result in significantly higher maintenance and operating costs or, in some cases, premature asset replacement.

To address this problem and its effect on NPS resources, Congress enacted the Great American Outdoors Act (GAOA).⁸ GAOA was signed into law on August 4, 2020, and authorized up to \$1.9 billion per fiscal year from 2021 to 2025 to reduce deferred maintenance on public lands and at Indian schools through the National Parks and Public Land Legacy Restoration Fund (LRF).⁹ The LRF is intended to ensure the safety of staff and the increasing number of visitors to the U.S. Department of the Interior’s (DOI’s) public lands by providing dedicated funding to address the growing amount of deferred maintenance. Under GAOA, the NPS in particular will receive up to \$1.3 billion per fiscal year for 5 years (FY 2021 through FY 2025) to reduce or eliminate its deferred maintenance. In addition, the Inflation Reduction Act¹⁰ authorizes up to \$200 million to the NPS for priority deferred maintenance projects through FY 2026.

At the time of our review, the NPS calculated and reported its deferred maintenance using the total of the estimated costs from open deferred maintenance work orders at the end of each fiscal year. As of FY 2021, the NPS estimated deferred maintenance of \$23.7 billion. Although its number of assets has not increased, the estimated cost of the NPS’ deferred maintenance has risen more than \$12 billion since FY 2016 (see Figure 1).

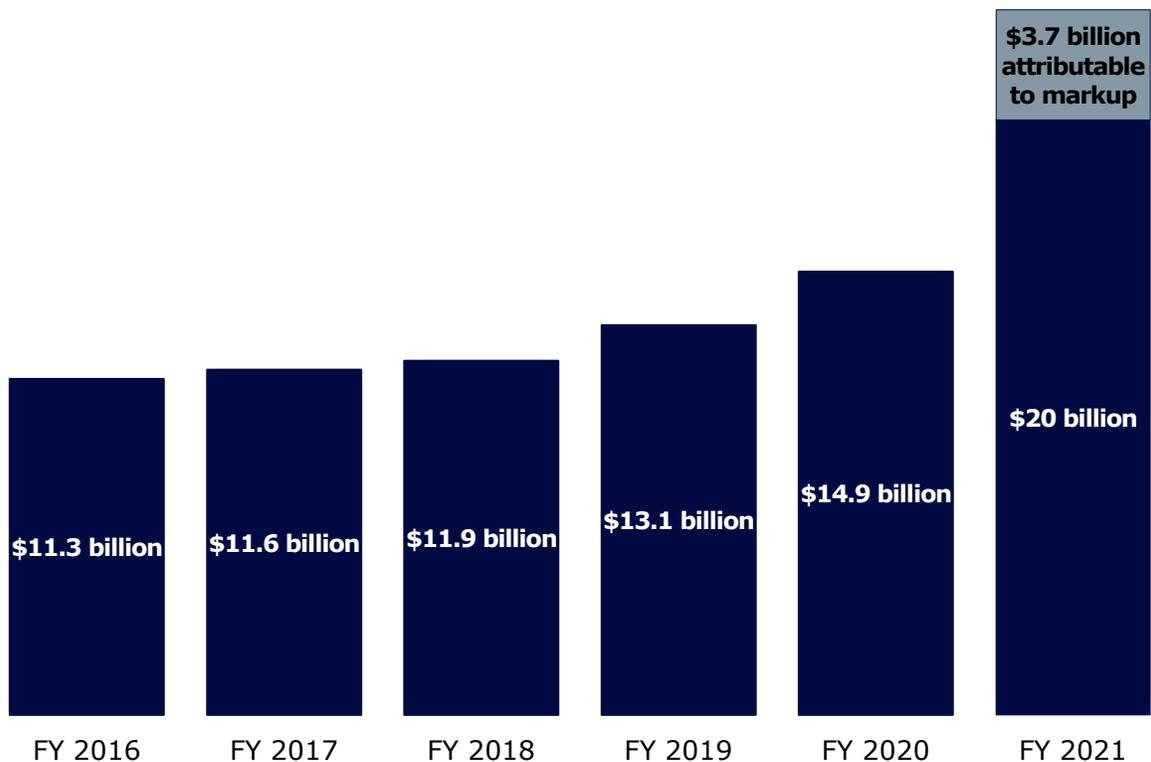
⁷ In response to our draft report, the NPS told us that it is in the process of revising the term “deferred maintenance” to “deferred maintenance and repairs” to better align with the Federal Accounting Standards Advisory Board (FASAB) terminology. FASAB is an advisory committee that develops accounting standards for U.S. Government agencies. The *FASAB Handbook of Federal Accounting Standards and Other Pronouncements, as Amended as of June 30, 2021*, Statement of Federal Financial Accounting Standards 42, “Deferred Maintenance and Repairs,” defines deferred maintenance and repairs as “maintenance and repairs that were not performed when they should have been or were scheduled to be and which are put off or delayed for a future period.” For purposes of this report, we rely on the definition of “deferred maintenance” applied by the NPS at the time of our fieldwork.

⁸ Pub. L. No. 116–152.

⁹ The LRF is funded from an amount equal to 50 percent of all energy development revenues due and payable to the United States from oil, gas, coal, or alternative or renewable energy development on Federal land and water credited, covered, or deposited as miscellaneous receipts under Federal law in the preceding fiscal year. Of the \$1.9 billion annually, the NPS will receive 70 percent, and the U.S. Fish and Wildlife Service, Bureau of Land Management, and Bureau of Indian Education will each receive 5 percent. The remaining 15 percent is allocated to the U.S. Forest Service under the U.S. Department of Agriculture. We do not have an oversight role for the U.S. Department of Agriculture disbursements.

¹⁰ Pub. L. No. 117–169.

**Figure 1: Reported NPS Deferred Maintenance Increase
FYs 2016–2021**



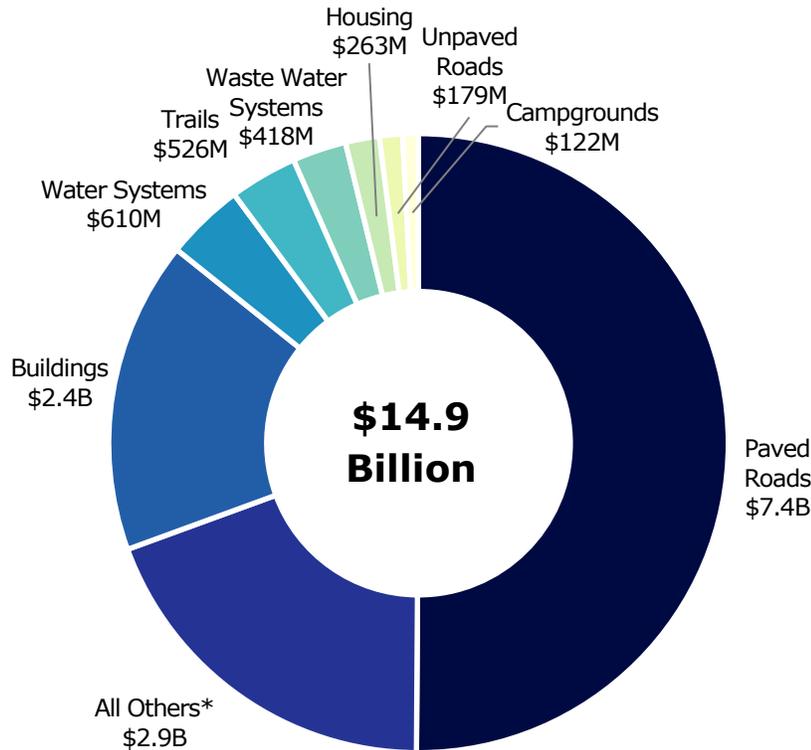
The NPS has reported that contributing factors to the increasing deferred maintenance—while not all inclusive—are aging infrastructure, heavy visitor use, and insufficient funding to keep pace with repair needs.¹¹ The NPS also reported that the FY 2021 increase was due, in part, to a change in how it estimates deferred maintenance costs. Specifically, from FY 2020 to FY 2021, the NPS added a blanket 35-percent markup¹² to its estimated deferred maintenance; this markup is composed of estimated costs related to compliance, design, construction management, and project management. In FY 2021, the NPS calculated approximately \$20 billion in deferred maintenance, which was an increase of approximately \$5.2 billion from FY 2020. The addition of the 35-percent markup increased the NPS’ FY 2021 deferred maintenance by another \$3.7 billion. Both increases resulted in an \$8.8 billion increase over FY 2020. The markup is discussed in further detail in our findings below.

The NPS uses asset categories to track and report resources for its 75,000 assets. Figure 2 shows the NPS’ FY 2020 deferred maintenance estimates by asset category.

¹¹ See <https://www.nps.gov/subjects/infrastructure/faqs.htm>.

¹² The 35-percent markup was not applied to transportation (paved and unpaved road asset categories, including bridges) deferred maintenance work orders, which already included a 35-percent project execution cost markup in those work order estimates.

Figure 2: FY 2020 Deferred Maintenance by Asset Category



* The "All Others" asset category includes a wide variety of assets, including waysides and picnic areas, radio systems, fuel systems, marinas and boat ramps, dams, and amphitheatres.

NPS Asset Management Roles and Responsibilities

In October 2016, the NPS' Park Planning, Facilities and Lands directorate implemented the *Desk Reference: Facility Projects*, which outlines its process from project creation to project closeout, including roles and responsibilities at each management level. There are three levels of responsibility for facility management within the NPS with respect to deferred maintenance: Park Facility Management, Regional Facility Management, and the Washington Support Office. In addition, the NPS GAOA Program Office provides GAOA-specific support.

Park Facility Management

The Park Facility Management staff have the greatest responsibility for addressing deferred maintenance because maintenance begins and ends at the park level. The park staff use the NPS' Facility Management Software System (FMSS) to ensure asset condition assessments¹³ are completed, create maintenance repair work orders, assign work order status, and add cost

¹³ Condition assessments identify assets' current condition and critical needs, including deferred maintenance.

estimates.¹⁴ The NPS uses the FMSS to identify, manage, and track all park maintenance repairs, including deferred maintenance. Park staff use the Cost Estimating Software System to generate cost estimates, which they can either export to the FMSS or enter directly in a work order.

Work orders are the source documents for maintenance repairs for all park assets such as trails, visitor centers, and campgrounds, as well as water systems and roads. The NPS uses 10 categories for its facility maintenance work orders, including deferred maintenance. Separately, the NPS also uses the Health, Life, and Safety (HLS) classification, which is identified in the NPS' *Business Practices: Risk Assessment Codes*,¹⁵ to identify issues that need immediate attention such as an unsafe building.

Park staff are also responsible for determining when a maintenance or repair work order becomes deferred maintenance as well as for classifying and documenting work orders with HLS maintenance issues in the FMSS. For example, if park staff determine that a building is unsafe, it is their responsibility to create a new work order to quickly mitigate the HLS concern.

Park staff may complete the maintenance identified in work orders depending on park staff availability, expertise, or direct park funding. Otherwise, during the annual budgeting process, park staff prioritize work orders that can be completed in-house or bundle work orders (which can include those classified as deferred maintenance) into projects that need contractor technical expertise or additional funding resources. The bundled work orders are sent to the NPS Regional Facility Management staff for prioritization and funding authorization. When the maintenance or repair has been completed, the park staff are responsible for updating and closing each work order in the FMSS.

Regional Facility Management

The Regional Facility Management staff determine funding eligibility and prioritize project submissions for all parks within the respective region.¹⁶ Regional management review projects and adjust priorities based on factors such as the emergency status of particular projects or unforeseen costs (e.g., modifications, cost overruns of current executed projects).

Washington Support Office

The Washington Support Office prioritizes and reviews projects across the NPS and allocates funding to each region. Its Park Facility Management Division also provides guidance and oversight for all NPS facility maintenance. The division is responsible for the FMSS procedures, training, and facility project business process. According to the Park Facility Management Division Chief, in FY 2020, the NPS began implementing a new asset condition assessment process that allows parks to quickly assess the condition of each asset. This new process,

¹⁴ The NPS uses the FMSS to track work order status, or where the work order is in the process of being resolved. Examples of work order status include “waiting for estimate,” “approved,” “in progress,” and “closed.”

¹⁵ The NPS uses its *Business Practices: Risk Assessment Codes* to assess a physical health, life, and safety hazard of an asset and assigns a risk assessment code to a work order based on the probability and severity of the hazard.

¹⁶ The FMSS historical data correlated to the NPS' 7 regional offices (Alaska, Intermountain, Midwest, Northeast, National Capital, Pacific West, and Southeast) prior to the establishment of the 12 Unified Interior Regions.

however, was not integrated into the FMSS until FY 2023 and is not anticipated to be completed until FY 2024.¹⁷

NPS GAOA Program Office

The NPS GAOA Program Office provides additional program management oversight and guidance for current and future projects funded through the LRF. This office was established in FY 2021 and works with the Washington Support Office to prioritize and then submit projects for LRF funding. The DOI's GAOA Program Management Office then approves the LRF funding for these projects.

Once a project is approved and funded, the work is either completed by park personnel or through a contract. At that point, the NPS closes the project and work order.

Parks Reviewed

The various processes and prioritization approaches described previously cannot be effectively applied unless the underlying data describing assets, need for maintenance, and related requirements is accurate. Accordingly, we reviewed how the NPS identifies and manages its deferred maintenance at 15 of its 397 parks (see Figure 3) for FY 2020. We judgmentally selected these parks based on their total number of assets, arriving at 5 of its 249 parks with 1 to 99 assets, 5 of its 111 parks with 100 to 499 assets, and 5 of its 37 parks with 500 or more assets (see Appendix 1 for details on our scope and methodology). We also ensured that each of the NPS' seven regions was represented by at least one park. Because parks vary by mission, size, and location, each has varying assets with differing maintenance requirements. A small number of assets does not necessarily correlate with a smaller cost for deferred maintenance. For example, although San Juan National Historic Site has a comparatively small number of assets, those assets include the historic fort and other historic buildings, which have higher deferred maintenance cost estimates.

¹⁷ In its April 2023 response to our draft report, the NPS stated that deferred maintenance estimate reporting will use a hybrid of the new and old asset condition assessment processes until it fully implements the new process.

Figure 3: FY 2020 NPS Parks Reviewed

Park	Region	Deferred Maintenance (\$)	Total Assets
President’s Park (White House)	National Capital	62,244,044	94
Herbert Hoover National Historic Site	Midwest	4,445,417	96
Presidio of San Francisco	Pacific West	32,997,744	98
White Sands National Monument	Intermountain	6,358,112	98
San Juan National Historic Site	Southeast	315,649,911	99
Wrangell St Elias National Park	Alaska	18,655,577	392
New River Gorge National Park and Preserve	Northeast	16,296,689	485
Mammoth Cave National Park	Southeast	93,414,607	490
Mesa Verde National Park	Intermountain	117,726,547	492
Voyageurs National Park	Midwest	15,861,315	492
Chesapeake and Ohio Canal National Historical Park	National Capital	163,602,569	1,246
Appalachian National Scenic Trail	Northeast	28,826,979	1,556
Blue Ridge Parkway	Southeast	681,423,081	1,846
Yosemite National Park	Pacific West	637,373,863	2,121
Yellowstone National Park	Intermountain	1,221,356,125	2,823

Results of Evaluation

We found that the NPS was unable to effectively identify and manage its deferred maintenance due to inaccurate and unreliable data. Even though its identified number of assets remained relatively constant, the NPS' deferred maintenance cost estimate has continuously increased from \$11.3 billion in FY 2016 to \$20 billion in FY 2021. The NPS has cited multiple factors that contributed to this increase, including application of a blanket 35-percent markup to its FY 2021 deferred maintenance estimate, which increased its estimate by an additional \$3.7 billion that year for a total of \$23.7 billion. We found, however, that there was not sufficient documentation demonstrating whether the amount of the markup was reasonable. We also found that the NPS' broad application of the markup may lead to inaccurate estimates depending on whether work is completed by staff or contractors. In addition, we found delayed response times for addressing critical HLS work orders. This occurred because the NPS did not have an established process in place to monitor the ongoing status of critical HLS work orders.

We emphasize that these difficulties are long standing, and the NPS has struggled to manage its deferred maintenance for at least two decades. For example, in 1999, we examined the NPS' FY 1998 estimates of deferred maintenance as reported in its financial statements.¹⁸ We found that the agency did not have an accurate estimate of its total deferred maintenance and that the NPS did not have reliable data to support its FY 2000 budget request for deferred maintenance funding. During our current evaluation, we again identified inaccuracies in the NPS' deferred maintenance estimates—possibly underestimating the figures in some cases and overestimating in others. Quality data are essential to the NPS' decision making process, and unreliable data can affect its ability to achieve its mission to preserve the NPS' natural and cultural resources for current and future generations. Without reliable deferred maintenance data and standardized policies and procedures, the NPS is unable to effectively use its resources, including the substantial influx of GAOA funding, to manage its deferred maintenance. Further, unreliable deferred maintenance data can potentially affect external decisions ranging from policymaking to appropriations.

In response to our draft report, the NPS stated that it began implementing a new methodology for estimating deferred maintenance using “parametric condition assessments”¹⁹ to estimate deferred maintenance in the second quarter of FY 2022 and expects this methodology to be fully implemented at the end of FY 2024. The NPS stated that the new methodology removes the need to enter work orders for the purpose of estimating deferred maintenance from the process of managing work order completion within the FMSS. Based on the information we have received to date, it does not appear that this new methodology, on its own, addresses the ongoing risk that

¹⁸ *Deferred Maintenance, National Park Service* (Report No. 99–I–959), dated September 1999.

¹⁹ The NPS stated that scoring involves visual assessments of assets on a scale of 0 to 9 (with 9 being in “great condition,” 1 representing a “poor condition,” and 0 indicating that the system does not exist). Models within the parametric scoring tool convert the assessed condition scores into “deferred maintenance and repairs” (previously deferred maintenance) values (estimates). According to the NPS, these models were developed based on real cost data from park calculations, the current replacement value calculator, or developer modeling based on a database of current construction cost estimates for nearly every facet of a construction project, including materials, labor, storage, etc. These parametric results are combined with existing inspection data for concessionaire-occupied assets and the Federal Highway Administration-inspected assets to produce total deferred maintenance and repairs for the NPS portfolio. *Parametric Condition Assessment Guide*, dated March 2022.

the assessments may not be updated as deferred maintenance work is completed. Therefore, we believe that the NPS still faces risks in managing overdue maintenance and repairs if it does not develop and implement a process to ensure that data within the FMSS are accurate and complete.

The NPS' Deferred Maintenance Data Are Inaccurate and Unreliable

The U.S. Government Accountability Office's (GAO's) internal control standards characterize quality information as information that is current, complete, and accurate.²⁰ It also states that management should communicate policies and procedures to personnel so it can implement the control activities for their assigned responsibilities. The GAO further states that management must have quality information to make informed decisions to evaluate its performance in achieving its objectives.

Here, however, we found that the NPS' does not have such quality information and that, instead, its deferred maintenance data are inaccurate and unreliable. Specifically, the NPS did not consistently identify, enter, and classify deferred maintenance work orders or verify their accuracy—which in some cases understated and in others overstated its deferred maintenance estimates. The NPS also increased the FY 2021 deferred maintenance estimate through a 35-percent markup without sufficient documentation demonstrating whether the amount of the markup was reasonable, increasing its deferred maintenance by \$3.7 billion. These problems occurred because the NPS does not have policies or procedures that identify when to classify work orders as deferred maintenance; how to track, update, and monitor work orders; or how and when to apply the 35-percent markup.

The NPS Did Not Consistently Identify, Enter, and Classify Deferred Maintenance Work Orders

At the outset, we note that the NPS uses a broad definition²¹ for deferred maintenance that does not include a particular timeframe; in the absence of such a specified timeframe, we chose 3 years as a conservative and reasonable timeframe after which open work orders should be classified as deferred maintenance.

We found inconsistencies in how the NPS identified its deferred maintenance needs, entered its deferred maintenance work orders, and classified existing work orders as deferred maintenance in the FMSS. Some work orders that were years old were not categorized as deferred maintenance, thereby underestimating the amount of needed deferred maintenance. At the 15 parks we reviewed, we identified approximately 26,000 open work orders with estimated costs of \$371 million that were 3 years or older but that had not been classified as deferred maintenance. These work orders included necessary repairs for NPS employee housing assets

Approximately
\$2.6
billion
not included
in the NPS' deferred
maintenance
calculations.

²⁰ GAO-14-704G, *Standards for Internal Control in the Federal Government*, Principle 13.05.

²¹ See the NPS' deferred maintenance definition in the "Background" section above.

such as repairing broken smoke alarms, rehabilitating kitchens, replacing heaters and roofs, repairing leaks, and providing exit signs.

When we expanded our analysis across all NPS parks, we identified a total of approximately 214,000 work orders that were 3 years or older that were not classified as deferred maintenance—which amounted to a total of \$2.6 billion that was not included in the NPS’ deferred maintenance calculations.

We found that park personnel had varying practices relating to when to identify and enter deferred maintenance work orders or classify existing work orders as deferred maintenance. Park facility managers told us:

- Some would classify existing work orders as deferred maintenance based on the life cycle of the assets or if the work orders were delayed.
- Others would classify existing work orders as deferred maintenance after the work order had been open for 1 year.
- One park does not enter any work orders even if an asset requires maintenance if funding is not available to do so.
- Others do not have the resources or have not accurately identified or entered work orders for necessary maintenance on all assets in their parks.

These varying practices mean that the NPS has not fully defined and so cannot accurately account for the parks’ deferred maintenance needs. The NPS’ policies and procedures do not provide guidance on when park personnel should identify, enter, and classify work orders as deferred maintenance in the FMSS. Inconsistently identifying, entering, and classifying deferred maintenance work orders and failing to verify their status in the FMSS leads to inaccurate deferred maintenance estimates, which results in an incomplete picture of the NPS’ deferred maintenance needs. Without reliable data, the NPS cannot make informed decisions to manage its deferred maintenance.

Recommendations
<p>We recommend that the NPS:</p> <ol style="list-style-type: none">1. Develop and implement policies and procedures that define the circumstances and timeframe in which to enter work orders into its maintenance software system (e.g., the Facility Management Software System).2. Update current policies and procedures to clarify when to classify existing work orders as deferred maintenance in its maintenance software system (e.g., the Facility Management Software System).

The NPS Did Not Consistently Verify the Accuracy and Completeness of FMSS Data

The NPS did not verify the accuracy and completeness of FMSS data regarding deferred maintenance work orders (e.g., work order status, cost estimates, and duplicate work orders) due to inconsistent monitoring at all levels (including park, regional, and Washington Support Office). We found that the NPS did not consistently close deferred maintenance work orders in the FMSS after the work was completed even though changing the work order status to closed is the final step in the work order process. For the 15 parks we reviewed, we identified 580 open deferred maintenance work orders that included a “finished date” entered in the FMSS, suggesting that the work had been completed and that these work orders should have been closed.²² Because the work order status was not updated to “closed,” the estimated cost for deferred maintenance in the work orders was included in the NPS total deferred maintenance estimate. These work orders, if closed in the system, would lower the NPS’ deferred maintenance estimate by approximately \$86 million.

Approximately

\$364
million

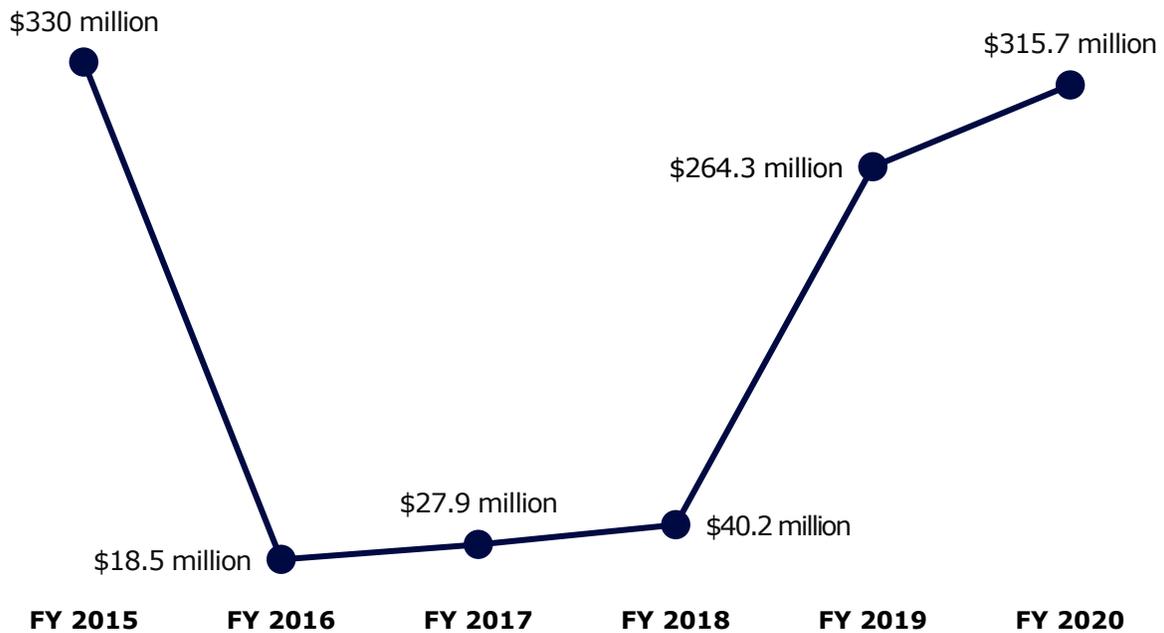
overstated
in the NPS’ deferred
maintenance cost
estimate.

When we expanded our analysis across all NPS parks, we identified a total of 3,667 open deferred maintenance work orders with a “finished date” entered in the FMSS. These work orders, if closed in the system, would lower the NPS’ deferred maintenance cost estimate by up to \$364 million.

Within the 15 parks we reviewed, we found stark differences concerning how the parks handled outdated work orders. For example, during our review of San Juan National Historic Site, we found that, between FYs 2015 and 2016, the NPS canceled all deferred maintenance work orders at the park that were more than 10 years old. As a result, the park’s deferred maintenance decreased from \$330 million in FY 2015 to \$18 million in FY 2016. This led to underestimated reporting of the park’s deferred maintenance cost estimates for several fiscal years. In FY 2017, the NPS received a congressional inquiry about its significant decrease in deferred maintenance. At the time, the NPS responded to this inquiry stating, “Old work orders with outdated cost estimates were cancelled. It was the decision of San Juan National Historical Site (NHS) staff that several older, very large work orders required full reassessment for cost and scope.” The NPS acknowledged to us that a better way to address this issue would have been to update the estimates in the individual work orders rather than cancel all older work orders at the park. As the park reentered the work orders with updated cost estimates, its deferred maintenance costs appeared to significantly increase through FY 2020 (see Figure 4).

²² We did not verify whether the NPS completed the maintenance work in the 580 work orders with a finished date in the FMSS.

**Figure 4: San Juan Historic Site Deferred Maintenance Cost Estimate Changes
FYs 2015–2020**



This instance as well as ongoing problems occurred because the NPS does not have a monitoring mechanism to ensure the accuracy and completeness of its FMSS data. Failing to monitor the FMSS data consistently across the NPS results in inaccurate and incomplete deferred maintenance reporting, and it also means that inconsistencies from different park practices are built into the system. Without reliable data, the NPS cannot make informed decisions on how to manage its deferred maintenance, improve program effectiveness and accountability, and potentially enhance decision making.

We note that one park proactively updated its deferred maintenance data in the FMSS by sorting through the status of the outdated deferred maintenance work orders to identify and close completed work orders or cancel duplicate work orders. Specifically, in FY 2019, Mesa Verde National Park conducted a one-time review and corrected its deferred maintenance work orders, thereby reducing its reported deferred maintenance costs by \$8 million (from \$76 million in FY 2018 to \$68 million in FY 2019). If the NPS developed a similar ongoing review process for deferred maintenance work orders, the NPS' calculation may more accurately reflect its current deferred maintenance.

Recommendations

We recommend that the NPS:

3. Identify and update deferred maintenance data in its maintenance software system (e.g., the Facility Management Software System) to ensure all data are accurate and complete.
4. Develop and implement a monitoring mechanism for deferred maintenance data in its maintenance software system (e.g., the Facility Management Software System) to routinely verify that deferred maintenance data are accurate and complete. This monitoring mechanism should define the roles and responsibilities for each facility management level.

The NPS' Data Quality Weaknesses Are Amplified by Its Application of a Blanket Markup

We found that the NPS added \$3.7 billion to its initial deferred maintenance estimate from the *FMSS FY 2021 Asset Inventory Summary Year-End Report* without a methodology to support this approach. The *FMSS FY 2021 Asset Inventory Summary Year-End Report* is a snapshot of the NPS' FMSS year-end data for each asset in the NPS inventory. The report includes deferred maintenance cost estimates for each asset, which is the basis for the NPS' deferred maintenance estimate calculation. The initial FY 2021 deferred maintenance calculation included in the report was \$20 billion; however, the NPS then added a blanket 35-percent markup in the report, which increased the FY 2021 deferred maintenance estimate to \$23.7 billion.

According to an October 5, 2021, internal NPS memorandum, *Changes to National Park Service Deferred Maintenance Reporting for Fiscal Year 2021*, the NPS started adding 35 percent to deferred maintenance cost estimates for all assets reported to both the Federal Real Property Profile²³ and Federal Accounting Standards Advisory Board (FASAB).²⁴ The memorandum further stated:

The NPS reports deferred maintenance for real property inventory both through the [Federal Real Property Profile] and FASAB process. The inventories and project execution add-ons applied to the deferred maintenance of those inventories in the past have differed due to reporting requirements for each method and previous decisions made by the NPS. To better align the reporting

²³ The U.S. General Services Administration (GSA) is responsible for maintaining a database of real property owned and leased by Federal agencies, collecting inventory information on the Federal Government real property holdings on an annual basis, and issuing annual *Guidance for Real Property Inventory Reporting*. The Federal Real Property Profile is the GSA's centralized and descriptive Federal real property inventory database.

²⁴ *FASAB Handbook of Federal Accounting Standards and Other Pronouncements, as Amended as of June 30, 2021*, Statement of Federal Financial Accounting Standards 42, "Deferred Maintenance and Repairs," provides measurements and reporting requirements for deferred maintenance and repairs.

moving forward, the NPS will adjust both the inventory reported and the project execution add-ons.

The memorandum further stated that the Federal Highway Administration included an additional 35 percent to account for project execution costs, consisting of 5 percent for compliance, 17 percent for design, 8 percent for construction management, and 5 percent for project management. The memorandum also stated that, because these project execution add-ons were included only for public roads and bridges in NPS units, the NPS would align reporting to add these costs to deferred maintenance for all assets.

Breakdown of 35% markup
Compliance: 5%
Design: 17%
Construction management: 8%
Project management: 5%

We identified two major concerns with the assumptions used in this approach, which call into question the validity of applying a 35-percent project execution cost to all deferred maintenance work orders. First, the NPS could not provide supporting documentation demonstrating the validity of the 35-percent project execution add-on for all NPS deferred maintenance work orders. The NPS officials we interviewed did not identify any additional rationale for the markup beyond what was cited in the memorandum. The percentage conforms with what the Federal Highway Administration uses for public road and bridge projects. Although this may be appropriate for some NPS deferred maintenance projects, adding such a significant amount to the overall balance without a methodology can lead to inaccurate cost estimates.

Second, the NPS applied this markup to all deferred maintenance included in the FY 2021 FMSS data with the assumption that all work would be completed by contractors. During interviews with NPS staff, however, we learned that NPS staff at multiple parks complete some work orders instead of contractors. For example, the New River Gorge National Park and Preserve had its NPS staff replace roofs for 13 buildings at an approximate cost of \$265,000 during FY 2020. Had the NPS applied the 35-percent markup to these work orders, the cost—and consequently, the deferred maintenance—would have been overestimated by approximately \$93,000.

The NPS added this blanket 35-percent markup to all work orders instead of individually revising its deferred maintenance work order cost estimates to accurately reflect the work that would be completed by contractors or NPS staff. This occurred because the NPS does not have processes or procedures in place to identify work orders that will be completed by NPS staff or contractors. Further, the NPS’ Park Facility Management Division told us that it could not determine if work had been or would be completed by NPS staff using the information available in the FMSS.

Federal internal control standards state that management should implement policies and procedures that contribute to processing relevant data from reliable sources into quality information within the entity’s information system. “Quality information” is information that is current, complete, and accurate. Management should use that quality information to make informed decisions and evaluate the entity’s performance in achieving its mission.²⁵ Here, however, the NPS does not have any such policies and procedures that allow collection and use

²⁵ GAO–14–704G, *Standards for Internal Control in the Federal Government*, Principle 13.05.

of quality information. To the contrary, the NPS is simply applying a blanket markup to all work orders without any attempt to determine the circumstances under which such a markup might be appropriate.²⁶

As a result, the NPS did not accurately estimate the cost of its deferred maintenance.²⁷ This issue is further complicated by the data reliability issues discussed above—that is, the blanket markup is being layered on top of information that is already unreliable. This markup accordingly contributes to an inaccurate deferred maintenance figure, which may affect internal and external stakeholders alike. Without addressing both the underlying data inaccuracies and the appropriateness of the blanket markup, the NPS cannot make informed decisions to manage its deferred maintenance.

Recommendations

We recommend that the NPS:

5. Develop and implement policies and procedures that provide guidance for appropriately estimating the cost of maintenance projects.
6. Include accurate estimates for all existing and future work orders based on the guidance developed under Recommendation 5.

The NPS Did Not Consistently Monitor, Complete, and Close Open Critical Health, Life, and Safety Work Orders

The NPS' *Business Practices: Risk Assessment Codes*, effective date April 2016, identifies five classifications²⁸ for HLS work orders and establishes timelines for their completion. Specifically, it defines "critical" HLS work orders as those that pose "immediate danger to life, health, property, or infrastructure." According to the guidance, work orders with this classification require immediate action to correct the issue or, if full remediation is not possible, implementation of an interim control measure to reduce the risk to an acceptable level until full remediation can be completed. For example, if an HLS work order identifies that a trail bridge used primarily for hiking and camping needs to be replaced, an interim control measure would be to close the bridge and temporarily relocate the trail until the NPS could replace the bridge.

²⁶ Although cost estimates are part of the work order process, the NPS told us that the initial work order cost estimates park staff enter into the FMSS do not include an additional 35 percent for project management costs. We did not verify whether or not individual parks included project execution costs in the original cost estimates.

²⁷ Our office is performing work on the NPS' GAOA construction cost estimates as part of a separate evaluation.

²⁸ The five classifications and their required response times are (1) critical—immediate, (2) serious—15 days, (3) moderate—12 months, (4) minor—2 years, and (5) negligible—5 years.

For the 15 parks we reviewed,²⁹ we identified timeliness concerns for 29 open critical HLS work orders (see Figure 5). Although all 29 open critical work orders had interim control measures in place, we found 2 were duplicate and 12 had been open for more than 5 years.

Figure 5: Open Critical HLS Work Orders by Calendar Year and Asset Type as of September 30, 2020

Asset Type	2006	2013	2014	2015	2017	2018	2019	2020	Total
Building	1	4	5	–	2	–	–	2	14
Paved Road	–	1	–	1	–	–	–	3	5
Fortification	–	–	–	–	3	1	–	–	4
Electrical System	–	–	–	–	–	–	1	–	1
Trail Bridge	–	–	–	–	–	–	2	–	2
Wastewater System	–	–	–	–	–	–	–	3	3
Total	1	5	5	1	5	1	3	8	29

For example, five open work orders designated as “critical” were related to mold in buildings. In these instances, NPS staff officially closed the buildings in 2014 as an interim control measure rather than immediately fix the issue, even though the staff designated the work orders as emergency maintenance. While an interim control measure mitigated the immediate risk, it did not address the original hazard. In addition, in these cases, the NPS was not able to use multiple buildings for their intended purpose—including visitor lodging, a coffee shop, a camp store, and a restaurant—for more than 5 years. Both the coffee shop and lodging were initially closed in 2010 when the NPS could not find concessionaires to run the properties. During the initial closures, the buildings began to deteriorate. When the NPS inspected the buildings in January 2014 it found mold. At that time, the NPS wrote an interim control measure work order to officially close the buildings; however, this resulted in larger deferred maintenance issues because the work order to remediate the mold was not immediately addressed. The coffee shop recently reopened after a long-term effort to raise nearly \$1 million with nonprofit and community funding support, which included more than \$250,000 for mold remediation.

We also noted that, even when NPS staff implemented an interim control measure instead of correcting the issue, staff may not have implemented those measures within the required response times. For example, the FMSS showed that 9 of the 29 open work orders had interim control measures that were not listed as completed for more than 5 months. According to the NPS’ *Business Practices: Risk Assessment Codes*, interim control measures require immediate action to ensure the health and safety of the public. When asked why critical work orders would remain open for years, the Park Facility Management Division Chief stated that either the data in the FMSS may be inaccurate or that once the initial concern was mitigated, the original critical

²⁹ For the 15 parks, we identified 29 critical, 116 serious, 471 moderate, 7,373 minor, and 1,012 negligible open HLS work orders.

work order would then be subject to the NPS’ annual budget process. In addition, our analysis suggests that there may be issues with the timeliness of responses regarding the other classifications of HLS work orders.

The NPS told us that all 29 critical HLS work order delays occurred because it does not have sufficient guidance for monitoring or verifying the ongoing status of HLS work orders. The NPS’ *Business Practice: Risk Assessment Codes* guidance, dated April 2016, includes a requirement to “Review and Update Assessment of Hazards Periodically.” The guidance, however, does not define how often staff should conduct reviews beyond “periodically.”

We focused on the critical classification; however, our finding regarding critical work order timeliness leads us to question whether the NPS is addressing HLS work orders with lower classification in a timely manner. Without clear guidance on interim control measure timeliness and HLS work order closure expectations, as well as policies establishing processes to ensure compliance by monitoring those timeframes, the NPS cannot ensure that it will timely complete HLS work orders or interim control measures to ensure the safety of both the public and NPS employees.

Recommendations
<p>We recommend that the NPS:</p> <ol style="list-style-type: none">7. Verify that existing Health, Life, and Safety work orders address the original hazard, are completed, and are closed.8. Develop and implement an oversight mechanism that monitors Health, Life, and Safety work orders to verify the original hazards are addressed and completed within the required timeframes.

Conclusion and Recommendations

Conclusion

The NPS manages some of the most recognizable and iconic resources in the world. The substantial increase of its deferred maintenance over the past 6 years combined with the increased visitation at the parks underscore the need for the NPS to improve its FMSS data reliability and the quality of its self-reported deferred maintenance information to align with GAO internal control standards. These needs are particularly pressing given the influx of funding intended to address this issue. The NPS also needs a methodology with sufficient documentation that demonstrates the markup amount is reasonable and describes how and when to apply additional markup costs. In addition, the NPS must strengthen its monitoring and oversight of HLS work orders to ensure critical work orders and any associated mitigation steps are completed timely. These issues compromise the NPS' ability to achieve its mission, manage its deferred maintenance, and fulfill its responsibility to ensure the safety of visitors and NPS staff.

We make eight recommendations to help the NPS increase its effectiveness in identifying and managing its deferred maintenance.

Recommendations Summary

We provided a draft of this report to the NPS for review. The NPS concurred with six recommendations and did not concur with two recommendations. Recommendations 1, 2, 3, 4, 7, and 8 are resolved; Recommendations 5 and 6 are unresolved.

In response to the report, the NPS provided additional information as well as technical comments regarding ongoing changes to its deferred maintenance estimating process. The NPS also stated that there had been a lengthy period between the time our fieldwork ended and the date when we held the exit conference for this matter, during which time the NPS made changes to its deferred maintenance reporting.

We acknowledge that the NPS provided information to us in May 2022 and continued to implement changes to its deferred maintenance estimating process in the period between that communication and our exit conference in 2023. We note, though, that it is not unusual for conditions to change between the time that fieldwork is completed and the next phase in the reporting process. We, like other OIGs, take additional information and updates into account to the extent it is appropriate. Accordingly, we have clarified some passages in our report, and we have also modified some recommendations. We did not, however, modify our overall findings, which accurately recount the state of the NPS' process at the time of our review. Moreover, as we describe below in assessing each individual recommendation in our responses to the technical comments, the various changes the NPS described are not yet fully implemented. As we have noted at various points throughout this report, we do not necessarily agree based on the information we have received that these changes will fully address the concerns we identified.

Below we summarize the NPS' response to our recommendations, as well as our comments on its response. See Appendix 2 for the full text of the NPS' response. Appendix 3 provides our response to the NPS' technical comments. Appendix 4 includes a memorandum the NPS issued after receiving our draft report. Appendix 5 lists the status of each recommendation.

We recommend that the NPS:

1. Develop and implement policies and procedures that define the circumstances and timeframe in which to enter work orders into its maintenance software system (e.g., the Facility Management Software System).

NPS Response: The NPS concurred with this recommendation and stated that, “[b]eginning in the second quarter of Fiscal Year (FY) 2022 the NPS began implementing a new methodology for determining Deferred Maintenance (DM) estimates and full implementation is planned to be completed by the end of FY 2024.” The NPS further stated that “[t]his change removes the need to enter work orders in the FMSS for the purpose of determining DM.”

OIG Comment: We consider Recommendation 1 resolved. The NPS stated that it began implementing a new methodology for conducting asset condition assessments to produce modeled deferred maintenance estimates for NPS assets. In July 2022, the NPS updated its guidance, *Desk Reference Facility Projects*, to clarify the project development and execution. This recommendation will be implemented when the NPS completes its updated process for deferred maintenance estimates.

2. Update current policies and procedures to clarify when to classify existing work orders as deferred maintenance in its maintenance software system (e.g., the Facility Management Software System).

NPS Response: The NPS did not concur with this recommendation and stated that it is “not applicable to the new method for determining DM&R [deferred maintenance and repair] estimates. However, business practice improvements on the use of work orders are in progress.” The NPS explained that, previously, deferred maintenance “was primarily calculated using the summation of work order costs,” but estimates will now be “determined through Federal Highway Administration (FHWA) estimates for assets they assess and the use of parametric condition assessments (PCA) in conjunction with the current replacement value (CRV) of an asset for other industry standard assets.” The NPS estimated that reporting using this new methodology will be fully implemented by the end of FY 2024. The NPS further stated that, “[e]ffective the first quarter of FY2023 work orders are classified based on the type of work being done” and that “[t]here is no timeframe component used in assigning the classification to a work order, and there is no [deferred maintenance] classification.”

OIG Comment: We consider Recommendation 2 resolved. Although the NPS did not concur with this recommendation, it stated that it is implementing a new process for assessing facility condition and repair through the PCA methodology. The NPS also

stated that it is in the process of transitioning from using work order data, which our report found to be unreliable, to using PCA data in conjunction with current replacement value as its basis for modeling deferred maintenance estimates. Additionally, the NPS stated that it has created new policies and procedures on using the PCA methodology to calculate “deferred maintenance and repair” estimates. We note, however, that the NPS stated that its deferred maintenance estimate still contains a portion of work orders; therefore, deferred maintenance on assets without PCAs may not be included in the deferred maintenance inventory. This recommendation will be implemented when the NPS fully integrates its new PCA methodology.

3. Identify and update deferred maintenance data in its maintenance software system (e.g., the Facility Management Software System) to ensure all data are accurate and complete.

NPS Response: The NPS did not concur with this recommendation and stated, “[d]eferred maintenance work orders are no longer used in the FMSS” and that the recommendation “is not applicable to the new method for determining [deferred maintenance and repair] estimates.” The NPS stated that it “has implemented an improved condition assessment process to provide more current, complete, consistent, and timely information on asset condition” and deferred maintenance and repair estimates and is planning to fully implement the new methodology by the end of FY 2024.

OIG Comment: We consider Recommendation 3 resolved. Although the NPS did not concur with this recommendation, it is meeting the intent of the recommendation by implementing its new PCA methodology for calculating deferred maintenance estimates and implementing tools to ensure it updates the PCAs once repairs are completed. According to new and updated policies that we reviewed, as an initial step in its new PCA methodology, each park must verify the accuracy of data currently recorded in the FMSS. Also, the NPS’ updated policy, *Desk Reference: Facility Projects*, specifically states that each park is responsible for placing project work orders in completed status, “COMP,” as the work is accomplished.

Further, after we provided our draft report, the NPS issued a memorandum to staff (see Appendix 4) advising them that the shift to the new calculation process created “data anomalies” and that “it is essential” that these data anomalies are corrected as soon as possible. The memorandum further states that the Park Facility and Management Division should identify anomalies and forward them to parks to correct; it also represents that the NPS has developed data quality tools to support parks in reviewing and correcting their own data.

To better align with the NPS’ new PCA methodology, we revised our initial recommendation to remove the “work order” references. This recommendation will be implemented when the NPS completes the process of identifying all its assets’ deferred maintenance needs through its new methodology and demonstrates that it has corrected the data anomalies created by the implementation of the new methodology.

4. Develop and implement a monitoring mechanism for deferred maintenance data in its maintenance software system (e.g., the Facility Management Software System) to routinely verify that deferred maintenance data are accurate and complete. This monitoring mechanism should define the roles and responsibilities for each facility management level.

NPS Response: The NPS concurred with this recommendation but stated that “deferred maintenance work orders are no longer used in the FMSS” and that “the recommendation is not applicable.” The NPS further stated that “a new work order classification system was implemented for tracking work orders” in the first quarter of FY 2023; it also stated that it uses an NPS-wide tool to monitor work order data quality and that, “at each level staff are aware of the responsibility to ensure data accuracy.” The NPS represented that the field for “work that is open under complete projects . . . saw an 87% reduction in errors from FY 2022 Q3 to FY2023 Q1.”

OIG Comment: We consider Recommendation 4 resolved. Although the NPS stated that the recommendation was no longer applicable, the NPS’ *Parametric Condition Assessment Guide*, dated March 2022, explains, “PCA scoring should be updated following major rehabilitation or projects to reflect new condition of the asset. . . . PCA scoring for all locations at a park should be reviewed each year for accuracy. In addition . . . a more comprehensive review should be conducted every five years to ensure data completeness and accuracy.” This suggests that there is an ongoing need to assess data accuracy. Nonetheless, to better align with the NPS’ new PCA methodology, we revised the wording of our initial recommendation.

We acknowledge that the policy guidance that parks should review the PCA each year for accuracy partially satisfies the recommendation. However, this guidance does not, on its own, address the ongoing risk that the PCAs will not be updated as deferred maintenance work is completed—i.e., an issue similar to that we identified with work orders that were not closed when work was completed. During a followup meeting with the NPS, officials stated that they are working on a tool that will allow them to reconcile data for completed deferred maintenance work with the information in the PCA. Accordingly, this recommendation will be implemented when the NPS demonstrates that it has completed the PCAs on all its assets and implemented the data quality tool across all work orders, regardless of asset classification.

5. Develop and implement policies and procedures that provide guidance for appropriately estimating the cost of maintenance projects.

NPS Response: The NPS concurred with this recommendation and stated that it has already been implemented, as its Denver Service Center “maintains a Cost Estimating Requirements Handbook that outlines the requirements for estimating costs at various stages of project development” and is “used for the creation of estimates for all projects including maintenance.” The NPS stated that it applies a “standard” 35-percent markup to estimates across the deferred maintenance portfolio but acknowledged that the “need and amount for these project execution costs varies” and that “[s]ome projects may require

more than the 35% markup allocation while others require less, resulting in an overall average estimate of mark-up.” The NPS also stated that the execution method—in-house or contracted—is determined later in the project development process and that “[t]hese are considerations that cannot be anticipated at the time of assessing conditions and estimating DM&R.” The NPS stated that the markup is consistent with the DOI Acquisition, Arts, and Asset Policy 183, *DOI Policy on Standardizing Cost Estimating Allowance for Reporting of Construction Cost in the Asset Management Program*, issued in July 2022.

OIG Comment: We consider Recommendation 5 unresolved. This recommendation is intended to prompt the NPS to develop an accurate methodology for estimating maintenance project costs. The guidance the NPS cited does not refer to a standard 35-percent markup. Accordingly, although the NPS has developed a policy to provide guidance for estimating maintenance project costs, it has still been unable to provide support fully explaining how it determined that a standard 35-percent markup on all NPS deferred maintenance is reasonable. The NPS stated in its response that “[s]ome projects may require more than the 35% allocation while others require less, resulting in an overall average estimate of mark-up.” Again, however, the NPS did not provide documentation to support this statement.

We reviewed the *Cost Estimating Requirements Handbook*, which the NPS stated it used to estimate costs for all projects. It included a lengthy discussion providing guidance on how to estimate project costs; in particular, this handbook provides detailed guidance on “estimate mark-ups,” including for factors related to location, remoteness, Federal wages, taxes, and design contingencies. It did not, however, include a reference to adding a standard 35-percent markup on all construction and repair costs.

We also reviewed the DOI Acquisition, Arts, and Asset Policy 183, *DOI Policy on Standardizing Cost Estimating Allowance for Reporting of Construction Cost in the Asset Management Program*, issued in July 2022. This document also has no reference to a standard markup of 35 percent. Rather, the policy included “standardized allowances” for various construction-related costs, that, if all were applied, would equate to a 208-percent markup. The NPS did not provide information correlating the *Cost Estimating Handbook* to DOI Acquisition, Arts, and Asset Policy 183, or specifically how it determined that 35 percent was reasonable. We note that it appears that, if NPS staff use the handbook to conduct cost estimates, the blanket 35 percent could also include duplicative markups—especially considering that the NPS’ new methodology for estimating deferred maintenance uses modeling calculations as opposed to actual repair costs.

This recommendation will be implemented when the NPS provides documentation demonstrating that any blanket markups applied to the deferred maintenance balance are supported by an analysis showing the markups in fact apply to the NPS and specifically to work performed by contractors, rather than applying markups to all deferred maintenance projects.

6. Include accurate estimates for all existing and future work orders based on the guidance developed under Recommendation 5.

NPS Response: The NPS concurred with this recommendation and stated:

Project work order costs are estimated using the guidelines in the Cost Estimating Requirements Handbook. The NPS does not fully scope and develop projects for all maintenance needs and deficiency corrections, rather projects are targeted for development based on timing criticality, priority, and available funding. As selected projects are developed, more accurate estimates are created to address the actual scope of work that will be undertaken. To employ staff resources most effectively, the NPS does not develop detailed estimates for all necessary work, but rather work that is likely to be moved forward in a project or included in project funding requests.

OIG Comment: We consider Recommendation 6 unresolved, largely for the reasons articulated with respect to Recommendation 5. This recommendation will be implemented when the NPS implements guidance on the development of reasonable cost estimates and updates existing and future deferred maintenance estimates.

7. Verify that existing Health, Life, and Safety work orders address the original hazard, are completed, and are closed.

NPS Response: The NPS concurred with this recommendation and stated that it “acknowledges the need for improved project closeout, including the work order closeout processes.” The NPS stated that it is implementing changes to improve shortcomings it identified through its Project revAMP³⁰ and that it plans to fully implement the changes by the end of FY 2024.

OIG Comment: We consider Recommendation 7 resolved. This recommendation will be implemented when the NPS completes its Project revAMP and verifies that HLS work orders address the original hazard, are completed, and are closed.

³⁰ “Project revAMP” is the NPS’ coordinated effort to improve its facility management by evaluating current business processes, identifying gaps, and moving toward an improved future state.

8. Develop and implement an oversight mechanism that monitors Health, Life, and Safety work orders to verify the original hazards are addressed and completed within the required timeframes.

NPS Response: The NPS concurred with this recommendation and stated that it “acknowledges the need for an improved oversight mechanism related to Health, Life, and Safety work orders.” The NPS estimates that it will implement this mechanism by the end of FY 2024.

OIG Comment: We consider Recommendation 8 resolved. We will consider the recommendation implemented when the NPS develops and implements an oversight mechanism that monitors HLS work orders to verify the original hazards are addressed and completed within the required timeframes.

Appendix 1: Scope and Methodology

Scope

We evaluated how the National Park Service (NPS) identified and managed deferred maintenance from fiscal year (FY) 2016 to FY 2021.

We reviewed NPS facility project and asset management and maintenance policies and procedures. We also reviewed the NPS and individual park units' total assets, deferred maintenance assets, and deferred maintenance dollar amounts for FY 2016 through FY 2021 as well as work orders for FY 2020, including those identified as Health, Life, and Safety work orders. We did not trace data to source records or review the NPS' Project Management Information System, projects, and prioritization processes.

Because of the COVID-19 pandemic, we could not complete our evaluation onsite. We gathered data remotely and communicated with NPS personnel via email, telephone, and video meetings. As a result, we could not perform normal procedures for this evaluation. Therefore, the audit team relied on alternative evidence provided by NPS personnel that was determined to be sufficient and appropriate to support our conclusions.

Methodology

We conducted our evaluation in accordance with the *Quality Standards for Inspection and Evaluation* as put forth by the Council of the Inspectors General on Integrity and Efficiency. We believe that the work performed provides a reasonable basis for our conclusions and recommendations.

To accomplish our objective, we:

- Gathered and reviewed background information about the NPS' Capital Investment Strategy and Facility Management programs related to asset management.
- Obtained and reviewed applicable laws and regulations.
- Reviewed NPS guidance related to asset management.
- Reviewed NPS policies and procedures guiding Facility Management Software System (FMSS) and Health, Life, and Safety work orders.
- Analyzed the NPS' deferred maintenance *Asset Inventory Summary by State and Park* reports for FY 2016 through FY 2021.
- Identified and interviewed NPS staff at the park, regional, and national levels.

- Interviewed the NPS' Park Facility Management Division and FMSS personnel about the NPS' deferred maintenance.
- Analyzed the NPS' FY 2020 work order report data for deferred maintenance, which included work order data for prior fiscal years.
- Reviewed NPS budget documentation and requirements.

We relied on computer-generated data the NPS provided from its FMSS from FY 2016 through FY 2021. The data provided corroborating evidence to our interviews supporting our objective. In addition, the data demonstrated the materiality of the findings.

Based on the results of our initial assessments, we judgmentally selected 15 park units for interviews and data reviews to ensure that each region was represented. We identified a population of 397 park units (75,624 total assets) from the NPS' *FMSS FY 2020 Asset Inventory Summary Year-End Report*. We stratified the park units we identified into 3 tiers based on total assets: 1–99 (249 park units), 100–499 (111 park units), and 500–2823 (37 park units). We used the total assets for these tiers due to their overall consistency from FY 2016 (75,604) through FY 2020 (75,624). We judgmentally determined to select 5 park units from each tier (largest to smallest) with at least 1 park from each region for a total of 15 park units.

We obtained, analyzed, and tested FMSS FY 2020 work order data for the 15 park units we selected. We assessed the reliability of the data by (1) performing testing, (2) reviewing existing information about the data and the system that produced them, and (3) interviewing NPS officials knowledgeable about the data. We determined that the data were sufficient and appropriate for the purposes of this report.

Our sample selections were not generated using statistical sampling, and therefore we did not project the results of our tests to the total population. However, we later used data from the entire population totals as a comparison to the selected sample.

Appendix 2: Responses to Draft Report

The National Park Service's response to our draft report follows on page 31.



United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, NW
Washington, DC 20240

10.A (2420-PFMD)

Memorandum

To: Kathleen Sedney
Assistant Inspector General for Audits, Inspections and Evaluations

From: Charles F. Sams III
Director, National Park Service

Charles F. Sams III 2023.04.06
11:04:02 -04'00'

Subject: NPS Response to Draft Evaluation Report - *The National Park Service (NPS) Faces Challenges Managing Its Deferred Maintenance* – (Report No. 2020-CR-066)

I am writing in response to the Draft Evaluation Report- The National Park Service (NPS) Faces Challenges Managing Its Deferred Maintenance (Report No. 202-CR-066).

The NPS initiated Project revAMP in September of 2017 to streamline the NPS asset management by evaluating business processes, identifying gaps, and conducting business more efficiently and consistently across the organization. This internal evaluation identified challenges administering and maintaining asset management data, including data inaccuracy and inconsistency and laborious and costly processes. The internal evaluation also resulted in recommendations to improve the reliability, consistency, and timeliness of asset management information while streamlining the workload associated with maintaining such information.

This Office of Inspector General (OIG) engagement (OIG 2020 CR-066) started in 2020, during the NPS implementation of revAMP asset management process improvements. The NPS informed the OIG of pending changes which impacted condition assessment and Deferred Maintenance and Repairs (DM&R) reporting processes and provided updates at different points throughout the review. In March of 2022, the NPS responded to multiple notices of potential findings and recommendations, reasserting plans to proceed with improvements and seeking changes to draft recommendations which were being addressed by the revAMP implementation. For your reference, the revAMP materials made available to the OIG team are posted at this link: [OIG 2020-CR-066 Supplementary Information](#)

In February of 2023, the OIG contacted the NPS to hold an exit conference for the engagement and to share draft final recommendations. During this almost yearlong gap in communication from the OIG, the NPS successfully implemented planned changes to the methodology for estimating DM&R, including releasing new estimates to Congress and the public with the roll-out of the fiscal year 2023 President's Budget.

The draft OIG report asserts the NPS faces challenges managing deferred maintenance but lacks a discussion on the root causes for the backlog of repair needs, including growing construction costs and insufficient funding to care for NPS assets. The NPS estimates that more than one billion dollars is needed annually for preventative and recurring maintenance and component renewal activities just to keep the portfolio of assets at a steady state. The report focuses on data management and administration; however, it fails to acknowledge improvements NPS has made to obtain more complete, timely, and consistent estimates of facility condition that can be used in identifying needs and targeting investments. Though the NPS had identified and acknowledged many of the issues and data management challenges discussed in the OIG's draft report, and appreciates the OIG team's effort and professionalism, the lack of consideration for the implementation of planned improvements during the engagement period has largely resulted in a set of conclusions and recommendations that are no longer valid nor relevant in the context described within the report. The NPS believes the intent of many of the recommendations has been met by improvements which have been implemented or are actively being implemented. Please find responses to the specific recommendations in Attachment 1.

The NPS is also concerned about the portrayal of the 35% project execution mark-up in the report. The NPS has a portfolio of over 75,000 assets and limited resources to care for these assets. It is neither practical nor efficient to complete project scoping and create individual project level estimates to correct all condition deficiencies. In estimating DM&R for the entire portfolio, the NPS applies industry standards for consistency and completeness. The NPS shared information with the OIG on the standard percentages for each type of project execution cost and explained how the 35% standard mark-up is used in estimating the DM&R and then refined on a project-by-project basis as projects are funded, scoped, designed, and executed. Additionally, the 35% project execution mark-up is mandated across all bureaus by the Department of the Interior Acquisition, Arts, and Asset Policy (DOI-AAAP) 183: DOI Policy on Standardizing Cost Estimating Allowance (Attachment 2). The NPS has included additional concerns and inaccuracies found in the report in Attachment 3.

To maximize the integrity and relevance of the report, the NPS would like to continue to collaborate with the OIG to better frame maintenance challenges and the implementation of asset management data improvements, develop a more accurate report title, review and correct inaccuracies in the draft report, and close out any recommendations which have already been accomplished before the report is issued.

If you have questions or require additional information and to schedule further discussions, please contact Michael Caldwell, Associate Director, Park Planning, Facilities, and Lands, at [REDACTED]@nps.gov or [REDACTED], or Jennifer Madello, Division Manager, Park Facility Management Division, [REDACTED]@nps.gov or [REDACTED].

Attachments (3)

NPS Response to Recommendations in Draft Evaluation Report - *The National Park Service (NPS) Faces Challenges Managing Its Deferred Maintenance* – (Report No. 2020-CR-066)

NPS concurs with recommendations 1, 4, 7, 8; and non-concurs with recommendations 2 and 3; and has implemented recommendations 5 and 6.

The OIG issued eight recommendations to the NPS as part of its overall findings that applies to NPS:

Recommendation #1: Develop and implement policies and procedures that define the circumstances and timeframe in which to enter work orders in the Facility Management Software System (FMSS).

Concur – Implementation in progress

Beginning in the second quarter of Fiscal Year (FY) 2022 the NPS began implementing a new methodology for determining Deferred Maintenance (DM) estimates and full implementation is planned to be completed by the end of FY 2024. This change removes the need to enter work orders in the FMSS for the purpose of determining DM. Work orders will be used to define the scope of work for requesting project funding and are created using the guidance in the [Desk Reference: Facility Projects](#).

Recommendation #2- Update current policies and procedures to clarify when to classify existing work orders as deferred maintenance in the Facility Management Software System.

Non-Concur – This recommendation is not applicable to the new method for determining DM&R estimates. However, business practice improvements on the use of work orders are in progress

Beginning in the second quarter of Fiscal Year (FY) 2022 the NPS began implementing a new methodology for determining Deferred Maintenance (DM) estimates. This change was conveyed to the Department of the Interior (DOI) in March of 2022 and the DOI concurred (memo attached). The terminology was also changed to Deferred Maintenance and Repairs (DM&R). While DM was primarily calculated using the summation of work order costs, DM&R estimates are now determined through Federal Highway Administration (FHWA) estimates for assets they assess and the use of parametric condition assessments (PCA) in conjunction with the current replacement value (CRV) of an asset for other industry standard assets. By the end of FY 2024 all DM&R reporting is planned to be accomplished by this new methodology.

Effective the first quarter of FY 2023 work orders are classified based on the type of work being done, i.e., maintenance, recapitalization, alteration, replacement, new construction, or divestiture aligned with DOI Investment Categories (policy attached). There is no timeframe component used in assigning the classification to a work order, and there is no DM classification.

Recommendation #3- Identify and update deferred maintenance work order data in the Facility Management Software System to ensure all data are accurate and complete (e.g., work order status, cost estimates, and duplicate work orders).

Non-Concur – Deferred maintenance work orders are no longer used in the FMSS. This recommendation is not applicable to the new method for determining DM&R estimates.

One of the main drivers in the NPS decision to move to reporting DM&R through means other than work orders was the tremendous level of resources needed to create and maintain data for over 75,000 assets primarily for the estimation of DM. DM work orders are no longer created in FMSS.

The NPS has implemented an improved condition assessment process to provide more current, complete, consistent, and timely information on asset condition and Deferred Maintenance and Repairs (DM&R) estimates across the portfolio. The NPS is planning to have the revised methodology fully implemented by the end of FY 2024.

Recommendation #4- Develop and implement a monitoring mechanism for deferred maintenance work orders in the Facility Management Software System to routinely verify the work order data are accurate and complete (e.g., work order status, cost estimates, and duplicates work orders). This monitoring mechanism should define the roles, responsibilities, and communication requirements for each facility management level.

Concur - Deferred maintenance work orders are no longer used in the FMSS. This recommendation is not applicable to the new method for determining DM&R estimates. Suggest change to recommendation language to focus on project work orders rather than DM work orders.

As of the first quarter of FY 2023, a new work order classification system was implemented for tracking work orders. Work orders are now classified based on the type of work being done, i.e., maintenance, recapitalization, alteration, replacement, new construction, or divestiture.

Work orders are now primarily used during the project development process. The NPS already uses a servicewide tool to monitor work order data quality. This tool, updated in September of FY 2022, tracks the completeness of several different fields relevant to work orders. One of these is work that is open under complete projects, which saw an 87% reduction in errors from FY 2022 Q3 to FY 2023 Q1. The tool is available to all levels of management and at each level staff are aware of the responsibility to ensure data accuracy.

Recommendation #5- Develop and implement policies and procedures that provide guidance for appropriately estimating the cost of maintenance projects.

Concur - Implemented

The NPS Denver Service Center (DSC) maintains a [Cost Estimating Requirements Handbook](#) that outlines the requirements for estimating costs at various stages of project development. This guidance is used for the creation of estimates for all projects including maintenance.

To meet Federal Accounting Standards Advisory Board (FASAB) requirements and to provide a baseline understanding of asset condition and needs for repair, the NPS performs periodic condition assessments and calculates DM&R estimates for all assets. The NPS does not fully scope and develop projects to correct all condition deficiencies identified during this process, rather projects are targeted for development based on timing criticality, priority, and available funding.

The standard 35% project execution mark-up is applied to estimates for DM&R across the portfolio. Components of the project execution mark-up include compliance, design, construction management, and project management. The need and amount for these project execution costs varies by project, based on factors such as scale, complexity, and the natural and cultural resources potentially impacted. While the cost for each element for a particular project may be greater or less than the standard mark-up percentage, this is a good representation across the portfolio. Some projects may require more than the 35% markup allocation while others require less, resulting in an overall average estimate of mark-up. This also reduces the burden on parks to predict every cost that may occur during a project's lifetime.

Determining project execution method- i.e., whether work will be completed in-house or by contracting- at the time of performing condition assessments and estimating DM&R across a portfolio of this size is neither effective nor efficient. The execution method is determined later in the project development process. There are many factors that contribute to determining the execution method, including additional information that is gathered during the scoping and design phase of a project, park staff capacity and skill set at the time of construction, and construction schedule constraints. These are considerations that cannot be anticipated at the time of assessing conditions and estimating DM&R.

Creating an additional requirement for parks to anticipate how work will be accomplished and record that in the Facility Management Software System will increase the workload on park staff and would not provide quality information to internal or external part the portfolio. During project formulation in the Project Management Information System, mark-ups are applied to project estimates based on needs for individual projects.

This mark-up percentage is consistent with the Department of Interior Acquisition, Arts, and Asset Policy (DOI-AAAP) 183: DOI Policy on Standardizing Cost Estimating Allowance that was issued on 7/22/2022.

Recommendation #6- Include accurate estimates for all existing and future work orders based on the guidance developed under Recommendation 5.

Concur – Implemented. Not all work orders are included in planned, funded, or active projects.

Project work order costs are estimated using the guidelines in the [Cost Estimating Requirements Handbook](#). The NPS does not fully scope and develop projects for all maintenance needs and deficiency corrections, rather projects are targeted for development based on timing criticality, priority, and available funding. As selected projects are developed, more accurate estimates are created to address the actual scope of work that will be undertaken. To employ staff resources most effectively, the NPS does not develop detailed estimates for all necessary work, but rather work that is likely to be moved forward in a project or included in project funding requests.

Recommendation #7- Verify that existing Health, Life, and Safety work orders address the original hazards, are completed, and are closed.

Concur

The NPS agrees with the recommendation and acknowledges the need for improved project closeout, including the work order closeout processes. The NPS initiated Project revAMP in 2017 to evaluate asset management business practices service wide and to develop comprehensive recommendations across a variety of systems, business practices, policies, and procedures to holistically improve asset management and reduce the burden on field staff. The revAMP rapid improvement events found the process for facility project closeout was inefficient and ineffective and work order management was time consuming and burdensome. In October 2019, the revAMP team met with the NPS Office of the Comptroller to identify shortcomings of the project closeout process and develop recommendations to improve this process. The kickoff of these changes began in November 2020. The NPS is still in the process of implementing these changes and plans to fully implement them by the end of FY 2024.

Recommendation #8- Develop and implement an oversight mechanism that monitors Health, Life, and Safety work orders to verify the original hazards are addressed and completed within the required timeframes.

Concur

The NPS agrees with the recommendation and acknowledges the need for an improved oversight mechanism related to Health, Life, and Safety work orders. Implementation of this mechanism is planned by the end of FY 2024.

Department of the Interior Acquisition, Arts, and Asset Policy (DOI-AAAP)

Title	DOI Policy on Standardizing Cost Estimating Allowances for Reporting of Construction Costs in the Asset Management Program
Reference Number	0183
Version Number	1
Function(s)	Real Property
Point of Contact	Reif, Aron R, [Alternate POC]
Source of this Requirement	Executive Order 13327 (EO) on Federal Real Property Asset Management
Regulatory Reference	N/A

Version Detail

The table below describes the version history of this policy.

Version Number	Date	Author	Description of update
01	Date of Signature	Reif, Aron	This policy updates a portion of the 2008 Departmental Policy on Deferred Maintenance, Current Replacement Value and Facility Condition Index in Life-Cycle Cost Management.

Purpose:

This policy updates guidance on standardizing the construction cost estimating markups for reporting purposes.

Scope:

This policy applies to real property as defined in [DOI-AAAP- 0120, Classifying Property, Plant, and Equipment \(PP&E\)](#). For a comprehensive list of all PP&E policies, please visit the following link: [DOI Acquisition, Arts, and Asset Policy \(DOI-AAAP\) Portal](#).

Effective date:

This policy is effective upon signature and is to be applied prospectively.

Background:

The purpose of this Policy is to update the direction previously provided in the Department of the Interior (DOI) 2008 Policy on Deferred Maintenance, Current Replacement Value and Facility Condition Index in Life-Cycle Cost Management by providing guidance to standardize the methodology used in calculating the cost estimates reported in the Federal Real Property Profile (FRPP) and for other reporting. This Policy also supports previous guidance and tools issued to implement the DOI

Asset Management Plan (AMP) and Executive Order (EO) 13327 on Federal Real Property Asset Management. This Policy will be incorporated into the broader revision of the 2008 policy elements in the near future.

Action:

To ensure that the Department is reporting estimates for construction-related requirements in a consistent manner across all bureaus and offices (collectively referred to here as bureaus), the following standardized allowances shall be used when project planning and design data are insufficient to support a site-specific estimate and current replacement value (CRV). The standard allowances are for representing construction-related costs and current replacement values reported at an aggregate level and are not intended to be used as a substitute for the allowances representing project-specific planning, design, and cost data:

Allowance	Title	Description
n/a	Base Cost	Labor, Materials, Tools, Equipment, etc., necessary to perform the task
15%	Mobilization (M)	Permits, Performance Bond, Commissioning, and other general conditions that may apply (scheduling, submittals, equipment rental, cleaning, etc.).
20%	Design Contingency (DC)	This mark-up relates to the accuracy of the estimate and completeness of the design/construction documents. At the preliminary stages of planning and design it is very difficult to determine the complete scope of the project in detail, therefore the design contingency is set at a high percentage.
25%	General and Administrative (G&A)	Expenses not directly related to the construction of a project, but vital to the contractor's business operations, including profit and overhead.
173%	Total Net Construction (NET)	= Base Cost * M * DC * G&A
18%	Field Overhead (FO)	Construction Supervision, including Project Management, and NEPA/Section 106 Compliance.
17%	Project Design (PD)	Pre-design planning, engineering design, and supplemental services costs. Also includes initial scoping trip(s) reporting; preparation of contracts; development of schematic alternative sketches; preparation of plans, design specifications, and cost estimates for schematic designs; workshop to evaluate and select preferred alternative; and color renderings or other materials necessary to present the design for public or management review and approval.
208%	Total Markup	= NET + FO + PD

Other Possible Additional Factors, which may be applied in different levels of the cost build up.		
Varies	Remoteness	Dependent upon the additional costs to transport materials and supplies to the job site (e.g., mule train, barges, helicopter, etc.).
0-100%	Historic	Where preservation type work is involved or hand-building replacement materials/'historic fabric'.

These standardized allowances are to be used for reporting the estimated costs of future projects in a pre-design stage and not yet planned or scheduled. Once the preliminary planning commences, it is expected that costs based on engineering expertise, design data, and site-specific factors will be substituted for these nationally-averaged, standardized cost factors to develop more detailed and accurate project plans and cost estimates.

The following references apply to this policy:

- [Executive Order 13327, Federal Real Property Asset Management](#)
- Policy on Deferred Maintenance, Current Replacement Value and Facility Condition Index in Life-Cycle Cost Management (2008)

Approval Signature:

7/27/2022

X Megan Olsen

Megan Olsen
Director, Office of Acquisition and Property Ma...
Signed by: MEGAN OLSEN

Appendix to NPS Draft Response to the OIG Evaluation Report

Background

The Office of the Inspector General (OIG) evaluated the National Park Service (NPS) processes for identifying and managing deferred maintenance (DM). The OIG reviewed NPS data as of the end of Fiscal Year (FY) 2021 and prepared a report highlighting key findings and recommendations. The NPS has reviewed and carefully considered the OIG findings and recommendations.

The NPS has engaged in a multi-year effort to work with stakeholders, evaluate existing practices, identify asset management pain points, and develop process improvements. In FY 2022 the NPS began implementing associated changes to DM&R reporting. These changes directly respond to concerns highlighted in the OIG report. The NPS has prepared Table 1 with NPS responses to OIG key findings and concerns; where applicable the NPS has included information on the process improvements the NPS is implementing to address the identified concerns.

Table 1: OIG Identified Concern and NPS Response

#	Reference	OIG Statement	Drafted Response	Relevant Recommendation
1	Page 1, Paragraph 2	<i>We found that the NPS was unable to effectively identify and manage its deferred maintenance, due to inaccurate and unreliable data in the NPS' deferred maintenance system</i>	The NPS does not have a "deferred maintenance system" but rather uses the Facility Management Software System (FMSS) to capture and track NPS maintenance needs. Consider revising this sentence to: "We found that the NPS was unable to effectively identify and manage its deferred maintenance, in large part due to inaccurate and unreliable work order data in the Facility Management Software System (FMSS)".	#1 – Concur #2 – Non-concur #3 – Non-concur #4 – Concur #5 – Implemented #6 – Implemented
2	Page 1, Paragraph 2	<i>For example, we identified approximately 214,000 work orders that were 3 years or older that were not classified as deferred maintenance, resulting in a potential \$2.6 billion underestimation of the NPS' deferred maintenance.</i>	Prior to FY 2022, NPS park staff created work orders to track maintenance needs and calculate DM for reporting purposes. The NPS recognized that tracking work in this way could lead to inconsistent management of work order data and work orders might remain open or miscategorized, as identified by the OIG in this finding. In FY 2022, the NPS implemented the Parametric Condition Assessment (PCA) methodology to calculate Deferred Maintenance & Repairs (DM&R). The updated methodology results in more consistent, timely, and comprehensive capture of DM&R needs across the portfolio, thus improving data reliability. PCAs allow parks to assess facility condition rapidly and consistently, without the need for the creation and management of work orders. Going forward, work orders are instead used only to track work necessary for projects. With the move to PCAs, parks will not have to continually monitor and update work orders to drive DM&R reporting. The updated assessment process is removed	#3 - Non-concur

			from the work order creation process, such that the NPS can holistically track asset condition deficiencies across the portfolio, regardless of whether a given asset has any planned or funded project work.	
3	Page 1, Paragraph 2	<i>We found, however, that there was not sufficient documentation demonstrating whether the amount of the markup was reasonable. We also found that the NPS' broad application of the markup may lead to inaccurate estimates depending on whether work is completed by staff or contractors.</i>	<p>In November 2020, DOI formed an Investment Category Review Project Team. It became clear that not all bureaus were including a project execution mark-up in DM estimates (NPS was among the minority). In January of 2021 recommendations from the group were accepted, including that going forward DOI would develop a standard mark-up for all bureaus to use. The DOI has since issued guidance (attached) on the standard mark-ups to be included in project estimates for all bureaus.</p> <p>With the DOI recommendation that bureaus apply standard mark-ups, in FY 2021 the NPS implemented project execution mark-ups across the full portfolio when reporting DM to FASAB and FRPP. This made reporting consistent across the portfolio, as a 35% mark-up was already applied by Federal Highways (FHWA) for NPS transportation assets. As of FY 2021 NPS reporting of the project execution mark-up is consistent across the entire facility portfolio and in line with the standard percentages included in DOI Policy. The project execution mark-up includes:</p> <ul style="list-style-type: none"> - 5% compliance - 17% design - 8% construction management - 5% project management <p>Reference: memo_Changes to NPS Deferred Maintenance Reporting for FY 2021.pdf and DOI-AAAP-0183, v01.docx</p>	#5 - Implemented
4	Page 1, Paragraph 3	<i>For example, a series of critical work orders related to mold found in multiple buildings at an NPS park. The buildings were deemed unsafe to occupy and were closed in 2014 as an interim control measure. The mold, however, was not addressed, resulting in larger deferred maintenance costs and an extended lack of public access to the buildings. These issues occurred as a result of a lack of guidance for monitoring or verifying the ongoing status of critical work orders</i>	There is no evidence to suggest that the long term remediation was put off because of work order quality. The building was not in use, allaying any health, life, safety concerns, and the closure was documented as an interim measure appropriately. The report does not cite why the longer term repair was delayed.	#5 - Implemented

5	Page 2, Paragraph 1	<i>However, the NPS has struggled to keep up with its growing maintenance needs, and its self-identified deferred maintenance has nearly doubled since FY 2016 despite its number of assets remaining relatively unchanged.</i>	<p>There are several reasons DM has increased:</p> <ol style="list-style-type: none"> 1. The 35% markup was applied to account for additional costs needed to execute projects (e.g., project management). 2. Traditionally, there has been a year over year gap between the Operations and Maintenance (O&M) funding available and the funding needed to support scheduled annual maintenance needs. This gap leads to servicewide portfolio deterioration and an increase in the DM backlog. 3. Inflation has led to a significant rise in the cost of construction and maintenance work, which increases the cost for NPS to carry out work and raises the DM number. 	#3 - Non-concur
6	Page 2, Paragraph 2	<i>Particularly given the influx of funding from the Great American Outdoors Act (up to \$1.3 billion per fiscal year for 5 years through FY 2025) and the Inflation Reduction Act (up to \$200 million through FY 2026), the NPS must have an accurate calculation of its deferred maintenance needs to plan and prioritize work.</i>	<p>As described previously above, the NPS has implemented a new methodology for capturing and calculating DM. The updated methodology captures NPS portfolio repair needs more consistently, timely, and comprehensively, improving the data available for planning and prioritizing work. This change was conveyed to the Department of the Interior (DOI) in March of 2022 and the DOI concurred.</p> <p>Additionally, there is strict criteria for how projects are selected to receive GAOA funding. GAOA's main objective, and a key criterion in project selection is addressing DM. Other factors involved in project selection include readiness to execute, large project size, geographic distribution of funding, and alignment with DOI goals (e.g., accessibility, climate change)</p> <p>Reference: AMP - memo_FY2022 NPS Request for Concurrence of Accounting and Reporting Methodolgy_20220308 (PFM concurrence) (1).pdf</p>	#1 – Concur
7	Page 3, Paragraph 2	<p><i>An asset is real or personal property the NPS tracks and manages.</i></p> <p><i>Assets may also be movable items, such as vehicles and equipment.</i></p>	This is incorrect. Personal property and moveable items, such as vehicles and equipment, are not assets, are not tracked in our inventory, and therefore do not contribute to DM.	NA
8	Page 5, Paragraph 1	<i>The NPS also reported that the FY 2021 increase was due to a change in how it estimates deferred maintenance costs</i>	There are several factors that may cause an increase in year over year NPS DM. Consider revising to: “The NPS also reported that the FY 2021 increase was in part due to a change in how it estimates deferred maintenance costs.”	# 3 - Non-concur

9	Page 5, Paragraph 1	<i>The addition of the 35-percent markup increased the NPS' FY 2021 deferred maintenance by \$3.7 billion, resulting in a 59.7-percent increase over FY 2020</i>	<p>The 35% mark-up is not the sole reason that DM increased, and it cannot be said that the total increase is a result of the markup. The sentence as written is misleading and inaccurate.</p> <p>The DM for assets in active status:</p> <p>FY20 YE: \$14,867,410,728 FY21 YE: \$21,831,069,988 This is a ~47% increase between FY20 and FY21 year-end.</p>	#5 - Implemented
10	Page 6, Paragraph 5	<i>Otherwise, during the annual budgeting process, park staff prioritize work orders that can be completed in-house or bundle work orders (which can include those classified as deferred maintenance) into projects that need contractor technical expertise or additional funding resources. The bundled work orders are sent to the NPS Regional Facility Management staff for prioritization and funding authorization</i>	Parks create work orders regardless of how work will be completed. Work orders are bundled into projects depending on fund source requirements, not project execution method. Determination of project execution is a complex process that can be adjusted based on many factors such as park resources or technical expertise and is subject to change up until the start of a project.	#1 - Concur
11	Page 7, Paragraph 2	<i>According to the Park Facility Management Division Chief, in FY 2020, the NPS began implementing a new asset condition assessment process that allows parks to quickly assess the condition of each asset. This new process, however, will not be integrated into the FMSS until FY 2023</i>	In FY 2022, the changes to the condition assessment process that were begun in FY 2020 were incorporated into DM&R reporting and integrated into FMSS. The updated DM&R numbers were released publicly with the FY 2023 President's Budget.	#1 - Concur
13	Page 9, Paragraph 2	<i>We emphasize that these difficulties are long standing, and the NPS has struggled to manage its deferred maintenance for at least two decades.</i>	DM has continued to grow within the NPS over the years due to gaps in available maintenance funding compared to on-going annual maintenance requirements. DM values in the FMSS based on work orders were at times inconsistent due to the nature of parks updating and changing work orders to identify maintenance requirements. In part due to this, the NPS shifted to a new DM&R methodology that will help maintain more consistent data in the system. This is not a fair statement as the OIG did not look at all years during that 20-year period. Suggest striking this sentence or modifying it.	#1 – Concur #3 - Non-concur
14	Page 9, Paragraph 2	<i>Without reliable deferred maintenance data and standardized policies and procedures, the NPS is unable to effectively use its resources, including the substantial influx of GAOA funding, to manage its deferred maintenance.</i>	The NPS places great importance on tracking the portfolio DM needs to inform decision making, prioritize resources, and report accurately to stakeholders. The NPS went through a multi-year effort to review and improve the process for tracking the portfolio DM needs. This effort and the move to PCAs to track portfolio maintenance needs was implemented for the bulk of the NPS portfolio in FY 2022 and is being further rolled out to the rest of the portfolio by the end of FY 2024. This change to PCAs addresses the challenge of maintaining the work order system	#3 - Non-concur

			and more comprehensively and holistically tracks portfolio maintenance.	
15	Page 10, Paragraph 1	<i>The NPS also increased the FY 2021 deferred maintenance estimate through a 35-percent markup without sufficient documentation demonstrating whether the amount of the markup was reasonable, increasing its deferred maintenance by \$3.7 billion.</i>	See response to #3 above regarding decision to implement a 35 percent markup. Reference: memo_Changes to NPS Deferred Maintenance Reporting for FY 2021.pdf memo_Changes to NPS Deferred Maintenance Reporting for FY 2021.pdf	#5 - Implemented
16	Page 10, Paragraph 1	<i>NPS does not have policies or procedures that identify when to classify work orders as deferred maintenance; how to track, update, and monitor work orders; or how and when to apply the 35-percent markup</i>	There is guidance and policies in place to classify and track work orders, but issues arise due to resource constraints (i.e., understaffing, low budgets).	#4 - Concur
17	Page 10, Paragraph 2	<i>At the outset, we note that the NPS uses a broad definition for deferred maintenance that does not include a particular timeframe</i>	The NPS has always followed the definition of DM from Chapter 3 of the Federal Accounting Standards Advisory Board (SFFAS #6; June 1996) and this is documented in the Life-Cycle Business Practices. Reference: 2024 Asset Lifecycle Guidance-508.pdf 2024 Asset Lifecycle Guidance-508.pdf	#1 - Concur
18	Page 10, Paragraph 3	<i>At the 15 parks we reviewed, we identified approximately 26,000 open work orders with estimated costs of \$371 million that were 3 years or older but that had not been classified as deferred maintenance. These work orders included necessary repairs for NPS employee housing assets such as repairing broken smoke alarms, rehabilitating kitchens, replacing heaters and roofs, repairing leaks, and providing exit signs.</i>	The previous project prioritization methodology frequently did not prioritize Housing projects due to the scoring method. This was a known issue and has been addressed with a servicewide tool to help regions and parks select projects based on several factors.	#2 - Non-concur
19	Page 10, Paragraph 5 Page 11, Paragraph 1	<i>We found that park personnel had varying practices relating to when to identify and enter deferred maintenance work orders or classify existing work orders as deferred maintenance. Park facility managers told us</i> <ul style="list-style-type: none"> • <i>Some would classify existing work orders as deferred maintenance based on the life cycle of the assets or if the work orders were delayed.</i> • <i>Others would classify existing work orders as deferred maintenance after the work order had been open for 1 year.</i> • <i>One park does not enter any work orders even if an asset requires maintenance if</i> 	The NPS implemented the Parametric Condition Assessment (PCA) methodology to calculate Deferred Maintenance & Repairs (DM&R) in FY 2022 to address the issue of unreliable work order data. The parametric methodology rapidly assesses facility condition and mitigates the issues surrounding work order management. With the move toward PCAs, parks will not have to continually monitor and update work orders to drive DM&R reporting. The updated assessment process is divorced from the work order creation process, such that the NPS can holistically track maintenance needs across the portfolio.	#1 – Concur #2 – Non-concur #3 – Non-concur #4 – Concur #5 – Implemented #6 – Implemented

		<p><i>funding is not available to do so.</i></p> <ul style="list-style-type: none"> • <i>Others do not have the resources or have not accurately identified or entered work orders for necessary maintenance on all assets in their parks.</i> 		
20	Page 12, Paragraph 3	<p><i>For example, during our review of San Juan National Historic Site, we found that, between FYs 2015 and 2016, the NPS canceled all deferred maintenance work orders that were more than 10 years old.</i></p>	<p>Parks manage their own work orders and consistently review and modify them. Under the previous methodology when DM was calculated based on work orders, parks could make various changes in work orders, including cancellations throughout the project lifecycle, and impact the DM. With the new PCA methodology, there is a standardized approach to assessing facility condition and tracking repair needs, which remedies challenges presented by work order data quality. There was no servicewide recommendation to cancel work orders that were 10 years or older; this was a decision specific to San Juan National Historic Site.</p>	#4 - Concur
21	Page 13, Paragraph 1	<p><i>This instance as well as ongoing problems occurred because the NPS does not have a monitoring mechanism to ensure the accuracy and completeness of its FMSS data.</i></p>	<p>The NPS has a servicewide Data Quality Improvement Tool (DQIT) for users to track and fix any inaccuracies in FMSS data, including at the location, asset, and work order level. This tool tracks several different fields and informs users about data quality errors and how to fix them. The Work Order Module focuses on fields such as 'work open under completed projects' and 'work open under a removed location'. This tool has been in existence for many years and was recently re-evaluated and revamped in FY 2022.</p>	#4 - Concur
22	Page 15, Paragraph 1	<p><i>The memorandum further stated that the Federal Highway Administration included an additional 35 percent to account for project execution costs, consisting of: 5 percent for compliance, 17 percent for design, 8 percent for construction management, and 5 percent for project management. The memorandum also stated that, because these project execution add-ons were included only for public roads and bridges in NPS units, the NPS would align reporting to add these costs to deferred maintenance for all assets.</i></p>	<p>The FHWA applied a 35% markup to the DM numbers provided to the NPS that was used for FASAB reporting. As described in greater detail in response #3, the NPS followed DOI recommendations that project execution markups should be applied across the portfolio to better align reported DM with the actual costs of carrying out the work. The NPS chose to apply the 35% markup used for FHWA DM to all NPS assets to drive consistency across the portfolio.</p> <p>Reference: memo_Changes to NPS Deferred Maintenance Reporting for FY 2021.pdf memo_Changes to NPS Deferred Maintenance Reporting for FY 2021.pdf</p>	#5 - Implemented

23	Page 15, Paragraph 2	<p><i>First, the NPS could not provide supporting documentation demonstrating the validity of the 35-percent project execution add-on for all NPS deferred maintenance work orders. The NPS officials we interviewed did not identify any additional rationale for the markup beyond what was cited in the memorandum. The percentage conforms with what the Federal Highway Administration uses for public road and bridge projects. Although this may be appropriate for some NPS deferred maintenance projects, adding such a significant amount to the overall balance without a methodology can lead to inaccurate cost estimates.</i></p>	<p>The 35% markup is the standard markup that is used for all NPS projects and is worked into project estimates and included in PMIS.</p> <p>All reported deferred maintenance is marked up 35% to account for project costs and add-ons that were not accounted for until FY 2021 Q4 reporting. See response to #3 above for additional information.</p> <p>Reference: memo_Changes to NPS Deferred Maintenance Reporting for FY 2021.pdf memo_Changes to NPS Deferred Maintenance Reporting for FY 2021.pdf</p>	#5 - Implemented
24	Page 15, Paragraph 3, 4, 5	<p><i>Second, the NPS applied this markup to all deferred maintenance included in the FY 2021 FMSS data with the assumption that all work would be completed by contractors. During interviews with NPS staff, however, we learned that NPS staff at multiple parks complete some work orders instead of contractors. For example, the New River Gorge National Park and Preserve had its NPS staff replace roofs for 13 buildings at an approximate cost of \$265,000 during FY 2020. Had the NPS applied the 35-percent markup to these work orders, the cost—and consequently, the deferred maintenance—would have been overestimated by approximately \$93,000. The NPS added this blanket 35-percent markup to all work orders instead of individually revising its deferred maintenance work order cost estimates to accurately reflect the work that would be completed by contractors or NPS staff. This occurred because the NPS does not have processes or procedures in place to identify work orders that will be completed by NPS staff or contractors. Further, the NPS’ Park Facility Management Division told us that it could not determine if work had been or would be completed by NPS staff using the information available in the FMSS.</i></p> <p><i>Federal internal control standards state that management should implement policies and procedures that contribute to processing relevant data from reliable sources into quality information within the entity’s information system. “Quality information” is information that is current, complete, and accurate. Management</i></p>	<p>It would not have been practical nor accurate for the NPS to review all work orders to determine which should receive a 35% mark-up and which should not. The NPS does not always know which DM work orders will be ultimately funded in projects or by contractors and which be completed by NPS staff.</p> <p>Determining project execution method (i.e., whether work will be completed in-house or by contracting) at the time of performing condition assessments and estimating DM across a portfolio of this size is neither effective nor efficient. The execution method is determined later in the project development process. There are many factors that contribute to determining the execution method, including additional information that is gathered during the scoping and design phase of a project, park staff capacity and skill set at the time of construction, and construction schedule constraints. These are considerations that cannot be anticipated at the time of assessing conditions and estimating DM.</p>	#5 - Implemented

		<i>should use that quality information to make informed decisions and evaluate the entity's performance in achieving its mission.19 Here, however, the NPS does not have any such policies and procedures that allow collection and use of quality information. To the contrary, the NPS is simply applying a blanket markup to all work orders without any attempt to determine the circumstances under which such a markup might be appropriate</i>		
25	Page 17, Paragraph 2	<i>When the NPS inspected the buildings in January 2014 it found mold. At that time, the NPS wrote an interim control measure work order to officially close the buildings; however, this resulted in larger deferred maintenance issues because the work order to remediate the mold was not immediately addressed. The coffee shop recently reopened after a long-term effort to raise nearly \$1 million with nonprofit and community funding support, which included more than \$250,000 for mold remediation.</i>	There is no evidence to suggest that the buildings were closed because of work order quality. The building was not in use and was due to remain vacant after any potential work was completed. Buildings that are in use are prioritized over buildings that will remain vacant.	#5 - Implemented

Appendix 3: Analysis of the National Park Service's Technical Comments

In the National Park Service's (NPS') response to our draft report, it included "additional concerns and inaccuracies found in the report." We summarize the NPS' technical comments and address each below. We clarified some passages and recommendations in our report to address the NPS' technical comments. However, we did not modify our overall findings.

NPS General Response Comment: The NPS provided a general comment in its response and stated:

To maximize the integrity and relevance of the report, the NPS would like to continue to collaborate with the OIG to better frame maintenance challenges and the implementation of asset management data improvements, develop a more accurate report title, review and correct inaccuracies in the draft report, and close out any recommendations which have already been accomplished before the report is issued.

OIG Response: We believe that the report title and content are accurate based on the work at the time of our review. Situations often change over the period during which we prepare our reports, and, as we have done in this case, we acknowledge those changes and have made updates to our report and recommendations as appropriate. More specifically, we met with NPS staff after we received the NPS' response to discuss its new process for estimating deferred maintenance and progress it has made since we completed our fieldwork. We recognize that the NPS began implementing a new asset condition assessment process in fiscal year (FY) 2022. We also recognize that NPS staff stated that this new process would allow parks to quickly assess the condition of each asset to produce modeled deferred maintenance estimates based on asset condition and current replacement value (as opposed to actual repair costs). As noted previously, though, the new process will not be fully implemented until FY 2024.

In short, based on the response the NPS provided, we determined that, although some of the recommendations have been resolved, none of the eight recommendations have yet been implemented. Therefore, we will assess corrective actions and whether the NPS demonstrates that it has implemented changes and addressed the concerns we identified.

NPS Technical Comment 1: The NPS provided suggested edits to a sentence in the "Results in Brief" section of our report, and stated, "The NPS does not have a 'deferred maintenance system' but rather uses the Facility Management Software System (FMSS) to capture and track NPS maintenance needs."

OIG Response: We updated the sentence in our report accordingly. We note, however, that the reference to the "deferred maintenance system" was an accurate summary of the system and its purposes.

NPS Technical Comment 2: In response to a sentence in the “Results in Brief” section of our report, the NPS noted that it is no longer using work orders to calculate its deferred maintenance estimates. Specifically, it stated:

Prior to FY 2022, NPS park staff created work orders to track maintenance needs and calculate DM [deferred maintenance] for reporting purposes. The NPS recognized that tracking work in this way could lead to inconsistent management of work order data and work orders might remain open or miscategorized, as identified by the OIG in this finding.

The NPS explained its new process, and stated:

In FY 2022, the NPS implemented the Parametric Condition Assessment (PCA) methodology to calculate Deferred Maintenance & Repairs (DM&R). The updated methodology results in more consistent, timely, and comprehensive capture of DM&R needs across the portfolio, thus improving data reliability. PCAs allow parks to assess facility condition rapidly and consistently, without the need for the creation and management of work orders. Going forward, work orders are instead used only to track work necessary for projects. With the move to PCAs, parks will not have to continually monitor and update work orders to drive DM&R reporting. The updated assessment process is removed from the work order creation process, such that the NPS can holistically track asset condition deficiencies across the portfolio, regardless of whether a given asset has any planned or funded project work.

OIG Response: We acknowledge the NPS’ efforts to adjust its methodology for calculating deferred maintenance. However, as we describe in addressing the recommendations, this process is not fully implemented, and a portion of the deferred maintenance is still calculated using the work order method. Additionally, the first step listed in its new methodology is FMSS data cleanup, which involves verifying the accuracy of data currently recorded in the FMSS using the work order cleanup tool, desk audit process, and current replacement value accuracy review guidelines. Accordingly, we did not make changes to our report in response to this comment.

NPS Technical Comment 3: In response to a statement in the “Results in Brief” section of our report, the NPS described additional background and provided U.S. Department of the Interior (DOI) guidance regarding the markup. Specifically, the NPS stated:

In November 2020, DOI formed an Investment Category Review Project Team. It became clear that not all bureaus were including a project execution mark-up in DM estimates (NPS was among the minority). In January of 2021 recommendations from the group were accepted, including that going forward DOI would develop a standard mark-up for all bureaus to use. The DOI has since issued guidance (attached) on the standard mark-ups to be included in project estimates for all bureaus.

The NPS restated percentage breakdown for the markup and further explained:

With the DOI recommendation that bureaus apply standard mark-ups, in FY 2021 the NPS implemented project execution mark-ups across the full portfolio when reporting DM to FASAB [Federal Accounting Standards Advisory Board] and FRPP [Federal Real Property Profile]. This made reporting consistent across the portfolio, as a 35% mark-up was already applied by Federal Highways (FHWA) for NPS transportation assets. As of FY 2021 NPS reporting of the project execution mark-up is consistent across the entire facility portfolio and in line with the standard percentages included in DOI Policy.

OIG Response: We address these issues in our comment on Recommendation 5 in the “Recommendations Summary” section of our report.

NPS Technical Comment 4: In response to an example in the “Results in Brief” section of our report discussing critical Health, Life, and Safety (HLS) work orders related to buildings that were closed due to mold, the NPS stated, “There is no evidence to suggest that the long term remediation was put off because of work order quality. The building was not in use, allaying any health, life, safety concerns, and the closure was documented as an interim measure appropriately. The report does not cite why the longer term repair was delayed.”

OIG Response: The paragraph with the cited example starts with “we identified 29 critical Health, Life, and Safety work orders . . . that were not consistently monitored for a timely completion and closure.” We do not suggest work order quality contributed to delayed remediation but rather that the NPS was not monitoring or verifying the HLS work order status. We did not make changes to our report in response to this comment.

NPS Technical Comment 5: In response to a sentence in the “Results in Brief” section of our report, the NPS stated that deferred maintenance has increased due to (1) the 35-percent markup for project execution, (2) “a year over year gap between the Operations and Maintenance (O&M) funding available and the funding needed to support scheduled annual maintenance needs,” which “leads to servicewide portfolio deterioration and an increase in the DM backlog,” and (3) increasing construction and maintenance costs due to inflation.

OIG Response: In the “Background” section of our report, we acknowledge various causes, stating that “contributing factors to the increasing deferred maintenance . . . are aging infrastructure, heavy visitor use, and insufficient funding to keep pace with repair needs.” We did not make changes to our report in response to this comment.

NPS Technical Comment 6: In response to a sentence in the “Results in Brief” section of our report, the NPS reiterated its new methodology for calculating deferred maintenance and stated that “[t]his change was conveyed to the Department of the Interior (DOI) in March of 2022 and the DOI concurred.” The NPS also stated, “Additionally, there is strict criteria for how projects are selected to receive GAOA funding. GAOA’s main objective, and a key criterion in project selection is addressing DM. Other factors involved in project selection include readiness to

execute, large project size, geographic distribution of funding, and alignment with DOI goals (e.g., accessibility, climate change).”

OIG Response: We acknowledge that the NPS is in the process of developing a new methodology for capturing and calculating deferred maintenance. However, our scope covered the process in place at the time of our fieldwork (FY 2016 through 2021), and, during the time of our audit, the NPS had not yet implemented its new methodology. As noted in our analysis of the recommendations, as part of the recommendations followup process, we will assess the extent to which these changes have been fully implemented and address the issues identified in our report.

More fundamentally, our statement in the “Results in Brief” section is still valid. Even with a new methodology, the NPS must ensure the accurate calculation of its deferred maintenance needs, which includes existing deferred maintenance calculations. The NPS itself reiterated this point in a memorandum, *On-Going Asset Management Data Quality Review and Management*, issued to staff in March 2023 (see Appendix 4), stating, “It is critical that facility data is complete and accurate so the NPS can effectively track and manage work internally and instill confidence among external stakeholders.” The implementation of the NPS’ new methodology may address the deficiencies of inaccurate deferred maintenance data and provide a more complete picture of its deferred maintenance needs. The NPS stated, however, that this new methodology will not be fully implemented until FY 2024. We did not make changes to our report in response to this comment.

NPS Technical Comment 7: The NPS identified an inaccuracy in the definition of an “asset,” in the “Background” section of our report and stated, “Personal property and moveable items, such as vehicles and equipment, are not assets, are not tracked in our inventory, and therefore do not contribute to DM.”

OIG Response: “Personal property” is included in the FMSS definition of an asset. Additionally, in its Facility Management Program Glossary of Terms, the NPS’ own definition of “asset” includes the distinction that the term “may be applied to movable items, such as vehicles and equipment.” We neither state nor suggest in our report that the NPS tracks vehicles and equipment in its deferred maintenance inventory. For clarity, however, we removed the language regarding vehicles in the definition at issue in the “Background” section of our report.

NPS Technical Comment 8: The NPS provided a suggested edit to a sentence in the “Background” section of our report and stated, “There are several factors that may cause an increase in year over year NPS DM.”

OIG Response: The NPS’ comment appears to take this sentence out of context. The preceding sentence reads, “The NPS has reported that contributing factors to the increasing deferred maintenance—while not all inclusive—are aging infrastructure, heavy visitor use, and insufficient funding to keep pace with repair needs.” However, we agree that the NPS’ suggestion will help emphasize that there are several contributing factors and adjusted the language in our report accordingly.

NPS Technical Comment 9: The NPS expressed concerns with the markup information in the “Background” section of our report that read, “The addition of the 35-percent markup increased the NPS’ FY 2021 deferred maintenance by \$3.7 billion, resulting in a 59.7-percent increase over FY 2020.” The NPS stated, “The 35% mark-up is not the sole reason that DM increased, and it cannot be said that the total increase is a result of the markup. The sentence as written is misleading and inaccurate.” The NPS provided a breakdown of the FY 2020 and FY 2021 numbers and increase.

OIG Response: The NPS’ comment appears to take this sentence out of context. It should have been read in conjunction with the preceding sentence: “In FY 2021, the NPS calculated approximately \$20 billion in deferred maintenance, which was a 34.8-percent increase from FY 2020.” However, for clarity, we modified both sentences and the corresponding figure to discuss the increases in terms of dollar amounts rather than percentages.

NPS Technical Comment 10: In response to information in the “Background” section of our report, the NPS stated that:

Parks create work orders regardless of how work will be completed. Work orders are bundled into projects depending on fund source requirements, not project execution method. Determination of project execution is a complex process that can be adjusted based on many factors such as park resources or technical expertise and is subject to change up until the start of a project.

OIG Response: This information in the “Background” section of our report was drawn directly from the NPS’ October 2016 *Desk Reference: Facility Projects*, section 1.1, “Evaluate Potential Project (Park).” We did not make changes to our report in response to this comment.

NPS Technical Comment 11: In response to information in the “Background” section of our report, the NPS stated, “In FY 2022, the changes to the condition assessment process that were begun in FY 2020 were incorporated into DM&R reporting and integrated into FMSS. The updated DM&R numbers were released publicly with the FY 2023 President’s Budget.”

OIG Response: During our review, the NPS stated that the new process would not be fully implemented until FY 2024. We added language to our report to clarify the status of the NPS’ new methodology.

NPS Technical Comment 13:³¹ The NPS suggested removing or revising the following sentence that is in the “Results of Evaluation” section of our report: “We emphasize that these difficulties are long standing, and the NPS has struggled to manage its deferred maintenance for at least two decades.” Specifically, the NPS stated:

DM has continued to grow within the NPS over the years due to gaps in available maintenance funding compared to on-going annual maintenance requirements. DM values in the FMSS based on work orders were at times inconsistent due to the nature of parks updating and changing work orders to identify maintenance

³¹ The NPS did not include Technical Comment 12. We used the numbering from the NPS document for consistency.

requirements. In part due to this, the NPS shifted to a new DM&R methodology that will help maintain more consistent data in the system. This is not a fair statement as the OIG did not look at all years during that 20-year period.

OIG Response: The NPS' comment appears to take this sentence out of context. This language should read in conjunction with additional information provided in the report as well as the scope of this project, which was limited to a particular time period and particular issues. We also note that both our office and the U.S. Government Accountability Office have conducted several reviews that concluded the NPS had difficulties in managing its deferred maintenance, dating back to 1999.³² We did not make changes to our report in response to this comment.

NPS Technical Comment 14: In reference to a sentence in the "Results of Evaluation" section in our report, the NPS stated:

The NPS places great importance on tracking the portfolio DM needs to inform decision making, prioritize resources, and report accurately to stakeholders. The NPS went through a multi-year effort to review and improve the process for tracking the portfolio DM needs. This effort and the move to PCAs to track portfolio maintenance needs was implemented for the bulk of the NPS portfolio in FY 2022 and is being further rolled out to the rest of the portfolio by the end of FY 2024. This change to PCAs addresses the challenge of maintaining the work order system and more comprehensively and holistically tracks portfolio maintenance.

OIG Response: We acknowledge the NPS' efforts to better track its deferred maintenance needs. However, these processes were not in place during our review and are not anticipated to be fully implemented until FY 2024. We did not make changes to our report in response to this comment.

NPS Technical Comment 15: In response to our first finding regarding the NPS' decision to implement a 35-percent markup, the NPS referred us to NPS Technical Comment 3 and its 2021 memorandum regarding the markup.

OIG Response: We address these issues in our comment on Recommendation 5 in the "Recommendations Summary" section of our report.

NPS Technical Comment 16: In response to a sentence in our first finding, the NPS stated, "There is guidance and policies in place to classify and track work orders, but issues arise due to resource constraints (i.e., understaffing, low budgets)."

OIG Response: During our review of the NPS' policies and procedures, we did not identify any guidance or direction as to when to classify work orders as deferred maintenance; how to track, update, and monitor work orders; or how or when to apply the 35-percent markup. The NPS also did not provide any such guidance in responding to this report. We did not make changes to our report in response to this comment.

³² See, e.g., *Deferred Maintenance, National Park Service* (Report No. 99-I-959), dated September 1999.

NPS Technical Comment 17: In response to our assessment of the NPS’ definition of deferred maintenance, the NPS stated that it “has always followed the definition of DM from Chapter 3 of the Federal Accounting Standards Advisory Board (SFFAS #6; June 1996) and this is documented in the Life-Cycle Business Practices.”

OIG Response: We do not dispute the factual accuracy of this statement but emphasize that an agency may modify the deferred maintenance definition to better align with the nature of its asset portfolio (indeed, as described in footnote 7, the NPS suggested that it planned to do so). The NPS uses a broad definition for deferred maintenance that does not include a particular timeframe. Therefore, there are varying interpretations of what can qualify as “deferred maintenance,” particularly in the absence of consistent criteria for a timeframe (e.g., 12 months or 18 months). We did not make changes to our report in response to this comment.

NPS Technical Comment 18: In response to our discussion of open work orders and their associated estimated costs in our first finding, the NPS stated, “The previous project prioritization methodology frequently did not prioritize Housing projects due to the scoring method. This was a known issue and has been addressed with a servicewide tool to help regions and parks select projects based on several factors.”

OIG Response: The new tool was not implemented at the time of our fieldwork. We did not make changes to our report in response to this comment.

NPS Technical Comment 19: In response to our description of varying NPS practices related to identifying and entering deferred maintenance work orders, the NPS stated:

The NPS implemented the Parametric Condition Assessment (PCA) methodology to calculate Deferred Maintenance & Repairs (DM&R) in FY 2022 to address the issue of unreliable work order data. The parametric methodology rapidly assesses facility condition and mitigates the issues surrounding work order management. With the move toward PCAs, parks will not have to continually monitor and update work orders to drive DM&R reporting. The updated assessment process is divorced from the work order creation process, such that the NPS can holistically track maintenance needs across the portfolio.

OIG Response: This process was not in place during the time of our review. Therefore, we cannot comment on the new methodology’s accuracy. Additionally, based on followup discussions with the NPS, it is our understanding that a portion of the deferred maintenance estimate is still based on work orders. This means that, at least until the NPS fully implements this new methodology, our finding concerning identifying and entering deferred maintenance work orders remains relevant. Finally, as work is completed, the NPS staff must still ensure that the PCAs for the repaired assets are updated to reflect the new conditions. In a followup meeting, the NPS told us that this is currently a manual process; therefore, the PCAs will still need to be monitored and updated to reflect asset repairs. We did not make changes to our report in response to this comment.

NPS Technical Comment 20: In response to the example we provided of canceled work orders at the San Juan National Historic Site, the NPS stated:

Parks manage their own work orders and consistently review and modify them. Under the previous methodology when DM was calculated based on work orders, parks could make various changes in work orders, including cancellations throughout the project lifecycle, and impact the DM. With the new PCA methodology, there is a standardized approach to assessing facility condition and tracking repair needs, which remedies challenges presented by work order data quality. There was no servicewide recommendation to cancel work orders that were 10 years or older; this was a decision specific to San Juan National Historic Site.

OIG Response: In the relevant portion of the report, we specifically acknowledged that this decision was one that was made at the park level and not NPS-wide. However, we modified the section to further clarify that this occurred specifically at the referenced park. We also note that, although the new PCA methodology reportedly provides a standardized approach to assessing facility condition and tracking repair needs (which the NPS asserts will remedy challenges presented by work order data quality), parks will still have to manually update the PCAs to reflect any completed work.

NPS Technical Comment 21: In response to our statement that the NPS did not have a monitoring mechanism to ensure the accuracy and completeness of its FMSS data, the NPS stated:

The NPS has a servicewide Data Quality Improvement Tool (DQIT) for users to track and fix any inaccuracies in FMSS data, including at the location, asset, and work order level. This tool tracks several different fields and informs users about data quality errors and how to fix them. The Work Order Module focuses on fields such as ‘work open under completed projects’ and ‘work open under a removed location’. This tool has been in existence for many years and was recently re-evaluated and revamped in FY 2022.

OIG Response: As stated in our response to Technical Comment 20 above, although the new PCA methodology reportedly provides a standardized approach to assessing facility condition and tracking repair needs, parks will still have to manually update the PCAs to reflect any completed work. The data used to compile the deferred maintenance and repair estimates will still need to be monitored for accuracy to ensure that after work is completed, the PCAs are updated to reflect the current asset condition. We identified that the NPS did not consistently close deferred maintenance work orders in the FMSS after the work was completed even though changing the work order status to close a work order is the final step in the work order process; this lack of closure increased deferred maintenance estimates. Without a standardized review process to ensure FMSS data are accurate, the NPS continues to be at risk of reporting inaccurate deferred maintenance costs. We did not make changes to our report in response to this comment.

NPS Technical Comment 22: In response to our discussion of its 2021 markup memorandum, the NPS stated:

The FHWA applied a 35% markup to the DM numbers provided to the NPS that was used for FASAB reporting. As described in greater detail in response #3, the NPS followed DOI recommendations that project execution markups should be applied across the portfolio to better align reported DM with the actual costs of carrying out the work. The NPS chose to apply the 35% markup used for FHWA DM to all NPS assets to drive consistency across the portfolio.

OIG Response: As we stated in our comment on Recommendation 5 in the “Recommendations Summary” section of our report, the NPS did not provide sufficient documentation demonstrating that the amount of the 35-percent markup was reasonable. The blanket application of the markup without support for this approach contributes to inaccurate deferred maintenance estimates, which affects the effective management of the NPS asset portfolio maintenance.

NPS Technical Comment 23: In response to our discussion of the NPS’ rationale for the blanket markup, the NPS stated, “The 35% markup is the standard markup that is used for all NPS projects and is worked into project estimates and included in PMIS [Project Management Information System]. All reported deferred maintenance is marked up 35% to account for project costs and add-ons that were not accounted for until FY 2021 Q4 reporting.”

OIG Response: We address these issues in our comment on Recommendation 5 in the “Recommendations Summary” section of our report.

NPS Technical Comment 24: In response to our discussion of the blanket markup application to work completed by NPS staff versus contractors, the NPS stated:

It would not have been practical nor accurate for the NPS to review all work orders to determine which should receive a 35% mark-up and which should not. The NPS does not always know which DM work orders will be ultimately funded in projects or by contractors and which be completed by NPS staff. Determining project execution method (i.e., whether work will be completed in-house or by contracting) at the time of performing condition assessments and estimating DM across a portfolio of this size is neither effective nor efficient. The execution method is determined later in the project development process. There are many factors that contribute to determining the execution method, including additional information that is gathered during the scoping and design phase of a project, park staff capacity and skill set at the time of construction, and construction schedule constraints. These are considerations that cannot be anticipated at the time of assessing conditions and estimating DM.

OIG Response: We address these issues in our comment on Recommendation 5 in the “Recommendations Summary” section of our report. Additionally, although the NPS states that it does not “always know which DM work orders will be ultimately funded in projects or by contractors and which be completed by NPS staff,” there are various methods that might be

considered to provide information on this issue. For example, the NPS has historical maintenance data housed in the FMSS upon which it could base its approach for application of the markup.

NPS Technical Comment 25: In response to the example used in our second finding discussing HLS work orders related to buildings that were closed due to mold, the NPS stated, “There is no evidence to suggest that the buildings were closed because of work order quality. The building was not in use and was due to remain vacant after any potential work was completed. Buildings that are in use are prioritized over buildings that will remain vacant.”

OIG Response: We address this issue in our response to NPS Technical Comment 4 above.

Appendix 4: National Park Service Data Quality Memorandum

The National Park Service's memorandum, *On-Going Asset Management Data Quality Review and Management*, issued March 23, 2023, follows on page 59.

No Response Due, Action Required: On-Going Asset Management Data Quality Review and Management

AD Park Planning Facilities and Lands, NPS

[REDACTED]@nps.gov>

Thu 3/23/2023 10:48

To: NPS WASO Field Memo [REDACTED]@nps.gov>

Cc: Madello, Jennif [REDACTED]@nps.gov>; Gajkowski, Jim [REDACTED]@nps.gov>; NPS Regional Facility Manager [REDACTED]@nps.gov>

4.A1 (2420-PFMD)

March 23, 2023

Memorandum

To: Regional Directors
Deputy Regional Directors

From: Associate Director, Park Planning, Facilities and Lands /s/ *Michael A. Caldwell*

Subject: **No Response Due, Action Required: On-Going Asset Management Data Quality Review and Management**

Background

The National Park Service (NPS) manages over 75,000 assets, many of which count among the Nation's most treasured resources including irreplaceable cultural and historical sites, scenic byways, and monuments. Maintaining the roads and bridges, water/wastewater and utility systems, visitor centers, historic buildings, trails, campgrounds, housing, and other facilities that support visitors and park operations is an enormous task.

The NPS uses its facility data to manage resources, inform funding requests, and conduct required reporting on the status of the NPS portfolio. Additionally, Deferred Maintenance and Repairs (DM&R) and other facility data is used for:

- Quarterly Federal Accounting Standards Advisory Board (FASAB) reporting
- Annual Federal Real Property Profile (FRPP) reporting
- Annual park and state infrastructure sheets
- Annual updates to NPS infrastructure information on NPS.gov
- Congressional inquiries and to inform lawmakers on needs and progress
- Reviews by the Office of the Inspector General (OIG), the Government Accountability Office (GAO), and other entities
- Information requests from internal and external stakeholders, including the Department of the Interior and partner groups

It is critical that facility data is complete and accurate so the NPS can effectively track and manage work internally and instill confidence among external stakeholders. Parks, regional POCs, and the Washington Area Support Office (WASO) must therefore continue to work together to review and improve data quality.

DM&R Calculation Changes and Associated Data Anomalies

In Fiscal Year (FY) 2022 the NPS moved to parametric condition assessments (PCAs) for capturing and

reporting portfolio DM&R for industry standard asset categories.[1] In FY 2023 the NPS is moving to PCAs for non-industry standard asset categories.[2] This shift in the DM&R calculation process has understandably created data anomalies throughout the portfolio. However, given the heightened scrutiny on NPS data due to the influx of funding from Legacy Restoration Fund (LRF), as well as a recent OIG review, it is essential that the NPS correct data anomalies as soon as possible.

On-Going Data Quality Review and Management

Reporting DM&R is reliant on (1) accurate Current Replacement Value (CRV) location information, and (2) PCA ratings that are reflective of the location's condition, with consideration of the asset's intended use. Other reporting and inquiries also rely on accurate asset data elements. The Park Facility Management Division (PFMD) conducts periodic in-depth reviews of Facility Management Software System (FMSS) data to drive completeness and accuracy of high-profile data elements. The PFMD makes every effort to flag data anomalies to regions and parks for their review and input, as was done for the current effort to prepare for FASAB FY 2023 Quarter 2 reporting. Data quality tools such as the Data Quality Improvement Tool, have also been developed to support parks in reviewing and correcting their own data and PFMD will also be reviewing and updating business practices and guidance relating to asset management.

The PFMD will continue to work with regions and parks throughout FY 2023 and future years to review and correct potentially inaccurate data in the FMSS for future reporting cycles. The continuing efforts of regions and parks to address these needs as they are identified is greatly appreciated and PFMD will be available to support data quality efforts.

Please share this information with appropriate regional and park contacts. Additional questions may be directed to Jim Gajkowski at [REDACTED]@nps.gov or [REDACTED].

[1] Industry standard asset categories include: buildings, housing, trails, wastewater systems, water systems, unpaved roads, and paved roads.

[2] Non-industry standard asset categories include: trail bridges, trail tunnels, maintained landscapes, boundaries, utility systems, dams, constructed waterways, marinas, aviation systems, railroad systems, ships, monuments, maintained archeological sites, fortifications, and amphitheatres

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Appendix 5: Status of Recommendations

Recommendation	Status	Action Required
<p>2020-CR-066-01 We recommend that the NPS develop and implement policies and procedures that define the circumstances and timeframe in which to enter work orders into its maintenance software system (e.g., the Facility Management Software System).</p>		
<p>2020-CR-066-02 We recommend that the NPS update current policies and procedures to clarify when to classify existing work orders as deferred maintenance in its maintenance software system (e.g., the Facility Management Software System).</p>		
<p>2020-CR-066-03 We recommend that the NPS identify and update deferred maintenance data in its maintenance software system (e.g., the Facility Management Software System) to ensure all data are accurate and complete.</p>	Resolved	We will track implementation.
<p>2020-CR-066-04 We recommend that the NPS develop and implement a monitoring mechanism for deferred maintenance data in its maintenance software system (e.g., the Facility Management Software System) to routinely verify that deferred maintenance data are accurate and complete. This monitoring mechanism should define the roles and responsibilities for each facility management level.</p>		
<p>2020-CR-066-05 We recommend that the NPS develop and implement policies and procedures that provide guidance for appropriately estimating the cost of maintenance projects.</p>	Unresolved	We will meet with the NPS to further discuss resolution of this recommendation.

Recommendation	Status	Action Required
<p>2020-CR-066-06 We recommend that the NPS include accurate estimates for all existing and future work orders based on the guidance developed under Recommendation 5.</p>	Unresolved	We will meet with the NPS to further discuss resolution of this recommendation.
<p>2020-CR-066-07 We recommend that the NPS verify that existing Health, Life, and Safety work orders address the original hazard, are completed, and are closed.</p>	Resolved	We will track implementation.
<p>2020-CR-066-08 We recommend that the NPS develop and implement an oversight mechanism that monitors Health, Life, and Safety work orders to verify the original hazards are addressed and completed within the required timeframes.</p>		



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