

Issue Brief

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Navy Shipyards Are Unprepared For Fleet Expansion and the Costs to Catch Up Remain Uncertain

Introduction

President Trump has proposed expanding the fleet of the United States Navy to 350 ships from the current count of roughly 270 vessels. This plan is estimated to cost [\\$106 billion through 2025](#).¹ This new spending could be at risk since the Navy's shipyards are incapable of handling the current demands of the fleet, let alone an expanded fleet with an additional 80 ships. Thanks to severe problems with existing public shipyards, the Navy is unable to maximise the use of its current fleet, losing thousands of operational days while ships sit idle, awaiting maintenance. The Navy has produced a preliminary cost estimate of its plans to upgrade public shipyards, but according to a [recent Government](#)

¹ Office of the Chief of Naval Operations. (2019). "[Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2019](#)".

Key Facts:



American shipyards do not meet the repair or operational needs of the Naval fleet.



Operational delays and maintenance requests have resulted in ships sitting unused, costing taxpayers billions of dollars in idle ships.



The Navy's shipyard improvement plan faces questions about its cost estimate that need to be addressed before Congress can act.

[Accountability Office \(GAO\)](#) report, the estimate may be significantly understating the costs and timeline of the plan.² Policymakers need reliable cost projections to make informed and efficient policy decisions, and uncertainty for a project of this scale could cost taxpayers billions.

The Problems

In 2017, the GAO [reported](#) that the existing shipyard capacity in the United States is no longer “meeting the Navy’s operational needs, partly because of the age and poor condition of their infrastructure, including their dry docks, facilities, and capital equipment.”³ The average age of shipyard production shop facilities is [76 years](#), exceeding the average life of 67 years expected by the Department of Defense (DoD).⁴ The average age for equipment in the private sector is 7 to 10 years, while the average age of equipment at the four remaining public shipyards is 24 years.

From a peak of 11 shipyards across the country during the Second World War, the United States today operates four public shipyards, contributing to a maintenance backlog of [\\$4.86 billion in 2017](#).⁵ This maintenance backlog is a list of work orders and upgrades that are behind schedule due to shipyard shortcomings, slowly compounding cost the longer maintenance is not completed. Out of 173 maintenance orders for submarines between 2006 to 2016, only 42 (24 percent) were fulfilled on time. Aircraft carriers fared better at 25 out of 53 orders completed on schedule; however, these orders were still late more than half the time.

This results in a staggering number of “lost operational days,” where ships are out of working order. Aircraft carriers burned 1,300 operational days due to insufficient shipyard capacity. The backlog is worse for the submarine fleet, which languished with [12,500](#) lost operational days from fiscal years 2000 to 2016.⁶ Between 2008 and 2018, the Navy spent [\\$1.5 billion](#) to support submarines that sat idle while waiting to enter shipyards, and those delayed in completing maintenance.⁷ Nuclear submarines require special technicians to work on proprietary hardware, limiting the volume of work the Navy can distribute to third-party contractors.

These lost operational days continue to pile up. The more repair requests compound, the greater the cost to taxpayers as shipyards delay much needed repairs due to insufficient capacity. In 2017 the GAO estimated clearing the naval maintenance backlog (as recorded in 2017) would take 19 years, through fiscal year 2036. As taxpayers continue to foot the bill for increasing delays in naval maintenance, the process must be improved for the continued safety of American sailors.

The Department of the Navy identified this problem a few years ago and in 2018 published a [roadmap](#) for bringing American shipyards up-to-date while raising the overall capacity for repairs.⁸ The “Shipyard Infrastructure Optimization Plan” (SIOP) focuses on the glaring lack of capacity for the current body of U.S. shipyards, due in large part to the aging of publicly-owned shipyards capable of operating on nuclear submarines and aircraft carriers. The Navy’s initial cost estimate was included in the SIOP, presented before [Congress in 2018](#).⁹ The original estimate of \$21 billion is suspect due to numerous problems with its methodology and thoroughness.

² Government Accountability Office. (November 2019). “[Key Actions Remain to Improve Infrastructure to Better Support Navy Operations](#)”.

³ Government Accountability Office. (September 2017). “[Actions Needed to Improve Poor Conditions that Affect Operations](#)”.

⁴ Government Accountability Office. [Nov. 2019](#)

⁵ Government Accountability Office. [Sep. 2017](#)

⁶ Government Accountability Office. [Sep. 2017](#)

⁷ Government Accountability Office. (November 2018). “[Navy Readiness: Actions Needed to Address Costly Maintenance Delays Facing the Attack Submarine Fleet](#).”

⁸ [Long-Range Plan for Fiscal Year 2019](#)

⁹ United States Congress. Senate. Armed Services Committee. Subcommittee on Seapower. “[Hearing To receive testimony on Navy ship-building programs in review of the Defense Authorization Request for Fiscal Year 2019 and the Future Years Defense Program](#)”. Tuesday, April 17, 2018. 116th Congress.

The Navy's Preliminary Cost Estimate Does Not Follow Best Practices

GAO's analysis identified a number of shortcomings of the Navy's cost estimate: it is missing some critical components of a robust cost projection. This is a *preliminary* estimate, and the Navy has not included costs for some portions of the program, such as infrastructure, until more complete and efficient modeling is finished. Given its preliminary status, some uncertainties in cost projection are forgivable; however, GAO identified seven categories of missed analysis, which leads to a murky projection.

The Navy's cost projection fails to account for projected inflation over the lifespan of the project. The GAO included the inflation estimate in its analysis of the Navy analysis, to the tune of \$9.5 billion in missed expenses, raising the projected cost to taxpayers to \$30.5 billion over the next ten years. This violates basic Generalized Accounting Standards, causing serious problems for the development of a clean and concise metric. Lawmakers cannot adequately evaluate the costs of Navy programs in the future if accounting is incomplete.

The GAO study also shows the Navy failed to include an analysis of cost of risk and uncertainty. These metrics are critical to creating any accurate cost estimate for a program at a scale of billions of dollars and running multiple years. Without a detailed analysis of risks of higher costs resulting from preservation requirements (for historical landmarks), environmental remediation, or temporary alternative workplaces during the project, policymakers would be ill-equipped to make a fully-informed expenditure decision on this critical project. Planners also need these risks analyzed and tallied to facilitate the creation of a contingency reserve (which has yet to be calculated) for meeting these risks and uncertainties.

Similarly, the Navy's plan lacks a work breakdown structure which deconstructs a program's end product into manageable levels and milestones. Without a work breakdown, critical parts of the project may be lost between managers and costs could be double counted. The Navy stated that a more detailed breakdown would not be possible until after fiscal year 2020. Completing a work breakdown that provides a detailed picture of the project and clear waypoints will help enable robust Congressional oversight to determine whether the Navy is meeting its objectives.

Another significant omission from the Navy's estimate is information about sensitivity metrics. This kind of analysis shows how small changes in key assumptions could lead to dramatically different outcomes in the cost estimate. The Congressional Budget Office (CBO) includes this information in its budget and economic outlooks and the Navy stands to benefit substantially from including such metrics in its analysis to provide a complete picture to lawmakers.

The Navy's estimate also needs an independent cost projection from a third party. Independent cost estimates are used throughout the government to give an impartial analysis of a program or plan to mitigate any institutional or personal biases. Navy officials have stated that given the size and projected cost of the plan, they intend to seek out independent cost estimates in the future. However, lawmakers also have the GAO and the CBO at their disposal to help evaluate the Navy's plan.

Problems Beyond the Proposal

Thanks to the current maintenance backlog the Navy is losing operation days as ships are stuck waiting for much needed repairs. This puts additional pressure on the operational fleet, which contributed to the [tragic accidents involving the USS McCain and Fitzgerald](#).¹⁰ In the face of severe maintenance delays and overall crew size reductions, sailors on high-traffic deployments have been working 100-hour weeks to keep ships running that are in dire need of repair. Sailors operating the ships were sleep

¹⁰ National Transportation Safety Board. (June 2019). "[Collision between US Navy Destroyer John S McCain and Tanker Alnic MC Singapore Strait, 5 Miles Northeast of Horsburgh Lighthouse August 21, 2017.](#)"

deprived, under-crewed, and burdened with a navigation computer running Windows 95. The costs of failing to maintain America's navy are not simply tax dollars, but the lives and wellbeing of service members as well.

It is important to ensure that maintenance issues are not impacting the safe deployment of the fleet. However, fiscal resources are finite and policymakers need to ensure that we are also maximizing the use of each dollar in the current budget. The Navy's modernization plan, if successful over the next several decades, could lead to increased efficiencies at the shipyards to help boost the Navy's maintenance capabilities. But there are, of course, costs to consider, and lawmakers need to have access to a full analysis of the potential expenses including the risks and uncertainties involved. In addition to ensuring that the Navy works to fill in the gaps in its cost estimate of its shipyard plan, there are steps lawmakers could consider to help maximize the existing maintenance budget.

The development of new technologies has led to a reduction of crew sizes. Smaller crew sizes were initially thought to be a cost saving practice; however, a [GAO report](#) from May of 2017 found the increase in maintenance costs from having fewer crew members working on a ship cancelled out the savings from reducing crew sizes and instead increased the overall cost of maintaining ships.¹¹ While reductions in crew size resulted in \$25.9 million in savings, GAO estimated that costs increased by \$86.5 million to cover maintenance otherwise completed by crewmembers as routine task work. This \$60 million cost is a drop in the bucket compared to the massive expenditures expected for retooling and upgrading of US shipyards, but is evidence that the Navy ought to take care not to be "a penny wise and a pound foolish."

GAO asked the Navy to conduct a business case analysis to better understand the advantages of distributing maintenance tasks to private shipyards, particularly for submarines. Private shipyards service the "bulk" of repair work for the Navy's surface vessels, but submarine maintenance largely remains a public shipyard project.¹² The private shipyards also have a maintenance backlog and GAO has noted that projects have not been completed on time, falling behind by [roughly a year](#).¹³

To save further money and ensure timely improvements to US shipyards, lawmakers should pass a budget that has firm lines for allocation. Funding the government on short-term, continuing resolutions has [negative impacts on agency planning](#).¹⁴ It leaves infrastructure projects in limbo as agencies can only prepare for the immediate months ahead before facing another shutdown. In December of 2019, a Navy Assistant Secretary [testified before the Senate Armed Services](#) Subcommittee on Readiness, reporting that the Navy would have preferred to make maintenance purchases years ago, but due to the uncertainty surrounding long-term budgeting, maintenance problems have been forced to the back burner:

"Having a stable and predictable budget is crucial to the Navy's ability to execute contracts and maintenance actions required to keep our Navy in the fight."¹⁵

As money is shifted around in the Pentagon to address immediate costs, necessary but longer term projects like the shipyard repair initiative may be forced to languish if Congress cannot pass a budget:

"In most hearings we are asked what Congress can do to support our efforts – the answer is simple, support and pass the President's Budget on time."¹⁶

¹¹ Government Accountability Office. (May 2017). "Actions Needed to Ensure Proper Size and Composition of Ship Crews." <https://www.gao.gov/assets/690/684771.pdf>

¹² Government Accountability Office. [Sep. 2017](#)

¹³ Government Accountability Office. [Nov. 2019](#)

¹⁴ Brady, Demian. "CBO and the Mysterious \$12.6 Trillion Continuing Resolution Cost Estimate." National Taxpayers Union Foundation. September 24, 2019.

¹⁵ United States Congress. Senate. Armed Services Committee. Sub Committee on Seapower and Subcommittee on Readiness and Management Support. "[Hearing on Ship and Submarine Maintenance](#)". December 4, 2019. 116th Congress. 1st Session. (Testimony of the Honorable James F Guert and Vice Admiral Thomas Moore.)

¹⁶ *Ibid.*

Conclusion

America is no longer at the height of the Second World War in a nautical arms race; however, the demand for a global U.S. Navy presence has only accelerated. Continued tension in the Middle East and an increasingly bold China have the U.S. 5th and 7th fleet working constant overtime. This high demand puts substantial stress on the U.S. Navy, and when repairs are needed America's shipyards cannot keep pace. The current cost estimation by the Navy about its shipyard improvement plan has substantial flaws that must be addressed before it can be confidently presented to Congress. These estimate problems should be addressed immediately to allow Congress to confront this challenge in the 2021 budget. If America's Navy is to sail confidently and safely to meet future threats, a rising tide of fiscal responsibility is needed.

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