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Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress

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Summary

The current and future size and composition of the Navy, the annual rate of Navy ship procurement, the prospective affordability of the Navy's shipbuilding plans, the capacity of the U.S. shipbuilding industry to execute the Navy's shipbuilding plans, and Navy proposals for retiring existing ships have been oversight matters for the congressional defense committees for many years. Congressional focus on these matters has been heightened over the past decade by the increasing size and capabilities of China's navy, and by the capacity of China's shipbuilding industry compared with the capacity of the U.S. shipbuilding industry.

The Navy fell below 300 battle force ships (the types of ships that count toward the quoted size of the Navy) in August 2003 and has generally remained between 270 and 300 battle force ships since then. As of October 1, 2025, the Navy included 293 battle force ships.

In December 2016, the Navy released a ship force-level goal that called for achieving and maintaining a fleet of 355 ships of certain types and numbers. The 355-ship goal was made U.S. policy by Section 1025 of the FY2018 National Defense Authorization Act (H.R. 2810/P.L. 115-91 of December 12, 2017).

In June 2023, the Navy sent a successor ship force-level goal to the congressional defense committees. In March 2024, the Navy released the details of this goal, which calls for achieving and maintaining a fleet of 381 manned ships of certain types and numbers, plus 134 large unmanned surface and underwater vehicles.

The 381-ship goal of 2023 is to be succeeded by a forthcoming ship force-level goal referred to as the Golden Fleet force-level goal. Aside from numbers of battleships and frigates, the Navy as of January 16, 2026, has not released the details of the Golden Fleet force-level goal.

The Navy's requested FY2026 shipbuilding program requests the procurement of 19 new ships, of which 16 ships would be funded with funds from the FY2025 reconciliation act (H.R. 1/P.L. 119-21) of July 4, 2025, also known as the One Big Beautiful Bill Act (OBBBA), and 3 ships would be funded with funds requested for FY2026 (i.e., "new money" requested for FY2026). The Navy's FY2026 budget submission includes a total of about $47.4 billion for the Navy's Shipbuilding and Conversion, Navy (SCN) appropriation account (i.e., the Navy's shipbuilding budget). The total of about $47.4 billion includes about $26.5 billion from the FY2025 reconciliation act (about 56% of the $47.4 billion) and about $20.8 billion in "new money" requested for FY2026 (about 44% of the $47.4 billion). The total of about $47.4 billion is substantially higher than the total FY2025 figure for the SCN account of about $39.0 billion. The $20.8 billion in "new money" requested for FY2026 is substantially lower than the total FY2025 figure for the SCN account of about $39.0 billion.

Issues for Congress regarding Navy force structure and shipbuilding plans include the following:

- the Golden Fleet ship force-level goal, including the details of the goal, the Trump Administration's position on the goal, and the appropriateness of the goal for performing projected future Navy missions;
- the estimated cost of the Navy's forthcoming FY2027 30-year (FY2027-FY2056) shipbuilding plan; and
- Navy shipbuilding delays and industrial base capacity constraints, and options for addressing those constraints.

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Issue for Congress

This report presents background information and issues for Congress concerning the Navy's force structure and shipbuilding plans. The current and future size and composition of the Navy, the annual rate of Navy ship procurement, the prospective affordability of the Navy's shipbuilding plans, the capacity of the U.S. shipbuilding industry to execute the Navy's shipbuilding plans, and Navy proposals for retiring existing ships have been oversight matters for the congressional defense committees for many years.

Congressional focus on these matters has been heightened over the past decade by the increasing size and capabilities of China's navy,[1] and by the capacity of China's shipbuilding industry compared with the capacity of the U.S. shipbuilding industry.[2] Decisions that Congress reaches on Navy force structure and shipbuilding plans can substantially affect U.S. Navy capabilities and funding requirements, and the U.S. shipbuilding industrial base.

CRS Reports on Individual Navy Shipbuilding Programs

Detailed coverage of certain individual Navy shipbuilding programs can be found in the following CRS reports:

- CRS Report R41129, *Navy Columbia (SSBN-826) Class Ballistic Missile Submarine Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS Report RL32418, *Navy Virginia-Class Submarine Program and AUKUS Submarine (Pillar 1) Project: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS In Focus IF11826, *Navy Next-Generation Attack Submarine (SSN[X]) Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS Report RS20643, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS In Focus IF13142, *Navy Guided Missile Battleship (BBG[X]) Program: Background and Issues for Congress*, by Ronald O'Rourke.

[1] For more on China's navy, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O'Rourke.

[2] See, for example, Matthew P. Funaiole, "The Threat of China's Shipbuilding Empire," Center for Strategic and International Studies (CSIS), May 10, 2024; Matthew P. Funaiole, Brian Hart, Joseph S. Bermudez Jr., "In the Shadow of Warships, How Foreign Companies Help Modernize China's Navy," Center for Strategic and International Studies (CSIS), undated, but with data through 2022, and accessed May 17, 2024; Mackenzie Eaglen, "The U.S. Navy Is Falling Behind China, And The Pentagon Knows It," *19FortyFive*," October 31, 2023; Cathalijne Adams, "China's Shipbuilding Capacity is 232 Times Greater Than That of the United States," Alliance for American Manufacturing, September 18, 2023; Kwan Wei Kevin Tan, "China Has the Capacity to Build PLA Combat Ships at 200 Times the Rate that the US Can, Per Leaked US Navy Intelligence," *Business Insider*, September 15, 2023; Michael Lee, "Chinese Shipbuilding Capacity Over 200 Times Greater than US, Navy Intelligence Says," *Fox News*, September 14, 2023; James Holmes, "China's Shipbuilding Capability: A Threat To The U.S. Navy?," *National Interest*, July 16, 2023; Joseph Trevithick, "Alarming Navy Intel Slide Warns Of China's 200 Times Greater Shipbuilding Capacity," *The War Zone*, July 11, 2023; Ryan Pickrell, "China Is the World's Biggest Shipbuilder, and Its Ability to Rapidly Produce New Warships Would Be a 'Huge Advantage' in a Long Fight with the US, Experts Say," *Business Insider*, September 8, 2020.

- CRS Report RL32109, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS In Focus IF11679, *Navy DDG(X) Next-Generation Destroyer Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS Report R44972, *Navy Constellation (FFG-62) and FF(X) Class Frigate Programs: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS Report R43543, *Navy LPD-17 Flight II and LHA Amphibious Ship Programs: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS Report R46374, *Navy Medium Landing Ship (LSM) Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS Report R43546, *Navy John Lewis (TAO-205) Class Oiler Shipbuilding Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS In Focus IF11674, *Navy Light Replenishment Oiler (TAOL) (Previously Next-Generation Logistics Ship [NGLS]) Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS In Focus IF11838, *Navy TAGOS-25 Ocean Surveillance Shipbuilding Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS Report R45757, *Navy Large Unmanned Surface Vessels (USVs): Background and Issues for Congress*, by Ronald O'Rourke.

Background

Current Number of Ships in Navy

The Navy fell below 300 battle force ships[3] in August 2003 and has generally remained between 270 and 300 battle force ships since then. As of October 1, 2025, the Navy included 293 battle force ships. The total number of ships in the Navy each fiscal year since FY1948 is shown in **Table J-1**.

[3] Battle force ships are the types of ships that count toward the quoted size of the Navy and the Navy's ship force-level goal. In this CRS report, references to numbers of ships generally refer to numbers of battle force ships.

The battle force ships method for counting the number of ships in the Navy was established in 1981 by agreement between the Secretary of the Navy and the Secretary of Defense, and has been modified somewhat over time, in part by Section 1021 of the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 (H.R. 3979/P.L. 113-291 of December 19, 2014). Battle force ships "are commissioned United States Ship (USS) warships built or armed for naval combat and capable of contributing to combat operations or other naval ships including United States Naval Ships that contribute directly to Navy warfighting or support missions." Such ships "include combat-capable ships and ships that contribute to warfighting missions, specified combat support missions, or service support missions." Ships and craft that are not counted as battle force ships include, among other things, certain types of support ships; combatant craft such as patrol boats; unmanned surface and underwater vehicles; and support craft such as floating dry docks, tugs, and lighters and barges. (Department of the Navy, "General Guidance for the Classification of Naval Vessels and Battle Force Ship Counting Procedures," SECNAVINST [Secretary of the Navy Instruction] 5030.8D, June 28, 2022.)

Navy Force-Level Goal

Two Elements of Navy Ship Force Structure Are Mandated by Statute

Two elements of Navy ship force structure—the number of aircraft carriers and the number of amphibious ships—are mandated by statute: 10 U.S.C. 8062(b) requires the Navy to include not less than 11 operational aircraft carriers and not less than 31 operational amphibious warfare ships. 10 U.S.C. 8062(b) and (h) further state that the 31 amphibious ships are to include not less than 10 LHA/LHD-type "big deck" amphibious assault ships, with the remaining amphibious ships being LPD/LSD-type amphibious ships.

The requirement regarding aircraft carriers was established by Section 126 of the FY2006 National Defense Authorization Act (NDAA) (H.R. 1815/P.L. 109-163 of January 6, 2006), which set the number at 12 carriers. The requirement was changed from 12 carriers to 11 carriers by Section 1011(a) of the FY2007 NDAA (H.R. 5122/P.L. 109-364 of October 17, 2006).

The requirements regarding amphibious ships were added by Section 1023 of the FY2023 (NDAA) (H.R. 7776/P.L. 117-263 of December 23, 2022).

355-Ship Force-Level Goal of 2016

In December 2016, the Navy released a ship force-level goal that called for achieving and maintaining a fleet of 355 ships of certain types and numbers. The 355-ship goal was made U.S. policy by Section 1025 of the FY2018 National Defense Authorization Act (H.R. 2810/P.L. 115-91 of December 12, 2017).[4] The provision, which is shown as a note to 10 U.S.C. 8661, does not include an enforcement mechanism.

The 355-ship goal predated the national defense strategies of the first Trump Administration and the Biden Administration, and did not reflect the new, more distributed fleet architecture (i.e., new mix of ships) that the Navy wants to shift toward in coming years—an architecture that includes significant numbers of large unmanned surface and underwater vehicles, so as to help implement the Navy's Distributed Maritime Operations (DMO) concept.[5]

381-Ship Force-Level Goal of 2023

In June 2023, the Navy sent a successor ship force-level goal to the congressional defense committees in a document called the Battle Force Ship Assessment and Requirement (BFSAR) report. In March 2024, as part of its FY2025 30-year (FY2025-FY2054) shipbuilding plan, the Navy released the details of this goal, which calls for achieving and maintaining a fleet of 381 manned ships of certain types and numbers, plus 134 large unmanned surface and underwater vehicles.

[4] Section 1025 of P.L. 115-91 states

> SEC. 1025. Policy of the United States on minimum number of battle force ships.
>
> (a) Policy.—It shall be the policy of the United States to have available, as soon as practicable, not fewer than 355 battle force ships, comprised of the optimal mix of platforms, with funding subject to the availability of appropriations or other funds.
>
> (b) Battle force ships defined.—In this section, the term "battle force ship" has the meaning given the term in Secretary of the Navy Instruction 5030.8C.

[5] For more on DMO, see CRS In Focus IF12599, *Defense Primer: Navy Distributed Maritime Operations (DMO) Concept*, by Ronald O'Rourke.

Forthcoming Golden Fleet Force-Level Goal

The 381-ship goal is to be succeeded by a forthcoming ship force-level goal referred to as the Golden Fleet force-level goal. Aside from numbers of battleships and frigates, the Navy as of January 16, 2026, has not released the details of the Golden Fleet force-level goal.[6]

Table 1 compares the 355-ship force-level goal, the 381-ship force-level goal, and available details on the Golden Fleet force-level goal. For Navy force-level goals prior to the 355-ship goal, see **Appendix A**.

Navy Force-Level Goals Result from Force Structure Assessments (FSAs)

Navy force-level goals are typically produced by Navy analyses called Force Structure Assessments (FSAs). The Navy conducts a new FSA or an update to the existing FSA every few years, as circumstances require.[7] In conducting an FSA, the Navy solicits inputs from U.S. regional combatant commanders (CCDRs) regarding the types and amounts of Navy capabilities that CCDRs deem necessary for implementing the Navy's portion of the national military strategy, and then translates those CCDR inputs into required numbers of ships, using current and projected Navy ship types. The analysis takes into account Navy capabilities for both warfighting and day-to-day forward-deployed presence.[8]

Navy's Force-Level Goal Is Not Just a Single Number

Although the result of an FSA is often reduced for convenience to a single number (e.g., 355 or 381 ships), FSAs take into account a number of factors, including types and capabilities of Navy ships, aircraft, unmanned vehicles, and weapons, as well as ship homeporting arrangements and operational cycles. Thus, although the number of ships called for by an FSA might appear to be a one-dimensional figure, it actually incorporates multiple aspects of Navy capability and capacity.

Commission on the Future of the Navy

Section 1092 of the FY2023 NDAA (H.R. 7776/P.L. 117-263 of December 23, 2022) established an independent commission in the legislative branch to be known as the Commission on the Future of the Navy. Section 1092 states that the commission is to "undertake a comprehensive

[6] A December 18, 2025, press article reporting on a draft version of the Golden Fleet force-level goal stated that the draft version included 12 ballistic missile submarines, 54 attack submarines, 9 aircraft carriers, 67 large surface combatants, 12 Littoral Combat Ships (LCSs), 24 other small surface combatants (frigates, by implication), 27 larger amphibious ships (including 9 LHA/LHD-type amphibious assault ships and 19 LPD-type amphibious ships), 27 smaller amphibious ships (i.e., Medium Landing Ships, or LSMs), and 100 large unmanned surface vessels (USVs). (Michael Fabey, "US Navy Mulls Major Concept Changes For Future Force," *Jane's Navy International*, December 18, 2025.) As reported numbers, these details are not necessarily authoritative. Other draft versions with differing numbers may have been prepared. Figures in the final version may differ from those in draft versions.

[7] The Navy is also required by law (10 U.S.C. 8695) to submit to the congressional defense committees a battle force ship assessment and requirement not later than 180 days after the date of occurrence of any of the following events:

- strategic guidance that results in changes to theater campaign plans or warfighting scenarios;
- a strategic laydown [i.e., homeporting and basing plan] of vessels or aircraft that affects sustainable peacetime presence or warfighting response timelines;
- operating concepts, including employment cycles, crewing constructs, or operational tempo limits, that affect peacetime presence or warfighting response timelines; or
- assigned missions that affect the type or quantity of force elements.

[8] For further discussion, see U.S. Navy, *Executive Summary, 2016 Navy Force Structure Assessment (FSA)*, December 15, 2016, pp. 1-2.

study of the structure of the Navy and policy assumptions related to the size and force mixture of the Navy, in order... to make recommendations on the size and force mixture of ships; and ... to make recommendations on the size and force mixture of naval aviation."

Table 1. 355-Ship Force-Level Goals

	355-ship force-level goal (2016)	381-ship force-level goal (2023)	Golden Fleet force-level goal (2026) (forthcoming)
Battle force ships (i.e., manned ships)			
Ballistic missile submarines (SSBNs)	12	12	n/a
Attack submarines (SSNs)	66	66	n/a
Aircraft carriers (CVNs)	12	12	n/a
Large surface combatants	104	87	n/a
Battleships	*0*	*0*	*15-25*
Cruisers and destroyers	*104*	*87*	*n/a*
Small surface combatants	52	73	n/a
Frigates (FFGs and FFs)	*(24)*	*(58)*[a]	*50-65*
Littoral Combat Ships (LCSs)	*(28)*	*(15)*[a]	*n/a*
Larger amphibious ships	38	31	n/a
LHA/LHD amphibious assault ships	*(12)*	*(10)*	*n/a*
LPD/LSD amphibious ships	*(26)*	*(21)*	*n/a*
Smaller amphibious ships (i.e., Medium Landing Ships [LSMs])[b]	0	18[b]	n/a
Combat Logistics Force (CLF) ships (i.e., at-sea resupply ships)	34	46	n/a
TAO oilers and TAOE replenishment ships	*(20)*	*(20)*	*n/a*
TAKE dry cargo chips	*(14)*	*(13)*	*n/a*
TAOL light replenishment oilers	*(0)*[b]	*(13)*	*n/a*
Command, expeditionary, and support ships	37	36[b]	n/a
LCC command ships	*(2)*	*(2)*	*n/a*
AS submarine tenders	*(2)*	*(2)*	*n/a*
ESD Expeditionary Transfer Dock ships	*(2)*	*(0)*	*n/a*
EPF Expeditionary Fast Transport ships	*(10)*	*(8)*	*n/a*
ESB Expeditionary Sea Base ships	*(6)*	*(6)*	*n/a*
ARS and ATF salvage ships and fleet ocean tugs	*(8)*	*(8)*	*n/a*
TAGOS ocean surveillance ships	*(7)*	*(10)*	*n/a*
Subtotal battle force ships (i.e., manned ships)	***355***	***381***	***n/a***
Large unmanned vehicles			
Large Unmanned Surface Vehicles (USVs)	0	78	n/a
Large Unmanned Underwater Vehicles (UUVs)	0	56	n/a
Subtotal large unmanned vehicles	***0***	***134***	***n/a***
TOTAL battle force ships and large unmanned vehicles	**355**	**515**	**n/a**

Source: Table prepared by CRS based on U.S. Navy data. The Navy categories LSMs as expeditionary ships, CRS and the Congressional Budget Office (CBO) categorize them as smaller amphibious ships.

a. Under its FY2025 budget submission, the Navy wanted to maintain a force of 25 (rather than 15) LCSs. This could imply a total of 48 (rather than 58) frigates.

b. The Navy states that "The 2022 Amphibious Force Requirements Study determined an initial capacity goal of 18 LSM[s], with a total requirements [sic] of 35." (U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2025*, p. 4 (Table 1, note).

Under Section 1092, the commission was to submit a report with its findings, conclusions, and recommendations not later than July 1, 2024. Section 1083 of the FY2025 NDAA (H.R. 5009/P.L. 118-159 of December 23, 2024) extended that date to January 15, 2026. Section 1081

of the FY2026 NDAA (S. 1071/P.L. 119-60 of December 18, 2025) extended the date further, to July 1, 2027. A December 16, 2024, press report stated: "After more than a year of delays, a congressional commission focused on outlining the optimal size and composition of the future US Navy is set to begin work, according to sources familiar with the panel."[9]

Navy Shipbuilding Plans

Requested FY2026 Shipbuilding Program

Figure 1 shows the Navy's requested FY2026 shipbuilding program. As shown in the figure, the Navy's requested FY2026 shipbuilding program requests the procurement of 19 new ships, of which 16 ships would be funded with funds from the FY2025 reconciliation act (H.R. 1/P.L. 119-21) of July 4, 2025, also known as the One Big Beautiful Bill Act (OBBBA), and 3 ships would be funded with funds requested for FY2026 (i.e., "new money" requested for FY2026).

In **Figure 1**, the column showing funds from the FY2025 reconciliation act is labeled "FY26 Mand.," meaning FY2026 mandatory funds, and the column showing additional "new money" requested for FY2026 is labeled "FY26 Disc.," meaning FY2026 discretionary funds.

As shown in **Figure 1**:

- The Navy's FY2026 budget submission includes a total of about $47.4 billion for the Navy's Shipbuilding and Conversion, Navy (SCN) appropriation account (i.e., the Navy's shipbuilding budget).
- The total of about $47.4 billion includes about $26.5 billion from the FY2025 reconciliation act (about 56% of the $47.4 billion) and about $20.8 billion in "new money" requested for FY2026 (about 44% of the $47.4 billion).
- The total of about $47.4 billion is substantially higher than the total FY2025 figure for the SCN account of about $39.0 billion.
- The $20.8 billion in "new money" requested for FY2026 is substantially lower than the total FY2025 figure for the SCN account of about $39.0 billion.

FY2026 Five-Year (FY2026-FY2030) Shipbuilding Plan

Similar to budget submissions made during the first years of some previous Administrations, the Trump Administration's FY2026 defense budget submission generally did not include details for the following four years (FY2027-FY20230). Consequently, the submission did not include a five-year (FY2026-FY2030) Navy shipbuilding plan. A five-year (FY2027-FY2031) Navy shipbuilding plan is expected as part of the Navy's FY2027 budget submission.

FY2026 30-Year (FY2026-FY2055) Shipbuilding Plan

Similar to budget submissions made during the first years of some previous Administrations, the Trump Administration's FY2026 budget submission did not include a 30-year (FY2026-FY2055) Navy shipbuilding plan. A 30-year (FY2027-FY2056) Navy shipbuilding plan is expected as part of the Navy's FY2027 budget submission.

[9] Justin Katz, "Following Delay, Congressional Panel on Future US Navy Can Start Work," *Breaking Defense*, December 16, 2024.

Figure 1. Requested FY2026 Shipbuilding Program

Figure 2.2 – Shipbuilding Procurement Quantities and Total Funding

	FY24	FY25	FY26 Disc.	FY26 Mand.	FY26 Total
New Construction:					
Columbia Class Submarine (SSBN 826)	1	-	1	-	1
Virginia Class Submarine (SSN 774)	2	1	1	1	2
Arleigh Burke Class Destroyer (DDG 51)	2	3	-	2	2
Constellation Class Guided Missile Frigate (FFG 62)	2	-	-	-	-
America Class Amphibious Assault Ship (LHA 6)	-	-	-	1	1
San Antonio Class Amphib. Trans. Dock (LPD 17) (Flt II)	-	1	-	1	1
Medium Landing Ship	-	-	-	9	9
John Lewis Class Fleet Replenishment Oiler (T-AO 205)	1	-	-	2	2
T-AGOS Surtass Ship	-	-	1	-	1
New Construction Total QTY	8	5	3	16	19
Other Construction:					
LCAC SLEP	1	2	-	1	1
Ship to Shore Connector	4	3	-	1	1
LCU 1700	2	-	-	9	9
Nimitz Class Aircraft Carrier (CVN 68) RCOH	-	1	-	-	-
Strategic Sealift	-	-	-	1	1
Auxiliary Vessels (Sealift used)	1	2	1	-	1
Other Construction Total QTY	8	8	1	12	13
Shipbuilding Total QTY	16	13	4	28	32

	FY24	FY25	FY26 Disc.	FY26 Mand.	FY26 Total
New Construction Total ($B)	$ 32.5	$ 34.4	$ 16.9	$ 24.8	$ 41.7
Other Construction Total ($B)	$ 3.3	$ 4.6	$ 3.9	$ 1.8	$ 5.7
Shipbuilding Total ($B)	$ 35.8	$ 39.0	$ 20.8	$ 26.5	$ 47.4

Source: Department of the Navy, *FY 2026 Budget Highlights*, Office of the Budget, 2025, Figure 202 on p. 2-2.

Issues for Congress

Potential issues for Congress concerning Navy force structure and shipbuilding plans include but are not necessarily limited to those discussed below.

Golden Fleet Ship Force-Level Goal

One issue for Congress concerns the Golden Fleet ship force-structure goal.

Details of Goal

One element of this issue concerns the details of the Golden Fleet ship force-level goal. Potential questions for Congress include the following:

- What are the details of the Golden Fleet ship force-level goal? When does the Trump Administration plan to submit them to Congress?
- In the absence of details on the Golden Fleet ship force-level goal, how well can Congress assess the intention and funding adequacy of the Trump Administration's proposed budgets for the Navy?

Trump Administration Position

A second element concerns the Trump Administration's position on the Golden Fleet ship force-level goal. Potential questions for Congress include the following:

- Does the Trump Administration support the Golden Fleet ship force-level goal as an administration goal and funding priority?
- Are the Navy's FY2027 five-year (FY2027-FY2030) and 30-year (FY2027-FY2056) shipbuilding plans and associated programmed funding levels consistent with achieving and maintaining the numbers of ships of various types included in the Golden Fleet ship force-level goal?

A December 9, 2025, press report states:

> The Navy Secretary last weekend said President Donald Trump signed off on a new shipbuilding initiative dubbed the "Golden Fleet," which is set to be a major part of the Navy's fiscal year 2027 budget request….
>
> "Myself and [OMB] Director [Russell] Vought and Secretary Hegseth had a meeting with the President on [Dec. 3]. He has signed off on what we are calling the 'Golden Fleet.' … Secretary of the Navy John Phelan said during the 2025 Reagan National Defense Forum on Dec. 6.[10]

Amending U.S. Law to Reflect Goal

A third element concerns U.S. policy regarding the Navy's force-level goal. As mentioned earlier, the 355-ship force-level goal of 2016 was made U.S. policy by Section 1025 of the FY2018 National Defense Authorization Act (H.R. 2810/P.L. 115-91 of December 12, 2017). The provision, which is shown as a note to 10 U.S.C. 8661, does not include an enforcement mechanism. One issue for Congress is whether to amend this provision to reflect the Golden Fleet ship force-level goal, and/or include an enforcement mechanism.

Appropriateness of Goal

A fourth element is whether the Golden Fleet ship force-level goal would be appropriate for performing projected future Navy missions. The question of the size and composition of the Navy needed for performing projected future Navy missions is a perennial matter of congressional oversight. As mentioned earlier, congressional focus on the question of the future size and composition of the Navy has been heightened over the past decade by the increasing size and capabilities of China's navy, and by the capacity of China's shipbuilding industry compared with the capacity of the U.S. shipbuilding industry.

Factors that Congress may consider in assessing this question include but are not limited to the following:

[10] Rich Abott, "Navy "Golden Fleet" Plan To Include Another Frigate, LSM To Avoid Change Orders," *Defense Daily*, December 9, 2025.

- U.S. national security strategy, U.S. national defense strategy, and the Navy's roles and missions in contributing to the implementation of those strategies;
- the current and potential future naval and other military capabilities of potential adversaries, particularly China and Russia;
- the current and potential future naval and other military capabilities of U.S. allies and partners for performing missions in support of U.S. interests;
- U.S. defense funding levels, the Navy's share of that funding, and the funding needs of other defense priorities; and
- industrial base capacity for building and maintaining Navy ships, aircraft, weapons, and other assets.

Regarding the first bullet point above, two other CRS reports discuss the potential impacts of changes in U.S. national security strategy and U.S. national defense strategy on the planned size and composition of U.S. military forces.[11]

In assessing the question of the size and composition of the Navy needed to perform the Navy's missions in coming years, Congress from time to time has sought independent (i.e., non-DOD) views on the matter. Congress did so in Section 216 of the FY2004 defense authorization act (H.R. 1588/P.L. 108-136 of November 24, 2003),[12] in Section 1067 of the FY2016 National Defense Authorization Act (S. 1356/P.L. 114-92 of November 25, 2015),[13] and, as noted above, in Section 1092 of the FY2023 NDAA (H.R. 7776/P.L. 117-263 of December 23, 2022), which established an independent commission in the legislative branch to be known as the Commission on the Future of the Navy. Section 1092 states that the commission is to "undertake a comprehensive study of the structure of the Navy and policy assumptions related to the size and force mixture of the Navy, in order... to make recommendations on the size and force mixture of ships; and ... to make recommendations on the size and force mixture of naval aviation."

Estimated Cost of Navy FY2027 30-Year Shipbuilding Plan

Another issue for Congress concerns the estimated cost of the Navy's FY2027 30-year (FY2027-FY2056) shipbuilding plan, particularly the difference between the Navy's cost estimate and CBO's cost estimate. (The statute that requires the Navy to include a 30-year shipbuilding plan with its annual budget materials—10 U.S.C. 231—also requires CBO to prepare its own cost estimate for that plan.)

CBO's cost estimates for Navy 30-year shipbuilding plans tend to be higher than the Navy's cost estimates, in part due to a difference between CBO and the Navy in the treatment of inflation, and in part due to differences between CBO and the Navy about the potential sizes and features of certain envisioned future classes of ships whose designs have not yet been developed.

CBO's January 2025 report on the Navy's FY2025 30-year shipbuilding plan states

> **The Costs of New-Ship Construction Under the 2025 Plan Would Average $35.8 Billion per Year**

[11] See CRS In Focus IF10485, *Defense Primer: Geography, Strategy, and U.S. Force Design*, by Ronald O'Rourke, and CRS In Focus IF13137, *National Security Strategy: Potential Implications for DOD of Prioritizing the Western Hemisphere and China*, by Hannah D. Dennis and Ronald O'Rourke.

[12] For further discussion, see CRS Report RL33955, *Navy Force Structure: Alternative Force Structure Studies of 2005—Background for Congress*, by Ronald O'Rourke.

[13] For further discussion, see Appendix F to the December 8, 2017, edition of this CRS report.

CBO estimates that buying only the new ships specified in the Navy's [FY]2025 [30-year shipbuilding] plan would cost $1,075 billion (in [constant] 2024 dollars)—an average of $35.8 billion per year over 30 years. Those amounts are between 7 percent and 16 percent higher than CBO's estimates for the three alternatives in the [Navy's FY]2024 [30-year shipbuilding] plan.

The Navy's cost estimates for new ships are lower than CBO's: $903 billion (or an average of $30.1 billion per year over 30 years). Those amounts are between 5 percent and 14 percent higher than the service's estimates for the alternatives in its [FY]2024 [30-year shipbuilding] plan.

In general, CBO's estimates of new-ship construction costs are higher than the Navy's because CBO and the Navy made different assumptions about the design and capabilities of some future ships, used different estimating methods, and treated growth in the costs of labor and materials for shipbuilding differently.

The growth in costs reflected in the Navy's and CBO's estimates for the [FY]2025 [30-year shipbuilding] plan is attributable to both an increase in the estimated costs of many shipbuilding programs and to the larger number of ships that the Navy would purchase under that plan compared with what it would have purchased under the alternatives in the [FY]2024 [30-year shipbuilding] plan. The estimated costs have risen for several reasons, but these are the most significant:

- Some ships have taken longer and been more difficult to build than the Navy anticipated,
- Some ships' designs have proved more complicated to complete than expected, and
- The estimated costs of some ships were unrealistically low in earlier shipbuilding plans.

In some cases, CBO's estimates increased more than the Navy's. That is because not all of the Navy's estimates reflect changing conditions in the shipbuilding industrial base that have caused costs, particularly the cost of building submarines, to rise.

Average Total Shipbuilding Costs Over the Next 30 Years Would Be 46 Percent More Than Average Appropriations Over the Past 5 Years

The Navy's shipbuilding plan reports only the costs of new-ship construction for battle force ships. It does not report the cost of refueling nuclear-powered ships or other costs, such as those associated with outfitting new ships or purchasing ships that are not considered part of the battle force (for example, used sealift ships), that are typically funded from the Navy's shipbuilding account. When those costs are included, the Navy's average annual shipbuilding costs under the [FY]2025 [30-year shipbuilding] plan increase by a little more than $4 billion, CBO estimates.

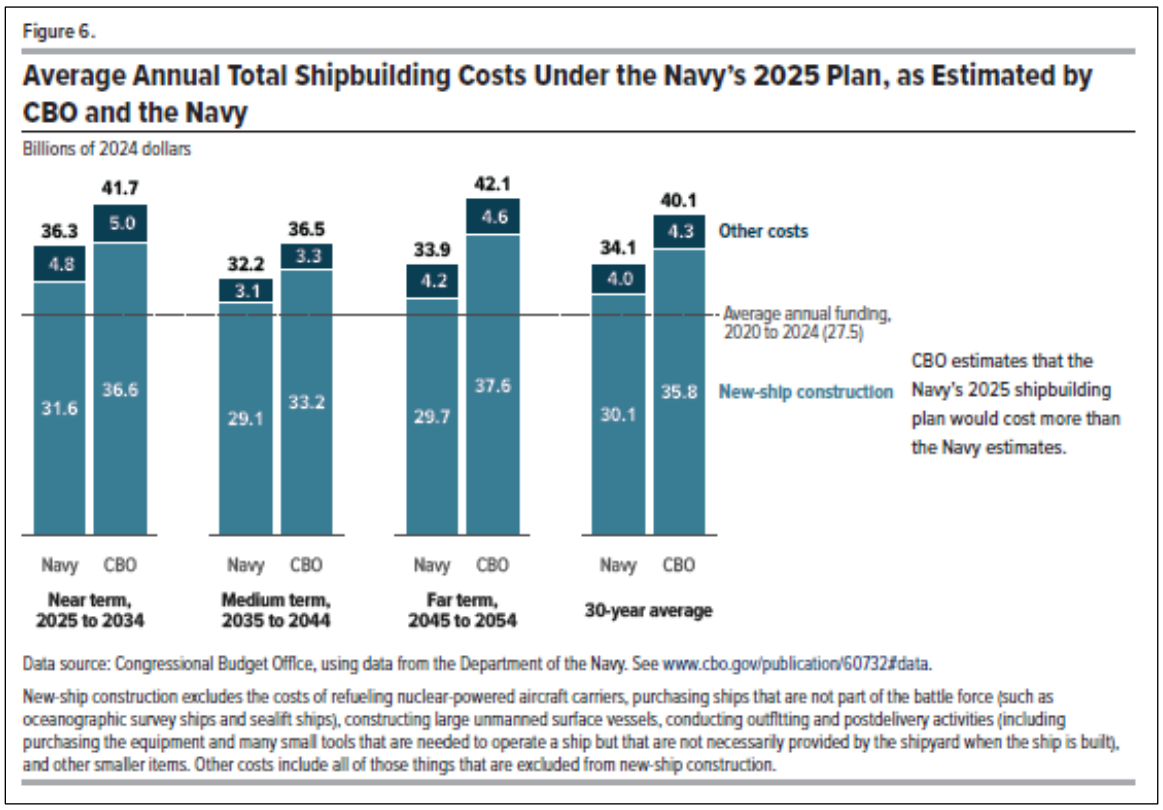
Thus, when funding for all activities supported by the Navy's shipbuilding account is included in the calculation, CBO estimates that the average annual cost of the [FY]2025 [30-year shipbuilding] plan would be $40.1 billion. That amount is 46 percent higher than the $27.5 billion the Navy has received in annual appropriations, on average, over the past five years. In real terms, CBO's estimate of the average annual cost of this year's plan is between 8 percent and 16 percent higher than its estimates for the alternatives in the Navy's [FY]2024 [30-year shipbuilding] plan.

The cost of the Navy's [FY]2025 [30-year] shipbuilding plan is high not only compared with recent funding but also by historical standards. Over the past decade, funding for ship construction reached its highest level since the Reagan Administration's defense buildup in the 1980s. Since [FY]2015, lawmakers have appropriated an average of $2.5 billion

more per year for shipbuilding than the President has requested, partly because of concerns that the fleet is too small to perform all of its missions….[14]

Figure 2 and **Figure 3** show a graph and table from the CBO report summarizing CBO's cost estimate and how it compares to the Navy's cost estimate.

Figure 2. Graph from CBO Report



Source: Congressional Budget Office, *An Analysis of the Navy's 2025 Shipbuilding Plan*, January 2025, p. 14 (Figure 6).

[14] Congressional Budget Office, *An Analysis of the Navy's 2025 Shipbuilding Plan*, January 2025, p. 4.

Figure 3. Table from CBO Report

Table 4.

Average Annual Shipbuilding Costs Under the Navy's 2025 Plan

Billions of 2024 dollars

	Near term, 2025 to 2034	Medium term, 2035 to 2044	Far term, 2045 to 2054	30-year average
		Navy's estimates		
New-ship construction	31.6	29.1	29.7	30.1
New-ship construction and all other items in the Navy's shipbuilding accounts[a]	36.3	32.2	33.9	34.1
		CBO's estimates		
New-ship construction	36.6	33.2	37.6	35.8
New-ship construction and all other items in the Navy's shipbuilding accounts	41.7	36.5	42.1	40.1
		Difference between CBO's and the Navy's estimates (percent)		
New-ship construction	16	14	27	19
New-ship construction and all other items in the Navy's shipbuilding accounts	15	14	24	17

Data source: Congressional Budget Office, using data from the Department of the Navy. See www.cbo.gov/publication/60732#data.

a. These amounts reflect the Navy's estimates of the cost of new-ship construction and of the amounts needed to complete ships authorized in previous years, as well as CBO's estimates of the costs of refueling nuclear-powered aircraft carriers, purchasing ships that are not part of the battle force (such as oceanographic survey ships and sealift ships), constructing large unmanned surface vessels, conducting outfitting and postdelivery activities (including purchasing the equipment and many small tools that are needed to operate a ship but that are not necessarily provided by the shipyard when the ship is built), and other smaller items.

Source: Congressional Budget Office, *An Analysis of the Navy's 2025 Shipbuilding Plan*, January 2025, p. 19 (Table 4).

Shipbuilding Delays and Industrial Base Capacity Constraints

Shipbuilding Delays

Another issue for Congress concerns significant delays in Navy shipbuilding programs. On April 2, 2024, the Navy announced significant projected delays in several of its shipbuilding programs.[15] The Navy's announcement reflected the results of a 45-day Navy review of its shipbuilding programs that then-Secretary of the Navy Carlos Del Toro directed on January 11, 2024.[16] **Figure 4** shows the Navy's one-page summary of the 45-day review and its findings regarding delays in its shipbuilding programs.

[15] For press reports about the Navy's announcement, see, for example, Megan Eckstein, "US Navy Ship Programs Face Years-Long Delays amid Labor, Supply Woes," *Defense News*, April 2, 2024; Justin Katz, "Navy Lays Out Major Shipbuilding Delays, in Rare Public Accounting," *Breaking Defense*, April 2, 2024; Nick Wilson, "Navy Shipbuilding Review Details Delays across Submarine and Ship Acquisition Portfolio," *Inside Defense*, April 2, 2024; Cal Biesecker, "Navy Confirms Delays In Shipbuilding Programs As Part Of Ongoing Review," *Defense Daily*, April 3, 2024; Chris Panella, "As It Looks to Keep Its Edge over Rivals, the US Navy's Biggest Shipbuilding Projects Are Delayed by Years, New Review Finds," *Business Insider*, April 3, 2024; Joe Saballa, "US Navy Review Exposes Major Shipbuilding Delays in Nine Key Programs," *Defense Post*, April 3, 2024; Thomas Black, "US Navy Shipbuilding Has Fallen Dangerously Behind," *Bloomberg*, April 17, 2024; Lauren Frias, "See the 10 Types of New US Navy Warships Plagued by Shipbuilding Delays," *Business Insider*, April 17, 2024; Steve Cohen, "Almost All Navy Shipbuilding Is Hopelessly Behind Schedule," *The Hill*, May 2, 2024.

[16] See, for example, Rich Abott, "SECNAV Directs Shipbuilding Review Amid Reports Frigate Running Late," *Defense Daily*, April 12, 2024.

Figure 4. Navy One-Page Summary of Delays in Shipbuilding Programs

Summary of Findings from Navy's 45-Day Shipbuilding Review

SECRETARY OF THE NAVY'S 45-DAY SHIPBUILDING REVIEW

"I remain concerned with the lingering effects of post-pandemic conditions on our shipbuilders and their suppliers that continue to affect our shipbuilding programs, particularly our Columbia Class Ballistic Missile Submarines and Constellation Class Frigate. The Department of the Navy has a strategic imperative requiring a whole-of-government effort to rebuild our nation's comprehensive maritime power – a new Maritime Statecraft in which the Navy plays a vital role... We will continue to work with industry and all other stakeholders to strengthen our national shipbuilding capacity, both naval and commercial."

-Secretary Del Toro, Jan 11 Press Release Announcing Shipbuilding Review

PURPOSE

The purpose of the review is to provide an assessment of national and local causes of shipbuilding challenges, as well as recommended actions for achieving a healthier U.S. shipbuilding industrial base that provides combat capabilities that our warfighters need, on a schedule that is relevant.

PROGRAMS REVIEWED

- Future District of Columbia (SSBN 826) Columbia Lead Ship
- Virginia Block IV
- Virginia Block V
- Future Enterprise (CVN 80)
- Constellation Lead Ship
- T-AGOS Ocean Surveillance Ships
- LPD Amphibious Transport Dock
- LHA Amphibious Assault Ship
- T-AO Fleet Replenishment Oilers
- DDG 51 Flight III

Ship Programs	Shipbuilder	Estimated Delay to Contract Delivery Based Upon Current Performance
Future District of Columbia (SSBN 826) Columbia Lead Ship	GD-EB/HII-NNS	Approx. 12-16 months
Virginia Block IV	GD-EB/HII-NNS	Approx. 36 months
Virginia Block V	GD-EB/HII-NNS	Approx. 24 months
Future Enterprise (CVN 80)	HII-NNS	Approx. 18-26 months
Constellation Lead Ship	FMM	Approx. 36 months
T-AGOS	Austal	TBD- Based on New Program Start
LPD/LHA/T-AO/DDG 51	HII-Ingalls/GD-NASSCO/GD-BIW	Delivery dates late to contract however stable and tracking to Program Manager estimates

CONTRIBUTING FACTORS

- Lead ship issues: design maturity, first of class challenges, transition to production, and design workforce
- Class Issues: acquisition and contract strategy, supply chain, skilled workforce, and government workforce

INITIATIVES TO IMPROVE

- Generate plan to address atrophy in national design and engineering workforce
- Refine acquisition and contract strategies
- Reimagine shipyard and skilled labor as a national asset
- Assess Navy workforce posture
- Budget for investments to improve performance and minimize delays

Source: Navy summary slide posted at *Inside Defense* on April 2, 2024.

Observations that might be made about the information presented in the Navy's one-page summary include the following:

- Projected delays of these lengths extending across this number of Navy shipbuilding programs at the same time amount to an unusual and arguably extraordinary situation in the post-World War II history of the Navy.
- Some observers, commenting these projected delays (or more generally on the comparative shipbuilding capacities of the United States and China), have characterized the situation as a strategic liability or major cause for concern for the United States in competing militarily with China.[17]
- The Navy's current challenges in designing ships and building ships can be viewed as part of a larger situation in which the Navy additionally faces challenges in crewing ships (due to recruiting shortfalls[18] that the Navy is working to overcome)[19] and maintaining ships (particularly nuclear-powered

[17] See, for example, Stephen Biddle and Eric Labs, "Does America Face a "Ship Gap" With China? The Real Threat Posed by Beijing's Fast-Growing Navy," *Foreign Affairs*, March 19, 2025; Lily Kuo, "Chinese Naval Modernization May Be Aided by Foreign Firms, Report Says," *Washington Post*, March 12, 2025, referring to a March 2025 CSIS report cited later in this footnote; Didi Tang, "China's Shipbuilding Dominance Poses Economic and National Security Risks for the US, a Report Says," *Associated Press*, March 11, 2025, referring to a March 2025 CSIS report cited later in this footnote; Matthew P. Funaiole, Brian Hart, and Aidan Powers-Riggs, Ship Wars, *Confronting China's Dual-Use Shipbuilding Empire*, Center for Strategic and International Studies (CSIS), March 2025, 68 pp.; Chris Panella, "Weak Shipbuilding Could Be the US Navy's Achilles' Heel in a War with China," *Business Insider*, November 17, 2024; Brent Crane, "America's SOS, Can the U.S. Build Enough Ships to Keep Up with China?" *Wire China*, October 27, 2024; Peter Apps, "China Looks to Its Shipyards to Beat US in Any Future War," *Reuters*, August 8, 2024; Justin Katz, "State Dept's Campbell: Gap between US, China Shipbuilding Is 'Deeply Concerning,'" *Breaking Defense*, July 30, 2024; Seong Hyeon Choi, "China Could Match US in Military Conflict Thanks to Shipbuilding Strength, Analysts Say, Observers Said China's Ability to Rapidly Reconstitute Its Combat Losses May Give It an Advantage, Including against 'Hellscape' Strategy," *South China Morning Post*, June 17, 2024; David Axe, "It's Just a New, Small Chinese Stealth Ship. But Its Arrival Is Terrifying," *Telegraph (UK)*, May 26, 2024; Gil Barndollar and Matthew C. Mai, "The U.S. Navy Can't Build Ships," *Foreign Policy*, May 17, 2024; Steve Cohen, "Almost All Navy Shipbuilding Is Hopelessly Behind Schedule," *The Hill*, May 2, 2024; Thomas Black, "US Navy Shipbuilding Has Fallen Dangerously Behind," *Bloomberg*, April 17, 2024; Jeffrey M. Voth, "Charting a New Course: Why the US Navy Must Confront Unrealistic Optimism," *Diplomat*, April 15, 2024.

[18] See, for example, Heather Mongilio, "Navy Has 20,000 Gaps at Sea Due to Training Backlog, Past Recruiting Shortfall," *USNI News*, December 15 2025; Heather Mongilio, "Navy Sees Promising 2025 Recruiting Numbers as Policy Shifts Endure," *USNI News*, February 24 (updated February 25), 2025; Government Accountability Office, *Navy Readiness[:] Actions Needed to Improve Support for Sailor-Led Maintenance*, GAO-24-106525, September 2024, 76 pp.; Heather Mongilio, "Navy Must Meet Recruiting Goal for 3 Years to Close Gaps at Sea," *USNI News*, January 23, 2025; Diana Stancy, "How a Sailor Shortage Is Crippling Ship Maintenance at Sea," *Navy Times*, September 11, 2024; Alison Bath, "Staff Shortages and Training Faults Hamper Navy Ship Upkeep at Sea, Sailors Tell GAO," *Stars and Stripes*, September 10, 2024; Jared Serbu, "Navy Grapples With At-Sea Shortages as Recruiting Lags," *Federal News Network*, May 20, 2024; Heather Mongilio, "Navy Set to Miss Recruiting Goals by 6,700, Chief of Naval Personnel Tells House," *USNI News*, April 17, 2024; Diana Stancy, "Navy Continues to Struggle in Recruiting as Other Services Near Goal," *Military Times*, April 17, 2024; Lolita C. Baldor, "New Recruiting Programs Put Army, Air Force on Track to Meet Enlistment Goals. Navy Will Fall Short," *Associated Press*, April 16, 2024; Timothy H.J. Nerozzi, "Navy Expects to Miss Recruiting Goal by More than 6,000 amid Worldwide Threats from China, Russia," *Fox News*, April 16, 2024; Heather Mongilio, "At-Sea Billet Gaps Rise to 22,000 for E1-E4 Sailors, CNP [Chief of Naval Personnel] Says," *USNI News*, January 10, 2024.

[19] See, for example, "Navy Sees Largest Number of Sailors Graduating from Boot Camp in a Decade," *Stars and Stripes*, December 5, 2025; Heather Mongilio, "Navy Exceeds 99% of FY 2025 Retention Goals Across All Zones," *USNI News*, November 13 (updated November 14), 2025; Heather Mongilio, "Navy Meets Enlisted Sailor Recruiting Goal for 2nd Straight Year," *USNI News*, October 1, 2025; Patty Nieberg, "Navy Beats Annual Recruiting Goals with More Recruiters, Less Paperwork," *Task & Purpose*, October 1, 2025; Shannon Renfroe, "Navy's Top Enlisted Leader Visits Bahrain, Stresses Recruiting Successes to Fill 20,000-Sailor Gap," *Stars and Stripes*, April 17, 2025; Heather Mongilio, "Personnel Chief Anticipates Drop in At-Sea Gaps as Navy Meets Recruiting Goals," *USNI News*, April 10, (continued...)

attack submarines, but also certain conventionally powered surface ships).[20] Stated differently, the Navy is currently facing challenges in designing, building, crewing, and maintaining ships.

- Workforce challenges—including challenges in recruiting and retaining sufficient numbers of production workers at shipyards and supplier firms, lower productivity of newly hired workers compared with more experienced workers, and limited numbers of ship designers (i.e., naval architects and marine engineers)—appear to be a central factor in the projected delays.[21] Several of the initiatives listed in the Navy's one-page summary for responding to the projected delays relate to workforce development.

2025; Heather Mongilio, "Navy Sees Promising 2025 Recruiting Numbers as Policy Shifts Endure," *USNI News*, February 24 (updated February 25), 2025; Diana Stancy, "Navy Bounces Back, Surpasses Recruiting Goals for Fiscal Year 2024," *Military Times*, October 2, 2024; Heather Mongilio, "Navy, Marines Exceed Fiscal Year 2024 Recruiting, Retention Goals," *USNI News*, October 1, 2024; Blaine Stewart, "For the First Time in Years, US Navy on Track to Reach Recruiting Goal in 2024," *WTKR*, September 18 (updated September 19), 2024; Hope Hodge Seck, "How Low-Scoring Applicants 'Primed the Pump' For Navy Recruiting Boost," *Navy Times*, Septembe5 5, 2024; Heather Mongilio, "Navy Set To Meet Active-Duty Recruiting Goals After Missing Two Straight Years," *USNI News*, August 29, 2024; Konstantin Toropin, "Navy's Innovative Programs Pay Off as It Meets Recruiting Goal for First Time in Years," *Military.com*, August 29, 2024; Lolita C. Baldor, "Navy recruiting rebounds, but it will miss its target to get sailors through boot camp," *Associated Press*, August 28, 2024.

[20] For further discussion of delays in maintaining nuclear-powered attack submarines, see CRS Report RL32418, *Navy Virginia-Class Submarine Program and AUKUS Submarine Proposal: Background and Issues for Congress*, by Ronald O'Rourke.

For a Government Accountability Office (GAO) report on delays in maintaining conventionally powered surface ships, see Government Accountability Office, *Weapon System Sustainment[:] Navy Ship Usage Has Decreased as Challenges and Costs Have Increased*, GAO 23-106440, January 2023, 98 pp.

For press reports regarding delays in maintaining conventionally powered surface ships, see, for example, Audrey Decker, "Navy Heading in 'Wrong Direction' with On-Time Shipyard Repair," *Inside Defense*, September 20, 2022; Megan Eckstein, "Ship Repair Delays Increased in 2022 Due to Labor, Material Challenges," *Defense News*, September 20, 2022; Sam LaGrone, "Chinese Fleet Expansion Pushing U.S. Navy to Catch Up on Maintenance," *USNI News*, September 20, 2022; Megan Eckstein, "Navy Aims for 75 'Mission-Capable' Surface Ships amid Readiness Drive," *Defense News*, January 10, 2023; Caitlin M. Kenney, "Fewer Than 1/3 of Navy's Amphibious Ships Are Ready to Deploy," *Defense One*, March 11, 2023; Carl Delfeld, "America's Navy Remains Crippled by Service and Repair Delays," *National Interest*, July 3, 2023; Craig Hooper, "America's Waterfront Buckles As Big U.S. Navy Maintenance Plans Go AWOL," *Forbes*, September 21, 2023; Paul McLeary, "As the Middle East Heats Up, the Navy Struggles to Deploy Replacement Ships," *Politico Pro*, January 12, 2024; "SECNAV Del Toro Meets with Vigor Shipyard as Part of Continued Efforts to Improve Navy Ship Repair and Modernization Work," *U.S. Navy*, February 13, 2024; Sean Carberry, "Navy Chasing North Star of 75 Available Surface Ships," *National Defense*, March 14, 2024; Megan Eckstein, "Navy, Marines Launching Study to Improve Readiness of Amphibious Fleet," *Defense News*, April 8, 2024; Sam LaGrone, "Lack of Free San Diego Dry Docks Complicates USS Boxer Repair," *USNI News*, April 19, 2024; Megan Eckstein, "Navy Looks to Apply Jet Readiness Gains to Surface Ship Fleet," *Defense News*, April 22, 2024; Megan Eckstein, "Boxer Deployment Delay Highlights Aging Fleet, Lack of Repair Capacity," *Defense News*, May 2, 2024; Mallory Shelbourne, "Marines, Navy Crafting Long-Term Fixes for Amphibious Warship Shortages," *USNI News*, May 3, 2024.

[21] See, for example, Justin Katz, "Amid Shortage, Navy Recruiting Program Struggles to Keep Half First-Year Shipbuilders: Official," *Breaking Defense*, March 26, 2025; Greg Ip, "The Hidden Threat to National Security Is Not Enough Workers," *Wall Street Journal*, December 19, 2024; Sam LaGrone, "'It's Never Going to Be Easy,' Gulf Coast Shipyards Have Plenty of Orders, But Workforce Challenges Persist," *USNI News*, October 14, 2024; Megan Eckstein, "Workforce Woes Are Top 'Strategic Challenge' for Navy, Admiral Says," *Defense News*, January 31, 2023; John Grady, "Attracting Quality Workforce Biggest Issue Facing Shipyards, Experts Tell Congress," *USNI News*, February 8, 2023; Bryant Harris, "Gulf Shipyards Struggle to Find Workers amid Shipbuilding Spree," *Defense News*, April 25, 2023; Megan Eckstein, "Coast Guard Ship Programs Facing Delays amid National Worker Shortage," *Defense News*, January 22, 2024; Paul McLeary and Lee Hudson, "Navy Shipyards Compete with Fast Food, and Are Losing," *Politico Pro*, April 9, 2024; Richard R. Burgess, "SECNAV: Frigate Delay Due to 'Atrocious' Shipyard Worker Retention," *Seapower*, May 16, 2024.

- Some of the delays shown in the one-page summary, such as those for Virginia-class submarines, were previously reported. Others were not as widely reported or the amount of delay that was previously reported was less than the amount shown on the one-page summary.
- Some of the contributing factors cited in the one-page summary, such as workforce and supply chain challenges, are generally consistent with previous press reporting on the causes of delays in Navy shipbuilding programs.
- Other contributing factors, such as limitations on the design workforce, were previously not as widely reported. Shipbuilding programs reportedly affected by limitations on the design workforce include the FFG-62 frigate program[22] and the Coast Guard's Polar Security Cutter (PSC, i.e., heavy polar icebreaker) program, which is a program being jointly managed by the Coast Guard and Navy.[23] Although the PSC program is not included in the Navy's one-page summary, the estimated delivery of the first PSC has been delayed from 2024 to 2030—a delay of about six years.
- The approximate 12- to 16-month delay in the Columbia-class ballistic missile submarine program has occurred in spite of this program being the Navy's top program priority since 2013—a status that has given the program first call on Navy and industry resources for more than a decade. The program has a tight schedule for designing and building the lead ship, and the Navy and industry for years have put significant management attention and resources into monitoring and executing this program with a goal of avoiding a schedule delay.[24] That this program faces an approximate delay of 12 to 16 months in spite of these efforts can be viewed as an indication of the significance of the challenges now facing Navy shipbuilding.
- The approximate 36-month delay for the lead ship in the FFG-62 frigate program is more than twice the 15-month delay reflected in the March 2024 budget-justification book for the Navy's FY2025 shipbuilding account.
- The Navy's one-page summary notes that the 45-day review examined the DDG-51 destroyer program, and states that this program and three other shipbuilding programs have delivery dates that are late to contract but are stable and tracking to program manager estimates. A Congressional Budget Office (CBO) analysis of DDG-51 delivery dates shown in annual budget-justification books for the Navy's shipbuilding account shows, in the FY2025 budget-justification book, an average 18-month delay for DDG-51s procured between FY2015 and FY2022 compared with delivery dates for those ships shown in the FY2023 budget justification book.[25]

An April 9, 2024, press report stated

[22] See CRS Report R44972, *Navy Constellation (FFG-62) Class Frigate Program: Background and Issues for Congress*, by Ronald O'Rourke.

[23] For more on the PSC program, see CRS Report RL34391, *Coast Guard Polar Security Cutter (Polar Icebreaker) Program: Background and Issues for Congress*, by Ronald O'Rourke, and CRS Testimony TE10100, *Building the Fleet: Assessing the Department of Homeland Security's Role in the United States Coast Guard's Acquisitions Process*, by Ronald O'Rourke.

[24] For additional discussion, see CRS Report R41129, *Navy Columbia (SSBN-826) Class Ballistic Missile Submarine Program: Background and Issues for Congress*, by Ronald O'Rourke.

[25] Source: CBO email to CRS, May 15, 2024.

> A new Navy office is assessing how to fix the years of delays plaguing the service's major shipbuilding programs, [then-]Secretary of the Navy Carlos Del Toro said on Tuesday [April 9, 2024].
>
> Del Toro ordered his Office of Strategic Assessment to perform a "deep dive" on how the service can implement recommendations from his recently released 45-day shipbuilding review.
>
> "I've also tasked OSA to develop innovative new approaches for how the Navy can better organize itself to procure ships more effectively," Del Toro said in remarks at the Navy League's annual Sea Air Space symposium.
>
> "I created OSA for just this kind of purpose: to propose data-driven assessments and recommendations that will help drive smart choices for our department."[26]

Oversight Questions on Shipbuilding Delays

Potential oversight questions for Congress include the following:

- Has the follow-on study discussed in the above April 9, 2024, press report been completed? If so, have its results been shared with Congress? If not, when does the Navy anticipate completing the study?
- What actions can the Navy take to mitigate these projected delivery delays and avoid similar delays in other shipbuilding programs? What are the potential costs of these actions, and how long will they take to produce results?
- What lessons can the Navy learn from this situation regarding ways to avoid such delays in future shipbuilding efforts?
- What are the potential strategic consequences of these projected delays, particularly in terms of the Navy's ability to counter China's improving naval capabilities?

Overview of Industrial Base Capacity Constraints

A related issue for Congress—one that has become more prominent as an oversight matter for the congressional defense committees since about 2022—concerns industrial base capacity constraints for building Navy ships. Even if the projected delays in delivering new ships discussed in the previous section are mitigated or eliminated, capacity constraints could limit the number of new Navy ships whose construction could be started or completed each year.

Industrial base capacity constraints for building Navy ships are present at both shipyards and supplier firms, and arise from limits on production facilities (i.e., numbers and ages of production spaces and equipment) and the workforce challenges discussed in the previous section. The situation is discussed at length in the Navy's FY2025 30-year shipbuilding plan.[27]

[26] Mallory Shelbourne, "SECNAV Del Toro Calls for 'Deep Dive' Into Latest Shipbuilding Review," *USNI News*, April 9, 2024. See also Justin Katz, "SECNAV Says 45-Day Shipbuilding Review Will Be Followed by Another Review," *Breaking Defense*, April 9, 2025; Allyson Park, "Del Toro: Navy Has 'Significant Plans' to Address Shipbuilding Delays," *National Defense*, April 9, 2024; Mike Schuler, "Navy Secretary Del Toro Calls for Modernization and Expansion of Domestic Shipbuilding," *gCaptain*, April 9, 2024.

[27] See U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2025*, pp. 12-14.

Submarine Capacity Constraints

Current Challenge

The most prominent shipbuilding industrial base capacity constraints are those for building submarines. Virginia-class attack submarines have been procured at a rate of two boats per year in most years since FY2011, but the submarine construction industrial base since about 2019 has not been able to complete two Virginia-class boats per year, resulting in a growing backlog of Virginia-class boats that have been procured but not completed. Since 2022, the completion rate has been about 1.1 to 1.2 Virginia-class boats per year. The Navy's goal is to increase the completion rate two 2.0 Virginia-class boats per year by 2028. The Navy is investing billions of dollars in the submarine construction industrial base to achieve that goal, but whether the Navy can achieve it is uncertain.

The Navy's goal for increasing the Virginia-class production rate to 2.0 Virginia-class boats per year by 2028 is part of a larger goal for ramping submarine production up to a rate of one Columbia-class ballistic missile submarine and two Virginia-class submarines per year by 2028—a workload that that is referred to in short as 1+2 by 2028, and which in terms of tonnage is about five times what the industry was annually contracted to do in FY2010 and prior years.[28] The industry is facing significant challenges in ramping up production to meet this goal.

Industrial Base Funding

As discussed in the Navy's FY2025 30-year shipbuilding plan, the submarine construction industrial base is receiving billions of dollars in Navy industrial base funding, with the aim of meeting the 1+2 by 2028 goal so as to meet U.S. Navy needs, and of subsequently increasing the Virginia-class production rate to 2.33 boats per year, so as to meet both U.S. Navy needs and additional Virginia-class production associated with the attack submarine portion (aka Pillar 1) of the AUKUS (Australia-UK-U.S.) trilateral security arrangement.[29] The industrial base funding began in FY2018, and is to continue through at least FY2029. The funding includes both funds requested by the Navy and funds provided by Congress that are in addition to those requested by the Navy. The funding is being used at both the country's two submarine construction shipyards—General Dynamics/Electric Boat Division of Groton, CT, and Quonset Point, RI, and Huntington Ingalls Industries/Newport News Shipbuilding of Newport News, VA—and at supplier firms. It is being used for both improvements to production facilities (aka capital expenditures, or CAPEX) and for workforce development.

Using Navy-provided industrial base funding for these efforts can reduce the cost of capital for the submarine shipyards and submarine supplier firms by avoiding a potential need for the shipyards and supplier firms to finance these efforts by borrowing money from banks or capital markets and eventually paying the money back to lenders with interest. In addition, the Navy-provided industrial base funding is largely not being incorporated into the stated procurement costs of submarines whose construction is facilitated by these efforts. If shipyards and supplier firms were to instead finance these Navy-funded facility improvements and workforce development efforts with funds borrowed from banks or capital markets, the shipyards and

[28] For additional discussion, see CRS Report R41129, *Navy Columbia (SSBN-826) Class Ballistic Missile Submarine Program: Background and Issues for Congress*, by Ronald O'Rourke, and CRS Report RL32418, *Navy Virginia-Class Submarine Program and AUKUS Submarine Proposal: Background and Issues for Congress*, by Ronald O'Rourke.

[29] See U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2025*, pp. 5-6. For more on AUKUS Pillar 1, see CRS Report RL32418, *Navy Virginia-Class Submarine Program and AUKUS Submarine Proposal: Background and Issues for Congress*, by Ronald O'Rourke.

supplier firms would seek recover those borrowed funds and their associated interest costs by incorporating them into the prices they charge the Navy for their work, which would increase the stated procurement costs of the submarines, potentially by hundreds of millions of dollars per boat.

Strategic Outsourcing

In addition to the above-discussed Navy-funded efforts at shipyards and supplier firms, the two submarine construction shipyards are also responding to constraints on their capacity by making greater use of what they and the Navy refer to as strategic outsourcing, which refers to offloading some of the two shipyards' submarine-construction work to industrial facilities in other locations.[30] As of early 2026, there were about 25 strategic outsources for submarine production, including two or three that are referred to as focus factories because of the details of their production relationships with the two submarine construction shipyards.[31]

Surface Ship Capacity Constraints

Shipbuilding capacity constraints are also affecting the construction rates for surface ships such as DDG-51 class destroyers.[32] Similar to the submarine construction industrial base, the Navy is providing industrial base funding to the surface combatant construction industrial base, though in smaller amounts. Similar to the submarine construction industrial base, the funding is being used at both shipyards and supplier firms, and for both facility improvements and workforce development efforts.

Navy Maritime Industrial Base Office

The Navy in 2024 created a Maritime Industrial Base (MIB) office to help focus Navy efforts to address shipbuilding capacity constraints. A July 26, 2024, press report stated

> The Navy is standing up a new maritime industrial base program office and has tapped one of its career civil servants to take the helm.
>
> Jay Stefany, who previously performed the duties of the assistant secretary of the Navy for research, development and acquisition (RDA), will lead the office as a direct reporting program manager, according to a Friday Navy news release.
>
> "Building on the progress and achievements of the Submarine Industrial Base (SIB) and Surface Combatant Industrial Base (SCIB) programs, DPRM-MIB creates a cohesive

[30] The difference between a strategic outsource and a traditional supplier firm is that a supplier firm makes individual components (such as pumps and valves) that are delivered to the shipyard for installation into the structure of the submarine, while a strategic outsource makes parts of the submarine's structure, and might also install components onto that piece of structure, before the structural unit is then transported to the shipyard for incorporation into the submarine.

[31] For additional discussion, see CRS Report R41129, *Navy Columbia (SSBN-826) Class Ballistic Missile Submarine Program: Background and Issues for Congress*, by Ronald O'Rourke, and CRS Report RL32418, *Navy Virginia-Class Submarine Program and AUKUS Submarine Proposal: Background and Issues for Congress*, by Ronald O'Rourke.

[32] See, for example, Mallory Shelbourne, "CNO Gilday: Industrial Capacity Largest Barrier to Growing the Fleet," *USNI News*, August 25, 2022; Rich Abott, "CNO: Industry Cannot Build Three Destroyers Per Year Yet," *Defense Daily*, September 14, 2022; Justin Katz, "Citing Industry Capacity, Navy's Gilday Throws Cold Water on Three Destroyers Per Year," *Breaking Defense*, September 14, 2022; Mallory Shelbourne, "OSD Comptroller Says U.S. Shipyards Can't Build 3 Destroyers a Year," *USNI News*, March 21 (updated March 22), 2023; Edward D. Murphy, "Bath Iron Works, Mississippi Shipyard Can't Produce Destroyers Fast Enough, Navy Says," *Portland [ME] Press Herald*, April 3 (updated April 4), 2023; Elizabeth Lawrence, "US Shipyards Can't Build Destroyers Fast Enough; Can't Even Build 2 a Year, Official Says," *American Military News*, May 2, 2023; Justin Katz, "HII, Bath to Build 9 Destroyers Total in New Multiyear Deals, Navy Mum On Price," *Breaking Defense*, August 1, 2023.

> organization focused on the health of the maritime industrial base centered on construction and sustainment," the Navy said in the release.
>
> Stefany will lead the new office as of Aug. 1 and relocate to the Washington Navy Yard, according to a June 3 memo, obtained by USNI News, that details the new office's establishment. Both surface and submarine shipbuilding and sustainment will fall under the office's purview.
>
> "While this is not a formal Acquisition Category program, the size and scope of the program require it to be treated like a major acquisition category (ACAT 1) program," reads the memo. "To that end, the program manager will be a fully acquisition certified executive dedicated full-time to this mission. The Program Manager will establish an acquisition strategy and a set of output performance metrics to guide this ACAT equivalent major program."
>
> In the new role, Stefany will report to Nickolas Guertin, the Navy's chief acquisition executive, who signed the June 3 memo. Stefany is currently the principal civilian deputy to Guertin.
>
> "The DRPM for MIB will play an instrumental role in realizing [then-]Secretary [of the Navy Carlos] Del Toro's vision to engage in a whole-of-government effort to rebuild the Nation's comprehensive maritime power and position the Navy and industry to build the expanded surface and submarine fleet that is required to achieve our National Defense Strategy," reads the Navy release.
>
> Guertin wants an execution plan from Stefany, the program executive office for ships, the program executive office for strategic submarines, the commander of Naval Sea Systems Command and Naval Reactors within a month of the office's creation, according to the memo.[33]

Ten Options for Addressing Capacity Constraints

In addition to using strategic outsourcing for building submarines and providing industrial base funding for shipyards and supplier firms, other options for addressing industrial base capacity constraints for building Navy ships (i.e., for increasing available shipbuilding capacity) include but are not limited to the 10 options discussed briefly below, which are not mutually exclusive and not listed in any particular order.[34] Eight of these 10 options are already being pursued to some degree by the Navy and industry, but could be pursued more intensively and/or at broader scale. Two of the 10 options—those relating to worker immigration and foreign shipyards—are not currently being used by the Navy and industry.

Worker Nationwide Advertising

As one workforce development effort funded in part with Navy-provided submarine industrial base funding, the submarine construction industry has raised awareness across the country of openings for submarine construction jobs through nationwide advertising efforts such as the Build Submarines advertising campaign and its associated website, buildsubmarines.com.[35] Similar

[33] Mallory Shelbourne, "Jay Stefany to Lead Navy's New Maritime Industrial Base Program Office," *USNI News*, July 26 (updated July 29), 2024. See also Rich Abott, "Stefany To Head New Navy Industrial Base Program Office," *Defense Daily*, July 29, 2024.

[34] For a policy paper discussing options that are in addition to those discussed below, see Wilson Beaver and Jim Fein, *Reforms Needed to Reduce Delays and Costs in U.S. Shipbuilding*, Heritage Foundation, May 28, 2024, 6 pp.

[35] For press reports discussing this effort, see, for example, Justin Katz, "Navy Investment in BlueForge Alliance Up to $500 million, and Growing," *Breaking Defense*, June 7, 2024; Lauren C. Williams, "Inside the Navy's Slick Effort to Find Workers to Build Submarines," *Defense One*, June 5, 2024.

efforts could be used to more widely advertise job openings for building surface ships. This option could raise awareness of shipbuilding jobs in regional U.S. labor markets that are distant from the shipyards that build Navy ships.

Worker Pipeline

Worker pipeline efforts involve shipyards and supplier firms working with state and local governments, state and local school systems, labor unions, and other organizations to not only increase awareness within their regional labor markets surrounding shipbuilding firms of shipbuilding as a potential line of work or career option, but also to encourage or provide instruction of students in basic trade skills that could help prepare them for potential future work in shipbuilding. Such efforts have been underway for years[36] and have been expanded in part with Navy-provided industrial base funding. This effort could be expanded further, to other parts of the country not currently involved in Navy shipbuilding.[37]

Worker Immigration

Carlos Del Toro, who was Secretary of the Navy during the Biden Administration, suggested worker immigration as an option for providing more workers for shipyards building Navy ships.[38] One issue that might arise in connection with this option would concern the citizenship of such workers, as contracts for building all U.S. Navy ships require that workers building the ships be U.S. citizens.[39]

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[36] See, for example, Edward Lundquist, "Pathways and Pipelines for Jobs, Careers, Shipyards Rely on Apprenticeships, Internships, Partnerships," *Naval Engineers Journal*, December 2021: 24-31. See also U.S. Department of Labor, "Acting Secretary Su, Navy Secretary Del Toro Tout Workforce Development, National Security in Visit to Newport News' Apprentice School in Virginia," news release dated August 28, 2024; Mike Gooding, "Navy Looking to Close the Gap on Shipyard Labor Shortages," *13NewsNow*, August 28, 2024; Nick McNamara, "Regional Apprenticeship Hub Announced During U.S. Labor Secretary Visit to Newport News," *WHRO*, August 28, 2024; Alexander Soule, "Behind the Scenes at Electric Boat: Building Submarines, Nonstop Hiring and Meeting Deadlines," *The Hour*, August 16, 2024.

[37] For a White House statement and examples of press reports about such efforts, see Charles Wilborn, "1,000 and Counting: Navy-Funded Industrial Program in Virginia Reaches Milestone," *Stars and Stripes*, August 2, 2025; White House, "Biden-Harris Administration Announces the Michigan Maritime Manufacturing (M3) Initiative," statement dated July 22, 2024; John Hill, "US Navy Secretary Expands Michigan Maritime Manufacturing Skills," *Naval Technology*, July 24, 2024; Candice Williams, "Michigan, Feds in $50 Million Partnership to Train Workers for Defense Production," *Detroit News*, July 22, 2024; Nick Williams, "SECNAV Announces $50 Million Michigan Workforce Development Initiative," *Inside Defense*, July 22, 2024; U.S. Navy, "SECNAV Del Toro Announces Michigan Maritime Manufacturing Initiative," press release dated July 22, 2024; Executive Office of the Governor, "Gov. Whitmer Announces New $50M Federal Michigan Maritime Manufacturing (M3) Initiative," press release dated July 22, 2024; Megan Eckstein, "Newport News Yard Seeks Experienced Workforce for Nuclear Shipbuilding," *Defense News*, May 28, 2024; The Maritime Executive, "Union Deal Will Send Construction-Industry Welders to U.S. Navy Shipyards," *Maritime Executive*, May 1, 2024; U.S. Navy, "Innovative Union Agreement Brings Midwest Construction Workforce to Bear on SECNAV [Secretary of the Navy] Shipbuilding Priorities," press release dated April 30, 2024.

[38] See, for example, John Grady, "SECNAV Del Toro Says Changes to Immigration Law, Policy Could Help with Shipyard Workforce Shortage," USNI News, February 27, 2024; Richard R. Burgess, "SECNAV [Secretary of the Navy] Advocates Increased Legal Immigration to Increase Shipbuilder Workforce," *Seapower*, April 23, 2024; Valerie Insinna, "From Kabul to Keel Laying: Afghan Immigrants Find New Careers at US shipyards," *Breaking Defense*, August 29, 2024; Rich Abott, "Del Toro Optimistic Congress Will Pass Ships For America Act," *Defense Daily*, December 10, 2024.

[39] Source for the citizenship requirement in the contracts: Navy information paper dated November 27, 2024, received by CRS from Navy Office of Legislative Affairs December 4, 2024, which states: "All existing contracts for all classes of naval vessels contain a requirement for U.S. citizenship for access to the naval vessels, work sites and adjacent areas (continued...)

Worker Wages and Benefits

Shipyards and associated supplier firms face challenges in recruiting and retaining new workers in part because wages and benefits in service and retail jobs have grown more in recent years than have wages and benefits at shipbuilders and supplier firms. As a result, the differential in wages and benefits between shipbuilding jobs and service and retail jobs has narrowed, and workers consequently might now more likely to choose service and retail jobs, where the work, while still paying less than shipbuilding work, is more likely to be done in air-conditioned and cleaner indoor settings, involve less heavy lifting or risk of serious injury, take place in locations offering easier daily commutes, and in other respects offer better quality-of-work and/or quality-of-life features.[40] Navy officials have stated that wages for shipyard workers need to be increased to make shipbuilding more competitive with jobs in other parts of the economy.[41] Reestablishing a larger differential in wages and benefits between shipbuilding jobs and service and retail jobs could require substantially increasing total wages and benefits for shipbuilding workers. Such a change could, in turn, substantially increase ship procurement costs, since shipyard labor can account for roughly 40% of a military ship's total procurement cost.

Worker Quality of Work and Quality of Life

Related to the discussion in the previous section, efforts to improve recruiting and retention of shipbuilding workers can also involve various initiatives to improve their quality of work or quality of life, such as providing affordable housing within certain commuting times of shipyards, ensuring sufficient parking at shipyards for workers arriving by car, building recreational or other support facilities for shipyard workers and their families at or close to shipyards,[42] providing child care for workers, or paying retention bonuses to workers.

Robotics and Automation

Increasing where possible the use of robotics and automation, including additive manufacturing (i.e., 3D printing) for accomplishing manufacturing work at both shipyards and supplier firms could increase production capacity beyond what might otherwise be possible with a production workforce of a given size.[43] Shipyards and supplier firms are already making use of robotics and

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when said vessels are under construction, conversion, overhaul, or repair. The requirement is under the Naval Sea Systems Command (NAVSEA) clause entitled 'ACCESS TO THE VESSELS BY NON-U.S. CITIZENS (NAVSEA) (APR 2019).' Prime contractors are responsible for subcontractor compliance with citizenship requirement."

[40] See, for example, Greg Ip, "The Hidden Threat to National Security Is Not Enough Workers," *Wall Street Journal*, December 19, 2024; Paul McLeary and Lee Hudson, "Navy Shipyards Compete with Fast Food, and Are Losing," *Politico Pro*, April 9, 2024.

[41] See, for example, Chris Panella, "Navy Secretary Says It's Hard to Get Workers to Want to Build Warships if They Get Paid What They Might Make at Buc-ee's or Amazon," *Business Insider*, November 18, 2025; Justin Katz, "Navy, Industry Has 'Got to Adjust' to Realities of Shipyard Worker Pay: Service Official," *Breaking Defense*, November 19, 2025.

[42] For examples of press reports discussing such projects, see, for example, Lauren C. Williams, "A 3D-Printed Submarine? Not Likely, but Maybe Something Close," *Defense One*, February 28, 2025; Mallory Shelbourne, "Newport News Shipbuilding Constructing 2 New Quality of Life Facilities for Navy Submariners," *USNI News*, August 6 (updated August 7), 2024; Mallory Shelbourne, "HII Awarded $78M for Quality of Life Improvements at Newport News," *USNI News*, July 15 (updated July 16), 2024.

[43] For more on the use of robotics and automation in shipyards, see, for example, the following articles, some of which discuss the use of robotics for ship maintenance rather than ship construction: *Robotics in Shipbuilding Market Size, Share & COVID-19 Impact Analysis* (truncated title), Fortune Business Insights, updated July 1, 2024; Peter Suciu, "MR4Weld Ready to Build Warships: Can Robots Rebuild the U.S. Navy?" *ClearanceJobs*, January 9, 2024; Tom (continued...)

automation; under this option, use of robotics and automation would be increased to take advantage of new advances in robotics and automation, or to perform work that in theory could be done more cost effectively by people, but that cannot be done by people due to insufficient numbers of production workers.

Distributed Shipbuilding/Federated Shipbuilding/Nation as a Shipyard

Another option—one that might be called *distributed shipbuilding*, *federated shipbuilding* or *nation as a shipyard*[44]—would involve expanding the use of strategic outsourcing, which as discussed earlier is currently used for building submarines, to the construction to surface ships as well, so as to apply strategic outsourcing to Navy shipbuilding programs in a more systematic and comprehensive manner. This option could also involve designing Navy ships and their production strategies with this approach in mind. Under this approach, ship modules would be built at facilities that are some distance from the final assembly shipyard, and the modules would then be transported by truck, train, or barge to that shipyard for incorporation into the ship. The aim of this option would be to gain access to production facilities and (perhaps more important) regional labor markets in parts of the country that currently are not significantly involved in Navy shipbuilding.[45] The manufacturing facilities that are some distance from the final assembly shipyard can be owned and operated by an owner of a final assembly shipyard[46] or by an owner other than the owner of a final assembly shipyard.

Navy ships that have been built with modules produced at locations distant from the final assembly yard include certain submarines built by General Dynamics/Electric Boat (GD/EB) since 1975,[47] every Virginia-class submarine procured since the start of Virginia-class

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Kington, "Fincantieri Taps Welding Robots to Build US Navy Frigates Faster," *Defense News*, January 8, 2024; "Ingalls Shipbuilding Sees Better Efficiency and Quality with Automated Bulkhead Production," Pemamek, Ltd., April 24, 2023; Justin Katz, "A Ship-Scaling Robot Is Getting New Work with the US Navy's Fleet," *Breaking Defense*, March 27, 2023; Kristi R. Britt, "Norfolk Naval Shipyard Demonstrates Robotic Technology to Bring Innovative Tools to the Workforce," Defense Visual Information Distribution Service (DVIDS), January 5, 2023; Robot Report Staff, "Sarcos Demonstrates Robots for Shipyard Operations to the US Navy," *Robot Report*, November 3, 2022; Shephard News Team, "Robots Put to Test for Naval Maintenance, Inspection And Repair," *Shephard News*, October 27, 2022; Latasha Ball, "Navy Debuts Future State Technology to Automate Maintenance on Ships," Defense Visual Information Distribution Service (DVIDS), May 12, 2021; Josh Farley, "Shipyard Partners with Robotics Firm to Put Exoskeletons to Work," *Kitsap Sun*, March 17, 2019; Laxman Pai, "Robots to Optimize Shipyard Operations," *Marine Link*, March 12, 2019; Xavier Vavasseur, "U.S. Navy Partners With Sarcos Robotics For Exoskeletons & Inspection Robots," *Naval News*, march 12, 2019' Chris Lo, "The Digital Shipyard: Robotics in Shipbuilding," *Ship Technology*, August 26, 2013.

[44] *Federated shipbuilding* and *nation as a shipyard* are terms used in this CRS report. RAND has referred to the approach as shared modular build—see Laurence Smallman, Hanlin Tang, John F. Schank, and Stephanie Pezard, *Shared Modular Build of Warships, How a Shared Build Can Support Future Shipbuilding*, RAND, TR-852-NAVY, 2011, 81 pp.

[45] See, for example, Collin Fox, "Distributed Manufacturing for Distributed Lethality," Center for International Maritime Security (CIMSEC), February 26, 2021; Jeffrey L. Seavy, "The United States Must Improve Its Shipbuilding Capacity," *U.S. Naval Institute Proceedings*, February 2024.

[46] The Quonset Point, RI, facility of submarine builder General Dynamics/Electric Boat (GD/EB), which GD/EB established in 1973 to provide off-site support to GD/EB's shipyard in Groton, CT, can be considered an example of a distant facility owned and operated by the owner of a final assembly shipyard. For more on the Quonset Point facility, see General Dynamics Electric Boat, "Electric Boat, Quonset Point Facility," accessed July 17, 2024, at https://www.gdeb.com/about/locations/quonset/, and General Dynamics Electric Boat, "Quonset Point History," accessed July 17, 2024, at https://www.gdeb.com/qp/about/history/.

[47] GD/EB states that the first hull cylinder section for an Ohio-class ballistic missile submarine was shipped from GD/EB's Quonset Point, RI, facility to GD/EB's shipyard in Groton, CT, in June 1975. See General Dynamics Electric Boat, "Quonset Point History," accessed July 17, 2024, at https://www.gdeb.com/qp/about/history/.

procurement in FY1998,[48] and several LPD-17 Flight I class amphibious ships that were built using this approach as a way of responding to damage to shipyards building San Antonio (LPD-17) Flight I class amphibious ships that was caused by Hurricane Katrina in 2005 (**Figure 5**).[49]

Figure 5. Shared Modular Build of LPD-17 Flight I Class Ships

Following damage to shipyards caused by Hurricane Katrina in 2005

Table C.1
Shared Build of LPD-17–Class Ships

Shipyard	LPD-17	LPD-18	LPD-19	LPD-20	LPD-21	LPD-22	LPD-23	LPD-24	LPD-25
Gulfport	x	x	x	x	x	x	x	x	x
Avondale	x	x	x	x	x	x	x	x	x
Ingalls	x	x	x	x	x	x	x	x	x
Huber	x	x	x	x	x	x	x	x	x
Tallulah				x	x	x	x	x	
Signal				x	x	x	x		
Newport News								x	
BIW								x	
Tecnico								x	
Atlantic Marine								x	

Source: Laurence Smallman, Hanlin Tang, John F. Schank, and Stephanie Pezard, *Shared Modular Build of Warships, How a Shared Build Can Support Future Shipbuilding*, RAND, TR-852-NAVY, 2011, p. 43 (Table C.1).

A September 2025 press report stated: "Several major American naval shipbuilders have started outsourcing arrangements as they try to increase capacity at their yards to build more ships at a faster pace for the U.S Navy."[50] Implementing distributed shipbuilding/federated shipbuilding/nation as a shipyard could require altering ship designs to facilitate the production of ship modules in locations other than final assembly yards, and could make shipbuilding programs more complex to manage.

[48] Virginia-class boats are built jointly by General Dynamics/Electric Boat (GD/EB)—the program's prime contractor—and Huntington Ingalls Industries/Newport News Shipbuilding (HII/NNS). Under the arrangement, GD/EB builds certain parts of each boat, HII/NNS builds certain other parts of each boat, and the yards have taken turns building the reactor compartments and performing final assembly of the boats. Parts built by the yard not doing the final assembly work are barged to the yard doing the final assembly work. For additional discussion, see CRS Report RL32418, *Navy Virginia-Class Submarine Program and AUKUS Submarine Proposal: Background and Issues for Congress*, by Ronald O'Rourke.

[49] See Laurence Smallman, Hanlin Tang, John F. Schank, and Stephanie Pezard, *Shared Modular Build of Warships, How a Shared Build Can Support Future Shipbuilding*, RAND, TR-852-NAVY, 2011, pp. 43-48 (Appendix C). See also other mentions of the shared modular production for the LPD-17 Flight I program earlier in the report.

[50] Mallory Shelbourne and Sam LaGrone, "U.S. Naval Shipyards Accelerating Outsourcing for New Construction Programs," *USNI News*, September 12 (updated September 13), 2025. See also Rich Abott, "Austal Signs Outsourcing Agreement With Master Boat Builders," *Defense Daily*, September 4, 2025; Huntington Ingalls Industries, "HII Increases Throughput, Expands Industrial Base through Distributed Shipbuilding," press release dated September 11, 2025; Rich Abott, "HII Expands Ingalls DDG Outsourcing Partners, Announces Thales And Babcock Work With Remus UUV," *Defense Daily*, September 12, 2025; Rich Abott, "Eastern Shipbuilding Confirms Subcontracting With HII For Destroyer Builds," *Defense Daily*, September 16, 2025; Nick Blenkey, "Gulf Copper in New Agreement to Support Ingalls with Outfitted Structural Units," *Marine Log*, November 17, 2025.

Additional Shipyard Facilities

Another option would be to construct new shipyard facilities for building Navy ships at waterfront sites other those currently used for building Navy ships. One version of this option would be to establish such facilities at sites that were once used to build Navy ships, such as—to name only three notional possibilities as examples, one each from the West Coast, Gulf Coast, and East Coast—the former Todd Seattle shipyard (now operated by Vigor Industrial), which once built surface combatants, including Oliver Hazard Perry (FFG-7) class frigates; the East Bank site of Huntington Ingalls Industries/Ingalls Shipbuilding (HII/Ingalls) in Pascagoula, MS, which was once used to build nuclear-powered submarines;[51] and the site of the former Philadelphia Naval Shipyard (a portion of which is currently operated by Philly Shipyard). As stated, these are only three notional possibilities, one each from the West Coast, Gulf Coast, and East Coast. Other waterfront locations around the country offer additional possible sites for building new shipyard facilities.[52] Constructing a shipyard facility capable of building large ships for the Navy could require hundreds of millions or billions of dollars of investment and years to build.

Smaller Ships

Another option would be to change the Navy's planned mix of ships (i.e., the Navy's planned fleet architecture) to include a larger number of smaller ships (such as missile-armed corvettes) that can be built by smaller shipyards that are not able to build larger Navy ships. This could increase the number of shipyards that participate in Navy shipbuilding.[53] Changing the Navy's planned mix of ships to include a larger number of smaller ships would produce a fleet mix that might be less optimal for performing missions than the Navy's currently preferred mix.

Foreign Shipyards

Another option would be to build Navy ships or parts of such ships in foreign shipyards, such as shipyards in Japan, South Korea, or allied countries in Europe. President Trump,[54] some other

[51] For a press report discussing the East Bank site, see Justin Katz, "At Ingalls, Plenty of Space for Shipbuilding but Ramping Up Workforce Will Be the Challenge," *Breaking Defense*, August 23, 2024.

[52] For press reports about a new facility at the Austal USA shipyard of Mobile, Alabama, see, for example, Rojoef Manuel, "Austal to Build Module Factory for US Navy Submarine Programs," *Defense Post*, October 29, 2024; Sam LaGrone, "Austal USA Awarded $450M to Build a Submarine Construction Facility in Mobile," *USNI News*, September 16, 2024.

[53] See, for example, Congressional Budget Office, *Perspectives on the Navy's 2025 Shipbuilding Plan*, Presentation at the National Defense Industrial Association's 26th Annual Expeditionary Warfare Conference, Eric J. Labs, National Security Division, October 22, 2024, briefing slide 20 (PDF page 21 of 23); Collin Fox, "Distributed Manufacturing for Distributed Lethality," Center for International Maritime Security (CIMSEC), February 26, 2021; Frederick "Andy" Cichon, "Rebooting the High-Low Mix of Ships," *U.S. Naval Institute Proceedings*, February 2024. See also Megan Eckstein, "Small Shipyards Consolidate amid Navy Program Delays," *Defense News*, November 8, 2022; Bryan Clark, Timothy A. Walton, and Seth Cropsey, *American Sea Power at a Crossroads: A Plan to Restore the US Navy's Maritime Advantage*, October 2020, p. 50.

[54] See, for example, Rich Abott, "DoD Advisor Confirms Potential To Build Navy Warships Outside U.S. Akin To ICE Pact," *Defense Daily*, December 11, 2025; Howard Altman, "Trump Considering Buying Foreign Ships To Make Up Gap With China," *The War Zone*, April 11, 2025; Song Sang-ho, "Trump Says U.S. May Buy 'Top-Of-The-Line' Ships from 'Close' Countries," *Yonhap*, April 11, 2025; Oh Sam-Gwon, "Korean Shipbuilders Gear Up as Trump Suggests U.S. May Buy Warships," *Korea JoongAng Daily*, April 11, 2025; Tom Sharpe, "Trump Plans to Rebuild the US Navy in Korean Shipyards. We Already Know This Works Well," *Telegraph (UK)*, January 9, 2025; Morgan Phillips, "Trump Threatens to Tap Allies for Military Shipbuilding if US Can't Produce," *Fox News*, January 7, 2025; Joe Gould, "Trump Hints Pentagon Could Lean on Allies to Build Warships," *Politico Pro*, January 6, 2025.

U.S. officials,[55] and other observers[56] have suggested or advocated using foreign shipyards—particularly shipyards in South Korea and/or Japan—to build ships for the U.S. Navy, at least as a stop-gap measure until U.S. shipbuilding capacity constraints can be alleviated. Other observers oppose proposals for using foreign shipyards to build ships for the U.S. Navy.[57]

10 U.S.C. 8679 prohibits the construction of vessels for U.S. Armed Forces, or the major components of the hull or the superstructures of such vessels, in foreign shipyards. The statute includes a presidential waiver for the national security interest. The phrase *major component of the hull* can be viewed as including, among other things, ship sections. The full text of the statute as of January 19, 2026, is as follows:

> §8679. Construction of vessels in foreign shipyards: prohibition
>
> (a) Prohibition.-Except as provided in subsection (b), no vessel to be constructed for any of the armed forces, and no major component of the hull or superstructure of any such vessel, may be constructed in a foreign shipyard.
>
> (b) Presidential Waiver for National Security Interest. (1) The President may authorize exceptions to the prohibition in subsection (a) when the President determines that it is in the national security interest of the United States to do so.
>
> (2) The President shall transmit notice to Congress of any such determination, and no contract may be made pursuant to the exception authorized until the end of the 30-day period beginning on the date on which the notice of the determination is received by Congress.

[55] See, for example, Daryl Caudle, "Winning the Long Game: Sustaining Sea Power as Our Enduring Advantage," *Defense News*, December 18, 2025, in which the author—the Chief of Naval Operations—states (emphasis added): "Until American [ship]yards fully recover from workforce shortages, supply chain fragility and lack of automation, we are exploring responsible cooperation with allied shipbuilders in places like South Korea and Japan to bridge near-term gaps in maintenance, repair and *production*." See also "U.S. Navy Looks to Korean and Japanese Shipyards to Address Submarine and Destroyer Delays," *Army Recognition*, November 26, 2025; Kim Hyun-soo, "Arms Agency, U.S. Navy Discuss Cooperation on Naval Shipbuilding, MRO," *Yonhap*, August 8, 2025.

[56] See, for example, Jennifer Hlad, "Can Partner Nations Help Solve the Navy's Shipbuilding Woes?" *Defense One*, November 24, 2025; Maritime Executive, "South Korean Yards Want to Build U.S. Navy Ships in Korea," *Maritime Executive*, November 16, 2025; Jihoon Yu, "ROK–U.S. Shipbuilding Cooperation Matters for Maritime Power," *Real Clear World*, December 17, 2025; Juliana Liu, "South Korea Is the Answer to America's Naval Problem," *Bloomberg*, December 4, 2025; Brad Lendon, Gawon Bae, Yoonjung Seo, Mike Valerio, and Charlie Miller, "US Navy Shipbuilding Is 'a Mess.' South Korean companies Think They Can Help Fix It," *CNN*, updated October 20, 2025; William Hawkins, "Trade Is Not What Matters Most," *U.S. Naval Institute Proceedings*, July 2025; Namyeon Kwon, "Don't Miss the Boat: Considerations for U.S.-South Korea Maritime Cooperation," Center for Strategic and International Studies (CSIS), June 12, 2025; Steve Forbes, "Making Our Navy Supreme Again," *Forbes*, May 27, 2025; Arjun Akwei and Jinwan Park, "Trump Wants More Ships? Korea Stands Ready to Help Build Them," *The Hill*, May 8, 2025; Miyeon Oh and Michael Cecire, "Why the United States, South Korea, and Japan Must Cooperate on Shipbuilding," RAND, May 6, 2025; "South Korea Offers to Build Five Aegis Destroyers per Year to Help the US Counter China at Sea," *Army Recognition*, April 11, 2025; Fatima Bahtić, "Facing New Realities amid Rising Costs: Could Future US Navy Warships Be Built at Foreign Shipyards?" *NavalToday.com*, February 17, 2025; Peter Suciu, "The 21st Century U.S. Navy Might Be Built in South Korea," *National Interest*, January 9, 2025; Brian T. Di Mascio, "Foreign Shipyards Can Help the U.S. Navy Build Its Fleet," *U.S. Naval Institute Proceedings*, October 2024; Douglas Robb, "Japan, South Korea and the US Should Mirror AUKUS for Destroyers," *Defense News*, October 5, 2023; Brad Lendon, "These May Be the World's Best Warships. And They're Not American," *CNN*, June 3, 2023.

[57] See, for example, Rebecca Grant, "6 Reasons to Say 'No Thanks' to Building U.S. Navy Warships in South Korea," *Real Clear Defense*, July 30, 2025; Matthew Paxton, "Outsourcing the US Shipyard Industrial Base Will Outsource American Sovereignty," *Breaking Defense*, August 5, 2024; Shipbuilders Council of America, "'We Stand Ready' Ad Campaign Shows American Shipbuilders Can Deliver the Fleet of the Future," undated, accessed January 4, 2026.

> (c) Exception for Inflatable Boats. An inflatable boat or a rigid inflatable boat, as defined by the Secretary of the Navy, is not a vessel for the purpose of the restriction in subsection (a).

In addition to 10 U.S.C. 8679, a recurring provision in the annual DOD Appropriations Act has prohibited funds appropriated each year for the Navy's shipbuilding account—the Shipbuilding and Conversion, Navy (SCN) appropriation account—from being used to build naval vessels or the major components of naval vessels in foreign shipyards or other foreign facilities. The provision has not included a presidential waiver. The phrase *major components* can be viewed as including, among other things, ship sections. The text of the provision, which appears in the paragraph of the DOD appropriations act that makes appropriations for the SCN account, has been as follows:

> … *Provided furth*er, That none of the funds provided under this heading [i.e., the heading for the SCN account] for the construction or conversion of any naval vessel to be constructed in shipyards in the United States shall be expended in foreign facilities for the construction of major components of such vessel: *Provided further*, That none of the funds provided under this heading shall be used for the construction of any naval vessel in foreign shipyards:…

Another issue that would arise in connection with this option would concern the ability to safeguard sensitive U.S. naval technology and ship-design know-how in foreign shipyards and supplier firms whose employees would generally not be U.S. citizens. This issue currently arises in connection with repairing and maintaining certain U.S. Navy ships at shipyards in foreign locations; one question would be how this issue might differ for a situation of building (rather than repairing and maintaining) U.S. Navy ships.

Supporters of having foreign shipyards contribute to the construction of ships for the U.S. Navy could argue that in light of China's naval shipbuilding effort, increasing production of ships for the U.S. Navy is a matter of some urgency, and that given the time needed to alleviate constraints on U.S. shipbuilding capacity (particularly limits on numbers of available workers and the productivity of recently hired workers), there are few apparent options other than using foreign shipyards for quickly expanding the shipbuilding capacity engaged in building ships for the U.S. Navy. They could argue that involving foreign shipyards in building ships for the U.S. Navy could be a stop-gap measure to be employed until U.S. shipbuilding capacity is increased, and that for similar reasons, Finnish shipyards are being brought into the effort to build new icebreakers for the U.S. Coast Guard.[58] They could argue that foreign shipyards in some cases have lower shipbuilding costs than U.S. shipyards, due in part to lower labor costs, and that involving foreign shipyards in the U.S. Navy's shipbuilding effort could therefore reduce ship procurement costs for the U.S. Navy.

Skeptics of having foreign shipyards contribute to the construction of ships for the U.S. Navy could argue that the Navy and industry are taking numerous steps to alleviate constraints on U.S. shipbuilding capacity; that diverting some of the work involved in building ships for the Navy to foreign shipyards could weaken the U.S. shipbuilding industrial base by depriving the U.S. shipbuilding industry of work that would support efforts to alleviate those constraints; that involving foreign shipyards in the Navy's shipbuilding effort, even if described as a stop-gap measure, could set a precedent for involving foreign shipyards on a continuing basis, which could further weaken the U.S. shipbuilding industrial base; and that involving foreign shipyards in the

[58] For more on programs to build new icebreakers for the U.S. Coast Guard, see CRS Report RL34391, *Coast Guard Polar Security Cutter (PSC) and Arctic Security Cutter (ASC) Icebreaker Programs: Background and Issues for Congress*, by Ronald O'Rourke.

Navy's shipbuilding effort could add to Navy shipbuilding program management workloads, and do so at a time when the Navy is facing challenges in executing its shipbuilding programs.

Challenges and Limitations of These Options

In addition to challenges and limitations noted for certain individual options discussed above, many of the above options could be very expensive, could take years to produce results, or both.

Five Options for Using Available Capacity

In addition to the above options for addressing shipbuilding capacity constraints (i.e., for *increasing* available shipbuilding capacity), additional options for *using* available ship-design and shipbuilding capacity include but are not limited to the five discussed briefly below, which are not mutually exclusive and not listed in any particular order. Four of these five options are already being pursued to some degree by the Navy and industry, but could be pursued more intensively and/or at broader scale. The fifth option, relating to up-front, enterprise-level fleet design, is not currently being used by the Navy and industry to a significant degree.

World-Standard Shipbuilding Practices and Methods

One option for maximizing the use of available shipbuilding capacity is to incorporate world-standard shipbuilding practices and methods—including those used by leading shipbuilders in Japan and South Korea—into the operations of U.S. shipyards that build Navy ships. Some of these practices and methods relate to in-house worker training methods; others relate to shipyard operations management and materials management (such as, for example, monitoring and managing the flow of work through the shipyard on a continuous basis); and still others relate to the design and fabrication of ship sections and components.

DOD and Navy interest in this option dates back to at least 2005.[59] GAO has focused on this option in multiple reports since at least 2009.[60] Other observers have also focused on this option.[61] Carlos Del Toro, who was Secretary of the Navy during the Biden Administration, encouraged Japanese and South Korean shipbuilders to consider investing in U.S. shipyards and transferring their shipbuilding practices and methods to U.S. shipyards.[62] Some builders of Navy

[59] See Department of Defense, *Global Shipbuilding Industrial Base Benchmarking Study, Part I: Major Shipyards*, May 2005, 70 pp. Related to this report, see also Testimony of Damien Bloor, Principal Consultant, First Marine International Limited, before the Seapower Subcom[m]ittee of the Senate Armed Services Committee on the Status and Trends in Shipbuilding, and the Industrial Base, April 6, 2006, 2 pp. As a 2016 update to this report, see First Marine International, *2014 US Naval Shipbuilding and Repair Industry Benchmarking, Part 1: Shipbuilding, [sponsored by] Assistant Secretary of the Navy, Research, Development & Acquisition*, March 18, 2016, 101 pp.

[60] See, for example, Government Accountability Office, *Navy Shipbuilding[:] Increased Use of Leading Design Practices Could Improve Timeliness of Deliveries*, GAO-24-105503, May 2024, 64 pp.; Government Accountability Office, *Navy Shipbuilding[:] Past Performance Provides Valuable Lessons for Future Investments*, GAO-18-238SP, June 2018, 36 pp.; Government Accountability Office, *Navy Shipbuilding[:] Opportunities Exist to Improve Practices Affecting Quality*, GAO-14-122, November 2013, 99 pp.; Government Accountability Office, *Best Practices[:] High Levels of Knowledge at Key Points Differentiate Commercial Shipbuilding from Navy Shipbuilding*, GAO-09-322, May 2009, 70 pp.

[61] See, for example, McKinsey & Company, "Charting a New Course: The Untapped Potential of American Shipyards," June 5, 2024.

[62] See, for example, Rich Abott, "SECNAV Looks To Allied Yard Practices To Fix Shipbuilding Delays," *Defense Daily*, April 10, 2024; Megan Eckstein, "US Navy Secretary Points to Foreign Shipyards' Practices to Fix Delays," *Defense News*, April 9, 2024; Sam LaGrone, "SECNAV Del Toro Tells U.S. Shipyards 'Invest More', Encourages Foreign Investment," *USNI News*, March 7, 2024; Ken Moriyasu, "U.S. Seeks to Revive Idled Shipyards with Help of (continued...)

ships have pursued the option. For example, General Dynamics' National Steel and Shipbuilding Company (GD/NASSCO) of San Diego, a builder of both Navy auxiliary ships and commercial cargo ships, has done so since at least 1990.[63] In April 2025, Huntington Ingalls Industries Newport News Shipbuilding (HII/NNS) of Newport News, VA, a builder of Navy aircraft carriers and submarines, signed an agreement with a South Korean shipbuilder to share best practices and otherwise collaborate on shipbuilding matters.[64] The two shipbuilders signed a follow-on agreement in October 2025.[65]

In adopting commercial world-standard shipbuilding practices and methods into naval shipbuilding, significant differences between commercial and naval ships need to be taken into

Japan, South Korea," *Nikkei Asia*, March 4, 2024; Justin Katz, "In South Korea, Del Toro Courts Major Shipbuilders to Set up Shop in US," *Breaking Defense*, February 29, 2024; U.S. Navy, "Secretary of the Navy Del Toro Meets with Leaders of HD Hyundai and Hanwha in the Republic of Korea, Tours Shipyards," press release dated February 28, 2024.

[63] See, for example, Kate Callen, "The Resurrection of NASSCO: San Diego Shipyard Skirts Reefs, Sails On," *United Press International*, September 11, 1990, which states that "NASSCO, rejuvenated by new construction methods it was forced to borrow from the Japanese, prepared for more business…. The last half of the 1980s seemed like a death march for San Diego's pre-eminent shipbuilder [NASSCO]. Like other domestic yards, it lost business to foreign shipyards after the Reagan administration shut off a federal subsidy program for commercial shipbuilding…. The end of federal subsidies forced the shipyard to cut costs and step up production. With the help of a Japanese consulting team, NASSCO began replacing outdated construction methods with newer internationally-accepted techniques." See also National Shipbuilding Research Program, *Investigate Methods of Improving Production Throughput in a Shipyard*, U.S. Department of the Navy, Carderock Division, Naval Surface Warfare Center, in cooperation with National Steel and Shipbuilding Company, San Diego, California, NSRP 0450, September 1995 (report submitted by National Steel and Shipbuilding Company, San Diego, CA), 112 pp.; Center for Naval Shipbuilding Technology (CNST), *Nested Material Manufacturing Technology Improvement*, project final report March 18, 2008 (report submitted by General Dynamics—NASSCO), 23 pp. A November 2019 Cato Institute report states

> In 2006, one of the few U.S. shipyards that builds large oceangoing ships, General Dynamics NASSCO, signed a partnership agreement with Daewoo Ship Engineering Company that would see the South Korean firm "provide the detail designs, support services and some of the material necessary for ship production." The fruits of this agreement are readily apparent, with Daewoo serving as the design agent for the Kanaloa-class ships currently being built at the shipyard. Philly Shipyard's 2018 annual report, meanwhile, highlights its "access to global shipbuilding and design expertise with partners in Asia and Europe," adding that the company typically seeks to "identify and license existing best-in-class designs and cooperate with the owners of such designs to make such modifications as are necessary."
>
> Colin Grabow, *Rust Buckets How the Jones Act Undermines U.S. Shipbuilding and National Security*, Cato Institute, November 12, 2019, pp. 11-12.)

[64] See, for example, Matthew Beinart, "HII, South Korea's HD Hyundai Heavy Industries Sign MoU For Accelerating Ship Production," *Defense Daily*, April 7, 2025; Zita Ballinger Fletcher, "Top US, South Korean Shipbuilders Partner to Bolster Vessel Production," *Navy Times*, April 7, 2025; Mike Glenn, "Largest U.S., South Korean Shipbuilding Companies to Collaborate to Ramp Up U.S. Ship Production," *Washington Times*, April 7, 2025; HD Hyundai, "HD Hyundai Forms 'Naval Alliance' with the Largest U.S. Defense Shipbuilder," *PR Newswire*, April 7, 2025; Sam LaGrone, "Naval Shipbuilder HII Signs Agreement with South Korean Shipyard Hyundai Heavy Industries," *USNI News*, April 7, 2025; Mike Schuler, "HII and HD Hyundai Sign MOU on Shipbuilding," *gCaptain*, April 7, 2025; Utkarsh Shetti, "Huntington Ingalls, HD Hyundai Heavy Industries Sign MOU for Shipbuilding Collaboration," *Reuters*, April 7, 2025; Brad Lendon, "US and South Korean Warship Makers Sign Deal that Could Help Narrow Naval Race with China," CNN, April 8, 2025.

[65] See, for example, Huntington Ingalls Industries, "HD Hyundai Heavy Industries and HII Execute Memorandum of Agreement to Collaborate on Distributed Shipbuilding and Pursue Teaming on Auxiliary and Commercial Vessels," news release dated October 26, 2025; Rich Abott, "HII And South Korea's Hyundai Agree To Jointly Bid For Navy Auxiliary Ships," *Defense Daily*, October 27, 2025; WorkBoat Staff, "Huntington Ingalls, HD Hyundai Sign MOA to Expand US–Korea Shipbuilding Cooperation," *WorkBoat*, October 27, 2025; Fatima Bahtić, "HII, HD Hyundai Ink Deal to Advance Next-Generation Naval Programs," *Naval Today*, October 28, 2025; Justin Katz, "American, South Korean Shipbuilders Ink Deal to Pursue Navy Auxiliary Ship Programs," *Breaking Defense*, October 28, 2025; "HII and HHI Sign MoA to Advance US-Korea Shipbuilding," *Naval Technology*, October 28, 2025; Alex Wilson, "Largest Shipbuilders in US, South Korea Agree to 'Deeper Collaboration,'" *Stars and Stripes*, October 29, 2025.

account. Examples of such differences include ship production quantities; interior density and complexity; commercial vs. military construction standards; specialty steels and welding techniques (particularly for submarines); propulsion systems (including nuclear propulsion); ship design and construction for reduced detectability and high survivability; the installation, integration, and testing of complex combat systems; and intended service lives.[66]

Navy as a Kit of Parts

Under an option that might be called *Navy as a kit of parts*,[67] the design of the Navy would be modified over time toward one in which, more fully than is now the case, standardized components would go into standardized weapon systems that would be incorporated into a collection of hull designs with standardized features, with the aim of making the Navy easier to design and build (and also easier to crew and maintain). Such an approach has been proposed and considered since the 1970s,[68] and the Navy since the 1970s has taken some steps in this direction, particularly in terms of pursuing commonality in its ship propulsion and ship combat system equipment. This option would expand the effort into one that is more systematic and comprehensive, so as to optimize the Navy more fully for ship design and ship construction (and also ship crewing and ship maintenance) at the fleet-wide level rather than optimizing the design of individual ship classes at the potential cost of reducing or missing opportunities for optimizing at the fleet-wide level. This option could involve de-optimizing individual ship designs (when those designs are viewed individually) in exchange for better optimizing the Navy at the fleet-wide level.

Ship Designs Requiring Fewer Labor Hours to Build

Another option—one used by South Korean warship designers—would be to design ship sections with a strong focus on reducing the labor hours needed to produce them (vs. focusing on reducing ship size, weight, and material costs). This option—which can be viewed as an example of the world-standard shipbuilding practices and methods discussed above—can involve enlarging ship sections somewhat so as to improve worker access to spaces in the ship sections and allow the sections to be filled with things like straighter pipe runs that take up more space but require less labor to produce and install, rather than space-saving but more convoluted pipe runs that require

[66] For further discussion, see John Birkler, et al., *Differences Between Military and Commercial Shipbuilding, Implications for the United Kingdom's Ministry of Defence*, RAND, MG-236, 2005, 111 pp. See also Justin Katz, "How SECNAV's Claims about S. Korean, Japanese Shipbuilders Do and Do Not Line Up," *Breaking Defense*, July 15, 2024.

[67] The term *Navy as a kit of parts* is a term used in this CRS report. Other terms that have been used over the years refer to ship designs that are modular, flexible, or adaptable. See, for example, the citations in the next footnote.

[68] See, for example, Jack W. Abbott, "Modular Payload Ships: 1975 – 2005," presentation to Naval Postgraduate School, April 27, 2006, 38 slides; Matthew Smidt and Michael Junge, "A Modular Warship for 2025, A Common Hull Design Adaptable to Multiple Missions Would Make Tomorrow's Navy Flexible, Versatile, and Affordable," *U.S. Naval Institute Proceedings*, January 2014; Shawna Garver and Jack Abbott, "Embracing Change, Reducing Cost and Maximizing Mission Effectiveness with the Flexible Warship," *Marine Technology*, July 2014: 22-28; N. [Norbert] H. Doerry, "Institutionalizing Modular Adaptable Ship Technologies," *Journal of Ship Production and Design*, August 2014, 18 pp.; Jack W. Abbott, "Flexible Warships – An Update," presentation to ASNE Tysons Corner Chapter, September 30, 2014, 33 slides; John F. Schank et al., *Designing Adaptable Ships, Modularity and Flexibility in Future Ship Designs*, RAND, report RR-696, 2016, 139 pp.; Norbert Doerry and Philip Koenig, "Modularity and Adaptability in Future U.S. Navy Ship Designs," conference paper, November 2017, 9 pp.; Tony Jang, Lois Pena, and Nicholas Abbott, "Realizing Flexible Ships: Lessons from Allies to Improve the U.S. Shipbuilding, Affordability, Capacity, and Schedule," *Naval Engineers Journal*, December 2019: 59-71; Robert G. Keane, Barry Tibbitts, Peter E. Jaquith, and Timoth B. Nichols, "Let's Design an Affordable and Flexible Warship: With the Right Design and Acquisition Strategy," Naval Engineers Journal, September 2021: 77-94.

more labor to produce and install. In such cases, the aim is for the reduction in labor costs to be greater than the increase in material costs that would result from making the ship section larger. Some observers argue, based on South Korea's experience, that this can result in ship designs that are somewhat larger—but nevertheless easier and less expensive to build, maintain, and modernize over their life cycles.[69]

Continuous Production

Another option, which can be referred to as *continuous production*, would be to construct Navy shipbuilding plans that

- emphasize continuous steady, production rates;
- employ multiyear contracting where cost-effective;[70]
- avoid year-to-year changes in near-term procurement profiles (i.e., programmed annual procurement quantities) that are made in an attempt to precisely match targeted downstream force levels;
- as a part of the previous point, manage the size of the Navy not at "the front end," though changes in near-term procurement profiles, but at "the back end," through end-of-life retirement decisions;
- manage transitions from procuring one class of ship to procuring the next class of ship of the same general kind in a manner that avoids or minimizes reductions in the numbers of ships of that general kind that are procured during the transitional period; and
- conceive and talk about the future Navy more in terms of steady production rates and a broadly defined future size than in terms of a precise targeted downstream force-level.

Compared with current practice, this option would place more emphasis on avoiding the potential costs and inefficiencies of irregular or changing procurement profiles, and recognize the likelihood that targeted downstream force levels could change, perhaps multiple times, between now and the year that the targeted downstream force levels are to be achieved. (For examples of past changes in U.S. Navy force-level goals, which tend to occur once every few years, see **Appendix A**.)

Managing the size of the Navy not at "the front end," though changes in near-term procurement profiles, but at "the back end," through end-of-life retirement decisions, would be similar to the approach that Japan uses for building its submarines and managing the size of its submarine fleet: to provide stability for its submarine construction industrial base and maximize efficiency in the production of its submarines, Japan aims to maintain a steady submarine production rate of one boat per year. When Japan planned to maintain a force of 18 submarines, it did so with the one-per-year build rate by keeping its submarines in service to about age 18. When Japan increased its submarine force-level goal to 22 boats, it maintained the one-per-year build rate and started keeping its submarines in service to about age 22. If Japan were to decide to further increase its submarine fleet to 30 boats, it could again maintain the one-per-year build rate and start keeping its boats in service to age 30. Under this approach, the one-per-year build rate is held constant

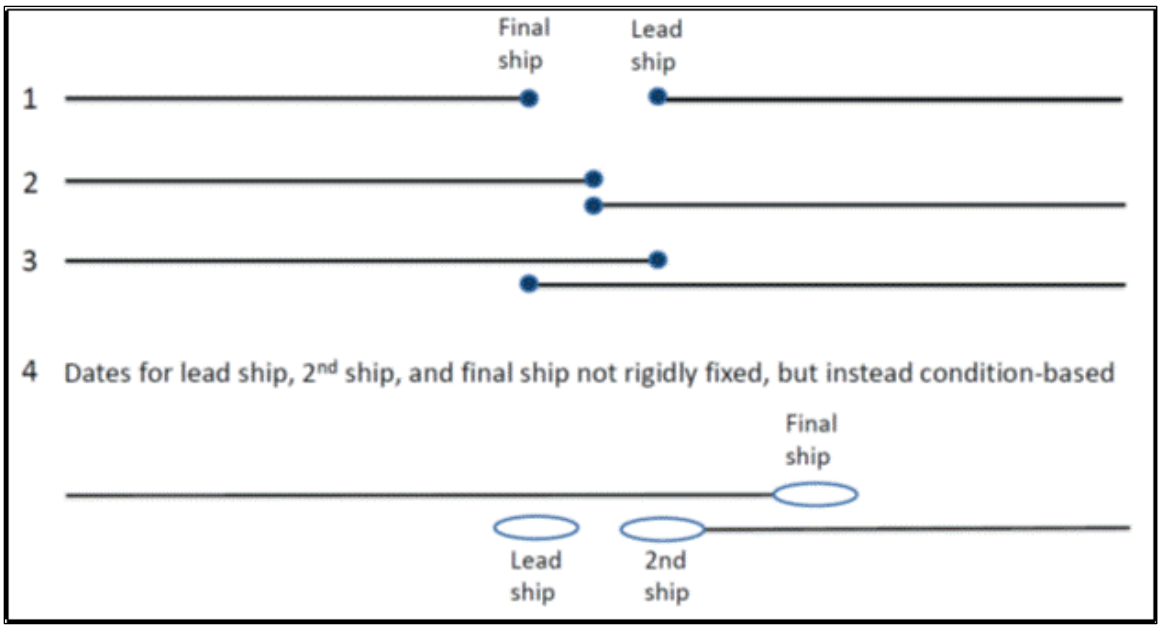
[69] See Peter E. Jaquith, "Asian vs. U.S. Warship Design, Production Engineering, and Construction Practice," *Naval Engineers Journal*, December 2019: 55-58.

[70] For more on multiyear contracting, see CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by Ronald O'Rourke.

even while the planned force size changes, because the size of the force is managed through end-of-life retirement decisions.[71]

Figure 6 presents a graphic on managing procurement transitions between classes. In the graphic, approach Number 1, in which there is a gap of one or more years between the procurement of the final ship of a class and the procurement of the lead ship of the next class, is recognized as one that can lead to significant losses of ship procurement opportunities and also cause damage to the shipbuilding industrial base for that type of ship.

Figure 6. Condition-Based, Minimal-Loss Procurement Transition Between Classes



Source: Graphic prepared by CRS.

Approach Number 2 closes up the gap shown in approach Number 1 but does not account for the risk of problems occurring in the effort to get production of the successor class underway. Approach Number 2 is the one that the Navy used in transitioning from procurement of Littoral Combat Ships (LCSs) to procurement of Constellation (FFG-62) class frigates, and the result, given delays in the FFG-62 program, has been a loss for the Navy in small surface combatant ship procurement opportunities.

Approach Number 3 provides a cushion against the risk problems occurring in the effort to get production of the successor class underway. The Navy successfully used this approach in transitioning from the procurement of CG-47 class Aegis cruisers to DDG-51 class Aegis destroyers. During that transition, the effort to get DDG-51 production underway encountered a delay, and the Navy was able to use the overlap between CG-47 procurement and DDG-51 procurement to shift some large surface combatant procurement opportunities back to the CG-47 program while the DDG-51 program recovered from its delay.

[71] See, for example, Jeong Soo "Gary" Kim, "Lessons from Japan and South Korea's Submarine Builders," *U.S. Naval Institute Proceedings*, June 2025; Jeong Soo "Gary" Kim, "Japan's Submarine Industrial Base and Infrastructure – Unique and Stable," Center for International Maritime Security (CIMSEC), July 15, 2024; Bradley Perrett, "How Japan Could Quickly Build Up Its Submarine Force," *Strategist*, April 18, 2023; Craig Hooper, "If Japan Expands Submarine Fleet To 30, It Will Shape The Pacific's Undersea Defenses," *Forbes*, July 19 (updated July 20), 2020.

Given the complexity of today's ships and industry conditions, Approach Number 3 may no longer provide the desired amount of protection against avoiding losses in procurement opportunities in transitioning procurement from one class to the next. If so, a new approach—something like that shown as Number 4—may now be required. This approach would treat lead ships more fully like prototypes, which some observers consider them to in effect be. Under this approach, the date for lead ship procurement is kept flexible until the design is fully completed, the date for starting the second ship is kept flexible until challenges in building the lead ship are fully worked out, and procurement of the previous class is continued until serial procurement of the successor class is well established.

Pursuing the option of continuous production could lead to a change in how the future Navy is described and discussed. Instead of describing and discussing the future Navy as a fleet that is to eventually consist of a certain precise number of ships (e.g., 381 ships), the future Navy might instead be described and discussed as a fleet of a certain general size range that will be produced by building a certain number of attack submarines each year, a certain number of destroyers per year, and so on, with the precise number of ships in the future fleet to be determined in the future, through end-of-life retirement decisions. The result would be a more production-centered (rather than end-point-centered) way of describing and discussing the future Navy.

Up-Front, Enterprise-Level Fleet Design, and a Related Vetting Question

Another option would be for the Navy to engage more substantially in up-front, enterprise-level fleet design, with an eye toward designing a fleet that as a whole would be intrinsically easier to design, build, crew, and maintain, particularly in terms of the numbers of people needed and the complexity of demands placed on people for designing, building, crewing, and maintaining ships.[72] Under this option, instead of designing the Navy incrementally, one ship class at a time, and producing a future Navy through the accretion over time of separately considered, bespoke ship designs, the Navy would place more up-front emphasis on how its ship acquisition programs collectively place demands on U.S. ship design, production, crewing, and maintenance capabilities, and on how up-front Navy decisions regarding its ship acquisition programs could shape those capabilities over time so as to better support future Navy needs.[73]

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[72] As used here, broad-scale means an effort that includes many or all of the Navy's ship categories, and end-to-end means an effort that considers all stages of a ship's life cycle, from design and construction through operation, maintenance, and potential modification, to retirement and disposal. For articles bearing on up-front, enterprise-level fleet design, see Arthur H. Barber III, "Rethinking the Future Fleet, The U.S. Navy Has No Overall Requirements Process for Designing a Fleet, and It Needs One—Desperately," *U.S. Naval Institute Proceedings*, May 2014; Arthur H. Barber III, "Redesign the Fleet," *U.S. Naval Institute Proceedings*, January 2019; Bryan Clark, "The Surface Navy Should Design for Competition, Rethink Fleet Make-Up," *Breaking Defense*, January 8, 2024; Robert C. "Barney" Rubel, "Roadblock to Strategy and Fleet Design: Platform-Centric Thinking," Center for Maritime Strategy, September 19, 2023; Jeffrey E. Kline, "Revamping Fleet Design and Maritime Strategy: An Integrated Naval Campaign For Advantage," Center for International Maritime Security (CIMSEC), September 18, 2023; James G. Foggo, "The US Navy Needs a Comprehensive Strategy to Support Future Fleet Design," *The Hill*, April 3, 2023.

[73] One observer—the Navy's chief analyst of future force structure and capability requirements within the Office of the Chief of Naval Operations from 2002 to 2014—stated

> It is time to rethink how we will design the future Fleet in a way that rebalances affordability, platform capability, and deployment processes. We must build it as a whole instead of continuing to "let it happen" one platform requirements decision at a time….
>
> Today the Navy operates about 50 different types of ships and aircraft with individual design-service lives of 20 to 50 years. On average, about two classes of ship or aircraft annually come up for a decision on replacement at the end of their service lives. Each of these decisions, a multi-year joint bureaucratic process with dozens of participating organizations, is made individually….

(continued...)

This option could also involve the use of a new up-front vetting question for proposed shipbuilding programs that would require those proposing a new program to show how the proposed program reflects the results of an up-front, enterprise-level fleet design and how the proposed program would make the Navy inherently easier to design, build, crew, and maintain by doing one or more of the things discussed in the previous three sections (i.e., Navy as a kit of parts, ship designs requiring fewer labor hours to build, and continuous production), by doing other things, or both.

Challenges and Limitations of These Options

The above options for using available ship-design and shipbuilding capacity could take years to produce results. They could require significant changes in Navy fleet design practices, ship acquisition practices, and Navy organization. They could also have potentially significant impacts for maintaining congressional oversight of Navy shipbuilding programs and maintaining year-to-year congressional flexibility for determining shipbuilding-related spending.

Summary List of Options

As noted earlier, 12 of the 15 options discussed above—8 of the 10 for addressing industrial base capacity constraints for building Navy ships (i.e., for *increasing* available shipbuilding capacity) and 4 of the 5 for *using* available ship-design and shipbuilding capacity—are already being pursued by the Navy and industry to some degree, but could be pursued more intensively and/or at broader scale, while 3 of the 15 options are not currently being used by the Navy and industry. Using the section headers employed above, a summary list of the 15 options (with the three that are not currently being used shown in italics) is as follows:

- **Options for addressing shipbuilding capacity constraints**

> The future Fleet is being designed ad hoc, one platform at a time, and we cannot afford this. How can we change the trend toward an ever-smaller Fleet of ever-better platforms while maintaining the capability superiority needed to execute our missions? It will take a top-down design to provide a structure in which individual platform requirements can be shaped and disciplined despite all of the pressures….
>
> Developing an overall fleet design to structure and discipline individual platform requirements is no small task. Simply constraining platform cost without dealing with how capabilities might be delivered differently is not sufficient. This is not a once-and-done process, as changes in threat and in our own technology options will never stop. But neither can it be a process that changes the design in some fundamental way every year or two—it will have to influence platform requirements for a long period of time to affect a significant number of new platform designs.
>
> We cannot afford to retire legacy platforms prematurely simply because they are not optimized within our new Fleet design, which will take time to implement and have to be done incrementally. Real and fundamental change in the roles, missions, and interdependencies among platform types, and in the balance between manned and unmanned and between platform and payload, is an inevitable outcome of a Fleet design process. That is the point. Change is hard, and it will have to be authorized and directed by the Navy's leadership or risk not happening….
>
> The only way to meet these demands within available resources is to develop a design that provides a structure within which the capabilities of future platforms can be shaped to meet the Fleet's missions efficiently as an overall force. Doing this will require a systems-level approach to defining what it must be able to do, and will mean abandoning some cherished traditions of what each type of platform should do. The alternative is a Navy no longer large or capable enough to do the nation's business.
>
> (Arthur H. Barber III, "Rethinking the Future Fleet, The U.S. Navy Has No Overall Requirements Process for Designing a Fleet, and It Needs One—Desperately," *U.S. Naval Institute Proceedings*, May 2014.)

  - Worker nationwide advertising
  - Worker pipeline
  - *Worker immigration*
  - Worker wages and benefits
  - Worker quality of work and quality of life
  - Robotics and automation
  - Distributed shipbuilding/federated shipbuilding/nation as a shipyard
  - Additional shipyard facilities
  - Smaller ships
  - *Foreign shipyards*
- **Options for using available capacity**
  - World-standard shipbuilding practices and methods
  - Navy as a kit of parts
  - Ship designs requiring fewer labor hours to build
  - Continuous production
  - *Up-front, enterprise-level fleet design, and a related vetting question*

March 2025 CRS Testimony

In connection with the above options, **Appendix G** reprints with minor changes a section of March 11, 2025, CRS testimony to the Seapower and Projection Forces subcommittee of the House Armed Services Committee on the state of U.S. shipbuilding regarding the Navy's current overall approach to ship acquisition and a potential alternative approach.

Appendix A. Earlier Navy Force-Level Goals Dating Back to 2001

The table below shows earlier Navy force-level goals dating back to 2001. The 308-ship force-level goal of March 2015, shown in the first column of the table, is the goal that was replaced by the 355-ship force-level goal released in December 2016.

Table A-1. Earlier Navy Force-Level Goals Dating Back to 2001

Ship type	308-ship goal of March 2015	306-ship goal of January 2013	~310-316 ship goal of March 2012	Revised 313-ship goal of September 2011	Changes to February 2006 313-ship goal announced through mid-2011	February 2006 Navy goal for 313-ship fleet	Early-2005 Navy goal for fleet of 260-325 ships		2002-2004 Navy goal for 375-ship Navy[a]	2001 QDR goal for 310-ship Navy
							260-ships	325-ships		
Ballistic missile submarines (SSBNs)	12[b]	12[b]	12-14[b]	12[b]	12[b]	14	14	14	14	14
Cruise missile submarines (SSGNs)	0[c]	0[c]	0-4[c]	4[c]	0[c]	4	4	4	4	2 or 4[d]
Attack submarines (SSNs)	48	48	~48	48	48	48	37	41	55	55
Aircraft carriers	11[e]	11[e]	11[e]	11[e]	11[e]	11[f]	10	11	12	12
Cruisers and destroyers	88	88	~90	94	94[g]	88	67	92	104	116
Frigates	0	0	0	0	0	0	0	0	0	
Littoral Combat Ships (LCSs)	52	52	~55	55	55	55	63	82	56	0
Amphibious ships	34	33	~32	33	33[h]	31	17	24	37	36
MPF(F) ships[i]	0[i]	0[i]	0[i]	0[i]	0[i]	12[i]	14[i]	20[i]	0[i]	0[i]
Combat logistics (resupply) ships	29	29	~29	30	30	30	24	26	42	34
Dedicated mine warfare ships	0	0	0	0	0	0	0	0	26[k]	16
Joint High Speed Vessels (JHSVs)	10[l]	10[l]	10[l]	10[l]	21[l]	3	0	0	0	0
Other[m]	24	23	~23	16	24[n]	17	10	11	25	25
Total battle force ships	**308**	**306**	**~310-316**	**313**	**328**	**313**	**260**	**325**	**375**	**310 or 312**

Source: Table prepared by CRS based on U.S. Navy data.

Notes: QDR = Quadrennial Defense Review. The "~" symbol means approximately.

a. Initial composition. Composition was subsequently modified.

b. The Navy plans to replace the 14 current Ohio-class SSBNs with a new class of 12 next-generation SSBNs. For further discussion, see CRS Report R41129, *Navy Columbia (SSBN-826) Class Ballistic Missile Submarine Program: Background and Issues for Congress*, by Ronald O'Rourke.

c. Although the Navy plans to continue operating its four SSGNs until they reach retirement age in the late 2020s, the Navy does not plan to replace these ships when they retire. This situation can be expressed in a table like this one with either a 4 or a 0.

d. The report on the 2001 QDR did not mention a specific figure for SSGNs. The Administration's proposed FY2001 DOD budget requested funding to support the conversion of two available Trident SSBNs into

SSGNs, and the retirement of two other Trident SSBNs. Congress, in marking up this request, supported a plan to convert all four available SSBNs into SSGNs.

e. With congressional approval, the goal has been temporarily be reduced to 10 carriers for the period between the retirement of the carrier *Enterprise* (CVN-65) in December 2012 and entry into service of the carrier *Gerald R. Ford* (CVN-78), currently scheduled for September 2015.

f. For a time, the Navy characterized the goal as 11 carriers in the nearer term, and eventually 12 carriers.

g. The 94-ship goal was announced by the Navy in an April 2011 report to Congress on naval force structure and missile defense.

h. The Navy acknowledged that meeting a requirement for being able to lift the assault echelons of 2.0 Marine Expeditionary Brigades (MEBs) would require a minimum of 33 amphibious ships rather than the 31 ships shown in the February 2006 plan. For further discussion, see CRS Report RL34476, *Navy LPD-17 Amphibious Ship Procurement: Background, Issues, and Options for Congress*, by Ronald O'Rourke.

i. Today's Maritime Prepositioning Force (MPF) ships are intended primarily to support Marine Corps operations ashore, rather than Navy combat operations, and thus are not counted as Navy battle force ships. The planned MPF (Future) ships, however, would have contributed to Navy combat capabilities (for example, by supporting Navy aircraft operations). For this reason, the ships in the planned MPF(F) squadron were counted by the Navy as battle force ships. The planned MPF(F) squadron was subsequently restructured into a different set of initiatives for enhancing the existing MPF squadrons; the Navy no longer plans to acquire an MPF(F) squadron.

j. The Navy no longer plans to acquire an MPF(F) squadron. The Navy, however, has procured or plans to procure some of the ships that were previously planned for the squadron—specifically, TAKE-1 class cargo ships, and Mobile Landing Platform (MLP)/Afloat Forward Staging Base (AFSB) ships. These ships are included in the total shown for "Other" ships. AFSBs are now called Expeditionary Sea Base ships (ESBs).

k. The figure of 26 dedicated mine warfare ships included 10 ships maintained in a reduced mobilization status called Mobilization Category B. Ships in this status are not readily deployable and thus do not count as battle force ships. The 375-ship proposal thus implied transferring these 10 ships to a higher readiness status.

l. Totals shown include 5 ships transferred from the Army to the Navy and operated by the Navy primarily for the performance of Army missions.

m. This category includes, among other things, command ships and support ships.

n. The increase in this category from 17 ships under the February 2006 313-ship goal to 24 ships under the apparent 328-ship goal included the addition of one TAGOS ocean surveillance ship and the transfer into this category of six ships—three modified TAKE-1 class cargo ships, and three Mobile Landing Platform (MLP) ships—that were previously intended for the planned (but now canceled) MPF(F) squadron.

Appendix B. Comparing Past Ship Force Levels to Current or Potential Future Levels

In assessing the appropriateness of the current or potential future number of ships in the Navy, observers sometimes compare that number to historical figures for total Navy fleet size. Historical figures for total fleet size, however, can be a problematic yardstick for assessing the appropriateness of the current or potential future number of ships in the Navy, particularly if the historical figures are more than a few years old, because

- the missions to be performed by the Navy, the mix of ships that make up the Navy, and the technologies that are available to Navy ships for performing missions all change over time; and
- the number of ships in the fleet in an earlier year might itself have been inappropriate (i.e., not enough or more than enough) for meeting the Navy's mission requirements in that year.

Regarding the first bullet point above, the Navy, for example, reached a late-Cold War peak of 568 battle force ships at the end of FY1987,[74] and as of October 1, 2025, included a total of 293 battle force ships. The FY1987 fleet, however, was intended to meet a set of mission requirements that focused on countering Soviet naval forces at sea during a potential multitheater NATO-Warsaw Pact conflict, while the October 2025 fleet is intended to meet a considerably different set of mission requirements centered on countering China's improving naval capabilities and, secondarily, Russia's naval capabilities. In addition, the Navy of FY1987 differed substantially from the October 2025 fleet in areas such as profusion of precision-guided weapons and the sophistication of C4ISR systems and networking capabilities.[75]

In coming years, Navy missions may shift again, and the capabilities of Navy ships will likely have changed further by that time due to developments such as more comprehensive implementation of networking technology, increased use of ship-based unmanned vehicles, and the potential fielding of new types of weapons such as lasers.[76]

The 568-ship fleet of FY1987 may or may not have been capable of performing its stated missions; the 293-ship fleet of October 2025 may or may not be capable of performing its stated missions; and a fleet years from now with a certain number of ships may or may not be capable of performing its stated missions. Given changes over time in mission requirements, ship mixes, and technologies, however, these past, present, and future relationships of Navy ship totals to stated Navy missions are to a substantial degree independent of one another.

[74] Some publications have stated that the Navy reached a peak of 594 ships at the end of FY1987. This figure, however, is the total number of active ships in the fleet, which is not the same as the total number of battle force ships. The battle force ships figure is the number used in government discussions of the size of the Navy. In recent years, the total number of active ships has been larger than the total number of battle force ships. For example, the Naval History and Heritage Command (formerly the Naval Historical Center) states that as of November 16, 2001, the Navy included a total of 337 active ships, while the Navy states that as of November 19, 2001, the Navy included a total of 317 battle force ships. Comparing the total number of active ships in one year to the total number of battle force ships in another year is thus an apples-to-oranges comparison that in this case overstates the decline since FY1987 in the number of ships in the Navy. As a general rule to avoid potential statistical distortions, comparisons of the number of ships in the Navy over time should use, whenever possible, a single counting method.

[75] C4ISR stands for command and control, communications, computers, intelligence, surveillance, and reconnaissance.

[76] For more on Navy programs for developing high-energy shipboard lasers, see CRS Report R44175, *Navy Shipboard Lasers: Background and Issues for Congress*, by Ronald O'Rourke.

For similar reasons, trends over time in the total number of ships in the Navy are not necessarily a reliable indicator of the direction of change in the fleet's ability to perform its stated missions. An increasing number of ships in the fleet might not necessarily mean that the fleet's ability to perform its stated missions is increasing, because the fleet's mission requirements might be increasing more rapidly than ship numbers and average ship capability. Similarly, a decreasing number of ships in the fleet might not necessarily mean that the fleet's ability to perform stated missions is decreasing, because the fleet's mission requirements might be declining more rapidly than numbers of ships, or because average ship capability and the percentage of time that ships are in deployed locations might be increasing quickly enough to more than offset reductions in total ship numbers.

Regarding the second of the two bullet points above, it can be noted that comparisons of the size of the fleet today with the size of the fleet in earlier years rarely appear to consider whether the fleet was appropriately sized in those earlier years (and therefore potentially suitable as a yardstick of comparison), even though it is quite possible that the fleet in those earlier years might not have been appropriately sized, and even though there might have been differences of opinion among observers at that time regarding that question. Just as it might not be prudent for observers years from now to tacitly assume that the 293-ship Navy of October 2025 was appropriately sized for meeting the mission requirements of 2025, even though there were differences of opinion among observers on that question, simply because a figure of 293 ships appears in the historical records for 2025, so, too, might it not be prudent for observers today to tacitly assume that the number of ships of the Navy in an earlier year was appropriate for meeting the Navy's mission requirements that year, even though there might have been differences of opinion among observers at that time regarding that question, simply because the size of the Navy in that year appears in a table like **Table J-1**.

Previous Navy force-level goals, such as those shown in **Table A-1**, might provide some insight into the potential adequacy of a proposed new force-level goal, but changes over time in mission requirements, technologies available to ships for performing missions, and other force-planning factors, as well as the possibility that earlier force-level goals might not have been appropriate for meeting the mission demands of their times, suggest that some caution should be applied in using past force-level goals for this purpose, particularly if those past force-level goals are more than a few years old. The Reagan-era goal for a 600-ship Navy, for example, was designed for a Cold War set of missions focusing on countering Soviet naval forces at sea, which is not an appropriate basis for planning the Navy today, and there was considerable debate during those years as to the appropriateness of the 600-ship goal.[77]

[77] Navy force-level goals that predate those shown in **Table A-1** include the Reagan-era 600-ship goal of the 1980s, the Base Force fleet of more than 400 ships planned during the final two years of the George H. W. Bush Administration, the 346-ship fleet from the Clinton Administration's 1993 Bottom-Up Review (or BUR, sometimes also called Base Force II), and the 310-ship fleet of the Clinton Administration's 1997 QDR. The table below summarizes some key features of these plans.

Features of Recent Navy Force-Level Goals

Plan	600-ship	Base Force	1993 BUR	1997 QDR
Total ships	~600	~450/416[a]	346	~305/310[b]
Attack submarines	100	80/~55[c]	45-55	50/55[d]
Aircraft carriers	15[e]	12	11+1[f]	11+1[f]
Surface combatants	242/228[g]	~150	~124	116
Amphibious ships	~75[h]	51[i]	41[i]	36[i]

(continued...)

Source: Prepared by CRS based on DOD and U.S. Navy data.
a. Commonly referred to as 450-ship goal, but called for decreasing to 416 ships by end of FY1999.
b. Original total of about 305 ships was increased to about 310 due to increase in number of attack submarines to 55 from 50.
c. Plan originally included 80 attack submarines, but this was later reduced to about 55.
d. Plan originally included 50 attack submarines but this was later increased to 55.
e. Plus one additional aircraft carrier in the service life extension program (SLEP).
f. Eleven active carriers plus one operational reserve carrier.
g. Plan originally included 242 surface combatants but this was later reduced to 228.
h. Number needed to lift assault echelons of one Marine Expeditionary Force (MEF) plus one Marine Expeditionary Brigade (MEB).
i. Number needed to lift assault echelons of 2.5 MEBs. Changing numbers needed to meet this goal reflect in part changes in the design and capabilities of amphibious ships.

Appendix C. Employment Impact of Additional Shipbuilding Work

This appendix presents background information on the employment impact of additional shipbuilding work.

Building the additional ships that would be needed to achieve and maintain the 355-ship fleet could create many additional manufacturing and other jobs at shipyards, associated supplier firms, and elsewhere in the U.S. economy. A 2021 Maritime Administration (MARAD) report on the economic importance of the U.S. private-sector shipbuilding and repair industry states

> In 2019, the U.S. private shipbuilding and repairing industry directly provided 107,180 jobs…, $9.9 billion in labor income, and $12.2 billion in gross domestic product, or GDP, to the national economy…. Including direct, indirect, and induced impacts, on a nationwide basis, total economic activity associated with the industry reached 393,390 jobs, $28.1 billion of labor income, and $42.4 billion in GDP in 2019….
>
> Considering the indirect and induced impacts, each direct job in the U.S. private shipbuilding and repairing industry is associated with another 2.67 jobs in other parts of the U.S. economy; each dollar of direct labor income and GDP in the U.S. private shipbuilding and repairing industry is associated with another $1.82 in labor income and $2.48 in GDP, respectively, in other parts of the U.S. economy….
>
> The importance of the industry is not limited to the direct output and employment it generates (i.e., "direct impact"). Companies in the shipbuilding and repairing industry purchase inputs from other domestic industries, contributing to economic activity in those sectors (i.e., "indirect" impact). Employees spend their incomes, helping to support the local and national economies (i.e., "induced" impact). Thus, the economic importance of the U.S. private shipbuilding and repairing industry includes direct, indirect, and induced effects….
>
> Average labor income per job [in the U.S. private-sector shipbuilding and repair industry, including wages and salaries and benefits as well as proprietors' income] was approximately $92,770 in 2019, 49 percent higher than the national average for the private sector economy ($62,090)….
>
> Total revenues for the U.S. shipbuilding and repairing industry are estimated to be $27.9 billion in 2019, up from $26.9 billion in 2018.10 In 2019, 78.7 percent of these revenues came from military shipbuilding and repairs, and 21.3 percent from commercial shipbuilding and repairs….[78]

[78] Maritime Administration (MARAD), The Economic Importance of the U.S. Private Shipbuilding and Repairing Industry, March 30, 2021, pp. 1, 2, 3, 9.

Appendix D. A Summary of Some Acquisition Lessons Learned for Navy Shipbuilding

This appendix presents a general summary of some shipbuilding lessons learned, reflecting comments made by various sources over the years. These lessons learned include the following:

- **At the outset, get the operational requirements for the program right.** Properly identify the program's operational requirements at the outset. Manage risk by not trying to do too much in terms of the program's operational requirements, and perhaps seek a so-called 70%-to-80% solution (i.e., a design that is intended to provide 70%-80% of desired or ideal capabilities). Achieve a realistic balance up front between operational requirements, risks, and estimated costs.
- **Use mature technologies.** Use land-based prototyping and testing to bring new technologies to a high state of maturity before incorporating them into ship designs, and limit the number of major new technologies to be incorporated into a new ship design.
- **Impose cost discipline up front.** Use realistic price estimates, and consider not only development and procurement costs, but life-cycle operation and support (O&S) costs.
- **Employ competition** where possible in the awarding of design and construction contracts.
- **Use a contract type that is appropriate for the amount of risk involved**, and structure its terms to align incentives with desired outcomes.
- **Minimize design/construction concurrency** by developing the design to a high level of completion before starting construction and by resisting changes in requirements (and consequent design changes) during construction.
- **Properly supervise construction work.** Maintain an adequate number of properly trained Supervisor of Shipbuilding (SUPSHIP) personnel.
- **Provide stability for industry**, in part by using, where possible, multiyear procurement (MYP) or block buy contracting.
- **Maintain a capable government acquisition workforce** that understands what it is buying, as well as the above points.

Identifying these lessons is arguably not the hard part—most if not all have been cited for years. The hard part, arguably, is abiding by them without letting circumstances lead program-execution efforts away from these guidelines.

Appendix E. Some Considerations Relating to Warranties in Shipbuilding Contracts

This appendix presents some considerations relating to warranties in shipbuilding contracts and other defense acquisition.

In discussions of Navy (and also Coast Guard) shipbuilding, one question that sometimes arises is whether including a warranty in a shipbuilding contract is preferable to not including one. The question can arise, for example, in connection with a GAO finding that "the Navy structures shipbuilding contracts so that it pays shipbuilders to build ships as part of the construction process and then pays the same shipbuilders a second time to repair the ship when construction defects are discovered."[79]

Including a warranty in a shipbuilding contract (or a contract for building some other kind of defense end item), while potentially valuable, might not always be preferable to not including one—it depends on the circumstances of the acquisition, and it is not necessarily a valid criticism of an acquisition program to state that it is using a contract that does not include a warranty (or a weaker form of a warranty rather than a stronger one).

Including a warranty generally shifts to the contractor the risk of having to pay for fixing problems with earlier work. Although that in itself could be deemed desirable from the government's standpoint, a contractor negotiating a contract that will have a warranty will incorporate that risk into its price, and depending on how much the contractor might charge for doing that, it is possible that the government could wind up paying more in total for acquiring the item (including fixing problems with earlier work on that item) than it would have under a contract without a warranty.

When a warranty is not included in the contract and the government pays later on to fix problems with earlier work, those payments can be very visible, which can invite critical comments from observers. But that does not mean that including a warranty in the contract somehow frees the government from paying to fix problems with earlier work. In a contract that includes a warranty, the government will indeed pay something to fix problems with earlier work—but it will make the payment in the less-visible (but still very real) form of the up-front charge for including the warranty, and that charge might be more than what it would have cost the government, under a contract without a warranty, to pay later on for fixing those problems.

From a cost standpoint, including a warranty in the contract might or might not be preferable, depending on the risk that there will be problems with earlier work that need fixing, the potential cost of fixing such problems, and the cost of including the warranty in the contract. The point is that the goal of avoiding highly visible payments for fixing problems with earlier work and the goal of minimizing the cost to the government of fixing problems with earlier work are separate and different goals, and that pursuing the first goal can sometimes work against achieving the second goal.[80]

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[79] See Government Accountability Office, *Navy Shipbuilding[:] Past Performance Provides Valuable Lessons for Future Investments*, GAO-18-238SP, June 2018, p. 21. A graphic on page 21 shows a GAO finding that the government was financially responsible for shipbuilder deficiencies in 96% of the cases examined by GAO, and that the shipbuilder was financially responsible for shipbuilder deficiencies in 4% of the cases.

[80] It can also be noted that the country's two largest builders of Navy ships—General Dynamics (GD) and Huntington Ingalls Industries (HII)—derive much of their revenues from U.S. government work. These two shipbuilders operate the only U.S. shipyards currently capable of building several major types of Navy ships, including submarines, aircraft (continued...)

The Department of Defense's guide on the use of warranties states the following:

> Federal Acquisition Regulation (FAR) 46.703 states that "the use of warranties is not mandatory." However, if the benefits to be derived from the warranty are commensurate with the cost of the warranty, the CO [contracting officer] should consider placing it in the contract. In determining whether a warranty is appropriate for a specific acquisition, FAR Subpart 46.703 requires the CO to consider the nature and use of the supplies and services, the cost, the administration and enforcement, trade practices, and reduced requirements. The rationale for using a warranty should be documented in the contract file….
>
> In determining the value of a warranty, a CBA [cost-benefit analysis] is used to measure the life cycle costs of the system with and without the warranty. A CBA is required to determine if the warranty will be cost beneficial. CBA is an economic analysis, which basically compares the Life Cycle Costs (LCC) of the system with and without the warranty to determine if warranty coverage will improve the LCCs. In general, five key factors will drive the results of the CBA: cost of the warranty + cost of warranty administration + compatibility with total program efforts + cost of overlap with Contractor support + intangible savings. Effective warranties integrate reliability, maintainability, supportability, availability, and life-cycle costs. Decision factors that must be evaluated include the state of the weapon system technology, the size of the warranted population, the likelihood that performance requirements can be achieved, and the warranty period of performance.[81]

carriers, large surface combatants, and amphibious ships. Thus, even if a warranty in a shipbuilding contract with one of these firms were to somehow mean that the government did not have pay under the terms of that contract—either up front or later on—for fixing problems with earlier work done under that contract, there would still be a question as to whether the government would nevertheless wind up eventually paying much of that cost as part of the price of one or more future contracts the government may have that firm.

[81] Department of Defense, *Warranty Guide*, Version 2.0, October 30, 2020, accessed February 25, 2025, at https://www.dau.edu/sites/default/files/Migrated/CopDocuments/Warranty_Guide_Version_2.0.pdf, pp. 5, 14.

Appendix F. Avoiding Procurement Cost Growth vs. Minimizing Procurement Costs

This appendix presents some considerations relating to avoiding procurement cost growth vs. minimizing procurement costs in shipbuilding and other defense acquisition.

The affordability challenge posed by the Navy's shipbuilding plans can reinforce the strong oversight focus on preventing or minimizing procurement cost growth in Navy shipbuilding programs, which is one expression of a strong oversight focus on preventing or minimizing cost growth in DOD acquisition programs in general. This oversight focus may reflect in part an assumption that avoiding or minimizing procurement cost growth is always synonymous with minimizing procurement cost. It is important to note, however, that as paradoxical as it may seem, avoiding or minimizing procurement cost growth is not always synonymous with minimizing procurement cost, and that a sustained, singular focus on avoiding or minimizing procurement cost growth might sometimes lead to higher procurement costs for the government.

How could this be? Consider the example of a design for the lead ship of a new class of Navy ships. The construction cost of this new design is uncertain, but is estimated to be likely somewhere between Point A (a minimum possible figure) and Point D (a maximum possible figure). (Point D, in other words, would represent a cost estimate with a 100% confidence factor, meaning there is a 100% chance that the cost would come in at or below that level.) If the Navy wanted to avoid cost growth on this ship, it could simply set the ship's procurement cost at Point D. Industry would likely be happy with this arrangement, and there likely would be no cost growth on the ship.

The alternative strategy open to the Navy is to set the ship's target procurement cost at some figure between Points A and D—call it Point B—and then use that more challenging target cost to place pressure on industry to sharpen its pencils so as to find ways to produce the ship at that lower cost. (Navy officials sometimes refer to this as "pressurizing" industry.) In this example, it might turn out that industry efforts to reduce production costs are not successful enough to build the ship at the Point B cost. As a result, the ship experiences one or more rounds of procurement cost growth, and the ship's procurement cost rises over time from Point B to some higher figure—call it Point C.

Here is the rub: Point C, in spite of incorporating one or more rounds of cost growth, might nevertheless turn out to be lower than Point D, because Point C reflected efforts by the shipbuilder to find ways to reduce production costs that the shipbuilder might have put less energy into pursuing if the Navy had simply set the ship's procurement cost initially at Point D.

Setting the ship's cost at Point D, in other words, may eliminate the risk of cost growth on the ship, but does so at the expense of creating a risk of the government paying more for the ship than was actually necessary. DOD could avoid cost growth on new procurement programs starting tomorrow by simply setting costs for those programs at each program's equivalent of Point D. But as a result of this strategy, DOD could well wind up leaving money on the table in some instances—of not, in other words, minimizing procurement costs.

DOD does not have to set a cost precisely at Point D to create a potential risk in this regard. A risk of leaving money on the table, for example, is a possible downside of requiring DOD to budget for its acquisition programs at something like an 80% confidence factor—an approach that some observers have recommended—because a cost at the 80% confidence factor is a cost that is likely fairly close to Point D.

Procurement cost growth is often embarrassing for DOD and industry, and can damage their credibility in connection with future procurement efforts. Procurement cost growth can also disrupt congressional budgeting by requiring additional appropriations to pay for something Congress thought it had fully funded in a prior year. For this reason, there is a legitimate public policy value to pursuing a goal of having less rather than more procurement cost growth.

Procurement cost growth, however, can sometimes be in part the result of DOD efforts to use lower initial cost targets as a means of pressuring industry to reduce production costs—efforts that, notwithstanding the cost growth, might be partially successful. A sustained, singular focus on avoiding or minimizing cost growth, and of punishing DOD for all instances of cost growth, could discourage DOD from using lower initial cost targets as a means of pressurizing industry, which could deprive DOD of a tool for controlling procurement costs.

The point here is not to excuse away cost growth, because cost growth can occur in a program for reasons other than DOD's attempt to pressurize industry. Nor is the point to abandon the goal of seeking lower rather than higher procurement cost growth, because, as noted above, there is a legitimate public policy value in pursuing this goal. The point, rather, is to recognize that this goal is not always synonymous with minimizing procurement cost, and that a possibility of some amount of cost growth might be expected as part of an optimal government strategy for minimizing procurement cost. Recognizing that the goals of seeking lower rather than higher cost growth and of minimizing procurement cost can sometimes be in tension with one another can lead to an approach that takes both goals into consideration. In contrast, an approach that is instead characterized by a sustained, singular focus on avoiding and minimizing cost growth may appear virtuous, but in the end may wind up costing the government more.

Appendix G. March 2025 CRS Testimony on Current Naval System and Potential Alternative

In connection with the discussion earlier in this report of 10 options for addressing shipbuilding capacity constraints and five options for using available shipbuilding capacity, this appendix reprints with minor changes a section of March 11, 2025, CRS testimony to the Seapower and Projection Forces subcommittee of the House Armed Services Committee on the state of U.S. shipbuilding.[82]

Current American Naval System, and a Potential Alternative

Current American Naval System

The Navy's current overall approach to ship acquisition, which might be referred to as the current American naval system, includes three general elements that can contribute to the Navy's challenges in designing, building, crewing, and maintaining ships. If not addressed, these three general elements could continue creating challenges, possibly putting the Navy in an endless cycle of discovering problems and addressing them in a reactive, ad hoc, and costly manner. That is, the Navy could remain in a situation of seeing a light at the end of the tunnel with regard to resolving challenges, but never getting there as new challenges continue to appear. The three general elements are as follows:

- First, the Navy treats its force-level goals for various ship types as more precise and durable than they really are, and then chases those force-level goals by continually tinkering with ship procurement profiles, leading to production inefficiencies and industrial base challenges that are incurred in the pursuit of something that the Navy is unlikely to ever achieve—a close match between the Navy's ship inventories and most or all of those force levels goals.
- Second, the Navy is suboptimizing ship design efforts at the individual-ship level, instead of optimizing them at the fleet-wide level, producing challenges throughout the ship design, build, crew, and maintain life cycle. In other words, the Navy puts a priority on fine tuning the design of each ship for its intended missions and places less priority on looking for opportunities to coordinate the design of that ship with the designs of its other ships for the purpose of increasing cross-class advantages in design, construction, crewing, and maintenance—a process sometimes called production engineering.
- Third, the Navy is developing shipbuilding programs without adequately taking into account the features of the U.S. society (e.g., numbers of potential workers in the economy, and the education, training, and interests of potential workers) that will be called on to design, build, crew, and maintain those ships, producing further challenges throughout the design, build, crew, and maintain life cycle. The Navy in the past has not had to look inward to the features of U.S. society more than a certain amount, but the complexity of what the Navy is attempting to do with individual ship designs and how its platforms are to work together has now grown to the point where the Navy may need to do this much more than it

[82] CRS Testimony TE10110, *The State of U.S. Shipbuilding*, by Ronald O'Rourke (Statement of Ronald O'Rourke, Specialist in Naval Affairs, Before Armed Services Committee, Seapower and Projection Forces Subcommittee, U.S. House of Representatives, Hearing on "The State of U.S. Shipbuilding," March 11, 2025), pp. 12-14.

has in the past (while continuing its practice of also looking outward, to missions and threats).

A Potential New American Naval System

Proceeding on the basis of the previous section, and drawing from the 15 options listed earlier, a potential option for a revised overall approach to ship acquisition, which might be referred to as a potential new American naval system, might look something like the following, with the individual components of the approach constituting severable options in themselves:

- **The goal** of a new approach could be to prevent at least some of the challenges the Navy is experiencing in designing, building, crewing, and maintaining ships from arising in the first place by taking actions to **make the fleet, by design, intrinsically easier to design, build, crew, and maintain**, while still delivering the needed capacity and capability for performing current and projected missions. Among others things, the aim could be to design a fleet that would require fewer people, and place less-complex demands on people, to design, build, crew, and maintain.
- In support of the above goal, the approach could essentially reverse the three general elements discussed in the previous section:
  - **Force-level goals could be treated as not so precise, and more subject to change over time**. Diseconomies from tinkering with procurement plans in an attempt to chase precisely stated force-level goals that will change multiple times between now and the target year would be avoided.
  - **Ship design could be optimized more at the fleet level**, and less at the individual-class level, with the aim of avoiding the diseconomies of having a fleet that is an assemblage of individually developed, bespoke designs. In short, the Navy could design and build *a fleet*, rather than designing and building a collection of individual ship classes.
  - **The Navy could examine, understand, and take better advantage of the features of the U.S. society** that will be called on to design, build, crew, and maintain the fleet, including both the strengths and limitations of U.S. society for meeting the Navy's needs, and areas of U.S. society whose capacity for meeting the Navy's needs might be increased by the Navy's own actions.
- As a consequence of the overall goal and the reversal of the three general elements of the existing approach, the potential new approach could include the following five elements:
  - **Distributed shipbuilding/federated shipbuilding/nation as a shipyard**, to gain access to production facilities and (perhaps more important) regional labor markets in parts of the country that currently are not significantly involved in Navy shipbuilding;
  - **Navy as a kit of parts**, to make the eventual fleet easier to design, build, crew, and maintain;
  - **Ship designs that take fewer labor hours to build**, following the South Korean approach to design for producibility;
  - **Continuous production**, including
    - **Multiyear contracting** (i.e., MYP and block buy contracting) where possible and cost effective;

- Holding production rates steady and managing changes in force size not through changes in procurement rates, but instead through end-of-life decisions, which is **Japan's approach to submarine procurement rates and force levels**;
- **Condition-based, minimal-loss procurement transitions in classes**; and
- Characterizing the future fleet more in terms of steady procurement rates than precisely stated force-level targets—**a production-centered or rate-centered approach** (as opposed to the current end point-centered approach) to thinking about and discussing the future fleet; and

- **Up-front, enterprise-level fleet design**—a generalized fleet design framework that incorporates federated shipbuilding, Navy as a kit of parts, the South Korean approach to design for producibility, and continuous production in its various aspects—and **vetting of proposed shipbuilding programs** in relation to this generalized framework.

The above potential alternative approach (with its severable sub-element options) is by no means the only possible approach for addressing the Navy's challenges in designing, building, crewing, and maintaining ships, and it would by no means solve all of the Navy's challenges in these areas. Continuing the Navy's current approach, however, is likely to lead to a continuation of these challenges.

Appendix H. Capacity for Conducting Ship Repair Work[83]

This appendix discusses capacity for conducting maintenance, repair, and overhaul (MRO) work on Navy ships, which is a topic that sometimes arises in connection with discussions of Navy shipbuilding.

Since challenges in building new Navy ships and in conducting MRO work on attack submarines (SSNs) are both due in large part to capacity constraints, it can be reasonable for an observer to conclude that challenges in conducting MRO work on the Navy's conventionally powered surface ships are similarly due chiefly to capacity constraints. Some observers may have made this conclusion, because they have suggested that the challenges of conducting MRO work on the Navy's conventionally powered surface ships can be addressed by adding additional capacity for conducting this work in the form of foreign shipyards.

CBO and CRS have asked the Navy on more than one occasion whether the Navy's challenges in conducting MRO work on the Navy's conventionally powered surface ships are due to capacity constraints, and the Navy has consistently replied that this is not the case—that the Navy's challenges in conducting this work are chiefly due not to capacity constraints, but to inadequate Navy planning, scheduling, and funding of this work, which the Navy is now focusing on improving.[84] The Navy has explained to CBO and CRS that while there was a shortage of drydocks on the West Coast for conducting this work, that shortage has since been reduced.

Based on the Navy's explanations to CBO and CRS, it would appear that proposals to address the challenges in performing MRO work on the Navy's conventionally powered surface ships by adding capacity in the form of foreign shipyards would miss the mark, since the problem is not inadequate capacity, but inadequate planning, scheduling, and funding of the work.

[83] This appendix is adapted from CRS Testimony TE10110, *The State of U.S. Shipbuilding*, by Ronald O'Rourke.

[84] See also, for example, Meghann Myers, "Stop Treating Shipyards Like the 'Corner Garage': Former Navy Acquisitions Chief," *Defense One*, February 19, 2025.

Appendix I. Commercial Shipbuilding in Relation to Navy Shipbuilding[85]

This appendix discusses commercial shipbuilding in relation to Navy shipbuilding, which is a topic that sometimes arises in connection with discussions of Navy shipbuilding.

Some observers are interested in expanding commercial ship construction in the United States, which fell to very low levels in the 1980s—in part due to the Reagan Administration's cancellation in the early 1980s of the Construction Differential Subsidy (CDS), which had previously supported commercial ship construction in the United States—and has remained at those very low levels since.

There are various potential reasons for supporting actions to increase commercial ship construction in the United States, including but not limited to a desire to create jobs (which was a major consideration in connection with shipbuilding initiatives in the Depression years of the 1930s, when there were high levels of unemployment), or a sense that major world powers should (or need to) be major maritime powers, and that being a major maritime power includes being a significant builder of commercial ships.

Given the comparative costs of building commercial ships in the United States and other countries, some of which is due to national differences in labor costs, significantly increasing commercial ship construction in the United States on a sustained basis by increasing the U.S. share of the international market for commercial ships could require reinstating the CDS or something like the CDS. Current world market prices for commercial ships vary considerably by ship type, but to keep the notional math fairly simple, a smaller commercial cargo ship might be said to have a current world market price of roughly $50 million, while a larger commercial cargo ship might be said to have a current market price of roughly $100 million.[86] The cost to build such ships in U.S. shipyards might start out at about four times those figures (i.e., $200 million and $400 million, respectively),[87] meaning that the subsidy amount needed under a reinstated CDS or something like the CDS might start out at something like $150 million to $300 million per ship. These figures might come down somewhat over time as the U.S. shipyards building these ships progress down the production learning curve for building the ships and achieve other production economies of scale, but given differences in national labor costs, a significant per-ship subsidy would likely be required indefinitely.

Increasing commercial ship construction activity in the United States would create a new competitor for the same potential shipyard production workers for which the Navy's shipbuilders are already challenged in recruiting. This could lead to upward pressures on shipyard worker

[85] This section is adapted from CRS Testimony TE10110, *The State of U.S. Shipbuilding*, by Ronald O'Rourke.

[86] Source: BRS Group, *Shipping and Shipbuilding Markets, Annual Review 2024*, table on page 39 showing prices for new-construction commercial cargo ships in 2023.

[87] See, for example, CRS In Focus IF12534, *U.S. Commercial Shipbuilding in a Global Context*, by John Frittelli, which states: "No overseas purchase of large U.S.-built ships has occurred in decades because U.S.-built ships can be four or more times the world price. Differences in wage rates, particularly for welders, and currency exchange rate policy are factors leading to higher prices in the United States. The lack of exports prevents U.S. shipyards from achieving economies of scale."

By way of comparison, in the Coast Guard's proposed FY2025 budget, the estimated procurement cost of a Fast Response Cutter (FRC)—a 154-foot patrol boat built in a U.S. shipyard—is $100 million. This figure includes costs for military systems not present on a commercial cargo ship, as well as government (Coast Guard) program management costs. After subtracting out those costs, the remaining procurement cost of an FRC might be comparable to the above-stated current world market cost (roughly $50 million) of a smaller commercial cargo ship.

wages and benefits as commercial and Navy shipbuilders compete for workers. A similar situation was reported occurring in 2024 among shipyards on the Gulf Coast due to additional Navy work being awarded to those shipyards.[88]

An increase in worker wages and benefits would be a welcome development for shipyard workers. It would increase construction costs for commercial ships (and thus the per-ship subsidy amount needed for commercial ships intended for sale in the international market) and Navy ships. Shipyards building commercial ships might have less-stringent security-related standards for vetting potential employees. Other things held equal, this could give shipyards building commercial ships an advantage over those building Navy ships in recruiting workers. Over time, the total number of workers engaged in shipbuilding in the United States would increase, eventually reaching a new equilibrium reflecting the expansion of commercial ship construction work. The additional workers would be engaged in commercial shipbuilding, and the net impact on the number of workers available for Navy shipbuilding could be essentially neutral. In short, increasing commercial shipbuilding in the United States could add to challenges facing Navy shipbuilders in recruiting new workers in the short term, and could produce no significant net gain in the number of workers available for Navy shipbuilding over the longer term.

Some observers who support expanding commercial ship construction in the United States may do so in part due to a belief that shipyards can easily shift from building commercial ships to building Navy ships, or vice versa. This notion is highly problematic, as shipyards that build commercial ships differ from shipyards that build naval ships in several important ways, including but not limited to the following:

- **Workforce ratio of steel trades to outfitting trades.** Building commercial ships in general requires much less interior outfitting than building complex Navy combatant ships, which have significant amounts of interior outfitting for their combat systems and crew-related spaces. Compared to shipyards that build naval ships, shipyards that build commercial ships consequently tend to have workforces with fewer workers in the outfitting trades relative to the number in the steel trades that build the ship's hull. A shipyard attempting to shift from commercial shipbuilding to Navy shipbuilding could thus face a significant shortage of outfitting workers, while a shipyard attempting to shift from Navy shipbuilding to commercial shipbuilding could face a need to lay off a large number of outfitting workers. This issue arose in the early 1990s, when the end of the Cold War led to a reduction in Navy shipbuilding and a consequent interest in exploring the potential for shifting shipyards from building Navy ships to building commercial ships. As a part of that discussion, the CEO of Bath Iron Works (BIW) testified in 1992 to a House Armed Services Committee panel on the defense industrial base that shifting BIW's work from building Navy ships to building commercial ships would reduce the number of people employed at BIW from 10,000 (the size of its workforce at that time) to about 3,500.[89] Workers who

[88] See Sam LaGrone, "'It's Never Going to Be Easy,' Gulf Coast Shipyards Have Plenty of Orders, But Workforce Challenges Persist," *USNI News*, October 14, 2024.

[89] Spoken testimony of Duane D. "Buzz" Fitzgerald, President and Chief Executive Officer, Bath Iron Works Corporation, at a February 19, 1992, hearing on shipbuilding and ship repair before the House Armed Services Committee's Structure of U.S. Defense Industrial Base Panel. Fitzgerald stated

> Now, I think there is one more point I would like to make on the conversion issue [i.e., converting a shipyard from producing Navy ships to producing commercial ships], Mr. Chairman. We have built commercial ships of all types, as I have said, [and] in the early 1980s we built our last merchant ship and it was an oil tanker, the *Falcon Champion*. So we know we could build ships like that

(continued...)

are laid off from a shipyard shifting from Navy work to commercial work might find work in other industries, and might be reluctant to return to the shipyard at a later point due to concerns about job stability at a shipyard that has a business model of shifting back and forth between Navy and commercial work.

- **Worker security and citizenship requirements.** Workers in shipyards that build commercial ships may have been hired under less-stringent security and citizenship requirements than workers in shipyards that build Navy ships. As noted earlier, all Navy shipbuilding contracts require that the shipyard workers building the ships be U.S. citizens. For shipyards that build commercial ships, this can pose a potentially significant impediment to being able to shift to production of Navy ships.
- **Worker techniques and skills.** Construction standards for building commercial ships are in some respects less stringent than those for building Navy ships, which incorporate higher engineering tolerances, features for ship survivability in combat situations, and longer intended service lives. This can lead to differences in techniques and skills between workers who build commercial ships and workers who build Navy ships. These differences in skills and techniques, as well as the differing security requirements noted in the previous bullet point, pose impediments to shifting workers back and forth between commercial ship construction and naval ship construction. At one South Korean shipbuilding firm that builds both commercial ships and naval ships, there is a fence with barb wire on top to keep the commercial shipbuilding workers separate from the naval shipbuilding workers.[90]
- **Equipment (and associated fixed overhead costs) for installing, integrating, and testing combat system equipment.** Shipyards that build complex Navy combatants have equipment (and associated fixed overhead costs) for installing, integrating, and testing ship combat systems. Shipyards that build commercial ships do not have such equipment and associated fixed overhead costs. This can pose an impediment for shipyards attempting to shift from building commercial ships to building complex Navy combatants, and a cost-competitiveness issue for shipyards attempting to shift from building complex Navy combatant ships to building commercial ships.[91]

Satellite photographs of shipyards in China where both commercial and naval ships are being built can raise a question among observers about whether this might be an approach for the United States to emulate. It is not clear, however, that the naval ships in those shipyards in China

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starting tomorrow. But if we devoted our three building ways and our entire steel capacity to building ships like that, and if we had a tanker on our building ways all the time, as soon as we launched one, lay another one down, we would employ about 3,500 people rather than the 10,000 we employ today.

(U.S. Congress, House, 102nd Congress, *Defense Industrial Base, Hearings before the Structure of U.S. Industrial Base Panel of the Committee on Armed Services, House of Representatives*, U.S. Government Printing Office, 1992, p. 536.)

[90] Source: Information provided by a RAND analyst who visited shipyards in South Korea and Japan in support of RAND's research on shipbuilding issues, provided at a meeting with CRS and CBO on October 1, 2024.

[91] For additional discussion of the differences between commercial shipbuilding and naval shipbuilding, see John Birkler et al., *Differences Between Military and Commercial Shipbuilding, Implications for the United Kingdom's Ministry of Defence*, RAND, Report MG-236, 2005, 111 pp. The report's preface states: "This report should be of special interest not only to the [UK's] DPA [Defence Procurement Agency] but also to service and defence agency managers and policymakers involved in shipbuilding on both sides of the Atlantic."

are being built efficiently. China might decide to build some of its naval ships in yards that also build commercial ships, even if the naval ships are not built very efficiently, as a means of preserving its commercial shipbuilding industry during periodic downturns in the global commercial shipbuilding market, or to top off its naval production at the margin without having to make the large investment that would be needed to establish an additional specialist naval construction yard. An August 2024 RAND report on China's naval and commercial shipbuilding states

> *Findings*
>
> This paper comes to two conclusions about the relationship between Chinese naval and commercial shipbuilding:
>
> First, historically, increases in [China's] naval shipbuilding were accompanied by declines in [China's] commercial shipbuilding and vice versa.… The data does not reveal the underlying motivations for these movements but does emphasize two industries with related movements.
>
> Second, commercial and naval shipbuilding [in China] may now be growing more independent. This is supported by the following observations:
>
> Shipyards [in China] have grown more specialized, focusing either on naval or commercial shipbuilding building, but not both. The two yards examined, Dalian and Jiangnan Changxingdao, are the only facilities that produce some of the latest PLAN[92] warship classes and these yards are now primarily dedicated to naval production. As Dalian and Jiangnan Changxingdao began to build modern surface combatants and aircraft carriers, the number of commercial ships under construction in those yards declined precipitously, even though there was not a similar drop in commercial production nationwide.… While naval production surged in the aftermath of the Great Recession and the accompanying dip in commercial demand, it remained elevated and even expanded after the commercial sector recovered. This suggests the PRC developed new capacity for naval shipbuilding rather than merely backfilling unused capacity in times of low commercial demand….
>
> *Implications*
>
> This divergence is likely a reflection of the increasingly modern PLAN. Modern warships are far more complex than commercial vessels and demand more specialized labor and the latest PLAN vessels appear to be increasingly equal to their American counterparts in some respects. US Navy officers who have been on PLAN vessels have described them as "built to commercial standards," yet these testimonials are based off of visits that occurred over a decade ago. The divergence between naval and commercial shipbuilding suggests that the latest PLAN warships may no longer be built to commercial standards….
>
> However, the cost of the divergence is that the PRC will not necessarily be able to convert its enormous commercial shipbuilding capacity into naval production, at least without a significant investment in time and resources. Previous analysis concluded that there was a there was a high degree of military and commercial overlap in PRC shipbuilding facilities and the PRC's most modern shipyards have the infrastructure and expertise to engage in advanced naval production even if their primary purpose is civilian. More recent data suggests this may no longer be the case, at least for certain classes of PLAN warships. As the PLAN becomes more composed of increasingly specialized warships requiring increasingly specialized yards, the significant gap between US and PRC commercial shipbuilding should not be thought of as easily translating into a major advantage for the PLAN.

[92] China's military is called the People's Liberation Army, or PLA. China's navy is called the PLA Navy, or PLAN.

> PLAN shipbuilding over the past decade is formidable and the PRC is able to construct modern warships at a rapid pace. Yet going forward comparisons between US and PRC naval production should be made on a like-for-like basis rather than looking at shipbuilding totals in aggregate. The PLAN may be a much more modern and high-quality force now, but that also means it will likely be less able to draw from the PRC's vast commercial shipbuilding capacity.[93]

Of the seven shipyards that currently build the Navy's larger ships, one of them—GD/NASSCO—also builds commercial ships. GD/NASSCO is able to build both Navy ships and commercial ships without encountering significant difficulties with the issues discussed above because the ships that GD/NASSCO builds for the Navy—auxiliary ships such as oilers—are not very different from commercial ships. In this sense, GD/NASSCO can be viewed as the exception that proves the rule regarding the challenges of building both commercial ships and Navy ships efficiently at a single shipyard. In the 1990s, one of the other six yards that currently build the Navy's larger ships—Huntington Ingalls Industries Newport News Shipbuilding (HII/NNS) of Newport News, Virginia, which builds submarines and aircraft carriers (i.e., complex Navy combatant ships)—attempted to enter the commercial shipbuilding market through a program to build oil tankers that it called Double Eagle tankers. In March 1998, the shipyard announced that it was ending the Double Eagle shipbuilding effort after losing $300 million, and a shipyard official stated in June 1999 that he would not have the shipyard attempt something like that again.[94]

As noted earlier, there are various potential reasons for supporting actions to increase commercial ship construction in the United States, including but not limited to a desire to create jobs or a sense that major world powers should (or need to) be major maritime powers, and that being a major maritime power includes being a significant builder of commercial ships. If increasing commercial shipbuilding is not cost effective as a means for increasing Navy shipbuilding capacity, policymakers may nevertheless decide to take actions to increase commercial shipbuilding for other reasons.

[93] Joel B. Predd, William Kim, and Jay Carroll, "PRC Shipbuilding: Naval and Commercial, A Working Paper Exploring the Relationship Between China's Naval and Commercial Shipbuilding," RAND, WR-A2852-1, August 2024, pp. 7-8.

[94] Dennis O'Brien, "Yard Christens Last Double Eagle," *Daily Press (Newport News, VA)*, June 19, 1999.

Appendix J. Size of the Navy and Navy Shipbuilding Rate

Size of the Navy

Table J-1 shows the size of the Navy in terms of total number of ships since FY1948; the numbers shown in the table reflect changes over time in the rules specifying which ships count toward the total. Differing counting rules result in differing totals, and for certain years, figures reflecting more than one set of counting rules are available. Figures in the table for FY1978 and subsequent years reflect the battle force ships counting method, which is the set of counting rules established in the early 1980s for public policy discussions of the size of the Navy.

As shown in the table, the total number of battle force ships in the Navy reached a late-Cold War peak of 568 at the end of FY1987 and began declining thereafter.[95] The Navy fell below 300 battle force ships in August 2003 and remained below 300 ships for the next 16 years. The Navy briefly returned to a level of 300 ships in early July 2020, for the first time in almost 17 years, subsequently fell back below 300 ships, reached 300 ships again briefly during periods in August and September 2022, and as of October 1, 2025, included 293 battle force ships.

As discussed in **Appendix B**, historical figures for total fleet size might not be a reliable yardstick for assessing the appropriateness of proposals for the future size and structure of the Navy, particularly if the historical figures are more than a few years old, because the missions to be performed by the Navy, the mix of ships that make up the Navy, and the technologies that are available to Navy ships for performing missions all change over time, and because the number of ships in the fleet in an earlier year might itself have been inappropriate (i.e., not enough or more than enough) for meeting the Navy's mission requirements in that year.

For similar reasons, trends over time in the total number of ships in the Navy are not necessarily a reliable indicator of the direction of change in the fleet's ability to perform its stated missions. An increasing number of ships in the fleet might not necessarily mean that the fleet's ability to perform its stated missions is increasing, because the fleet's mission requirements might be increasing more rapidly than ship numbers and average ship capability. Similarly, a decreasing number of ships in the fleet might not necessarily mean that the fleet's ability to perform stated missions is decreasing, because the fleet's mission requirements might be declining more rapidly than numbers of ships, or because average ship capability and the percentage of time that ships are in deployed locations might be increasing quickly enough to more than offset reductions in total ship numbers.

[95] Some publications have stated that the Navy reached a peak of 594 ships at the end of FY1987. This figure, however, is the total number of active ships in the fleet, which is not the same as the total number of battle force ships. The battle force ships figure is the number used in government discussions of the size of the Navy. In recent years, the total number of active ships has been larger than the total number of battle force ships. For example, the Naval History and Heritage Command (formerly the Naval Historical Center) states that as of November 16, 2001, the Navy included a total of 337 active ships, while the Navy states that as of November 19, 2001, the Navy included a total of 317 battle force ships. Comparing the total number of active ships in one year to the total number of battle force ships in another year is thus an apples-to-oranges comparison that in this case overstates the decline since FY1987 in the number of ships in the Navy. As a general rule to avoid potential statistical distortions, comparisons of the number of ships in the Navy over time should use, whenever possible, a single counting method.

Table J-1. Total Number of Ships in Navy Since FY1948

FY[a]	Number	FY[a]	Number	FY[a]	Number	FY[a]	Number
1948	737	1970	769	1992	466	2014	289
1949	690	1971	702	1993	435	2015	271
1950	634	1972	654	1994	391	2016	275
1951	980	1973	584	1995	372	2017	279
1952	1,097	1974	512	1996	356	2018	286
1953	1,122	1975	496	1997	354	2019	290
1954	1,113	1976	476	1998	333	2020	296
1955	1,030	1977	464	1999	317	2021	294
1956	973	1978	468	2000	318	2022	289
1957	967	1979	471	2001	316	2023	291
1958	890	1980	477	2002	313	2024	296
1959	860	1981	490	2003	297	2025	288[a]
1960	812	1982	513	2004	292		
1961	897	1983	514	2005	281		
1962	959	1984	524	2006	281		
1963	916	1985	541	2007	279		
1964	917	1986	556	2008	282		
1965	936	1987	568	2009	285		
1966	947	1988	565	2010	288		
1967	973	1989	566	2011	284		
1968	976	1990	546	2012	287		
1969	926	1991	526	2013	285		

Source: Compiled by CRS using U.S. Navy data. Numbers shown reflect changes over time in the rules specifying which ships count toward the total. Figures for FY1978 and subsequent years reflect the battle force ships counting method, which is the set of counting rules established in the early 1980s for public policy discussions of the size of the Navy.

a. Data for earlier years in the table may be for the end of the calendar year (or for some other point during the year), rather than for the end of the fiscal year. The number shown for FY2025 is the projected number for the end of FY2025 as shown in Figure 11.2 of the Navy's FY2026 budget highlights book. The actual figure as of October 1, 2025—the first day of FY2026—was 293.

Shipbuilding Rate

Table J-2 shows past (FY1982-FY2025) and requested (FY2026) rates of Navy ship procurement.

Table J-2. Battle Force Ships Procured or Requested, FY1982-FY2026

Procured in FY1982-FY2025 and *requested for FY2026*

82	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**00**
17	14	16	19	20	17	15	19	15	11	11	7	4	4	5	4	5	5	6
01	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
6	6	5	7	8	4	5	3	8	7	10	11	11	8	8	13	9	13	13
20	**21**	**22**	**23**	**24**	**25**	**26**												
13	11	13	11	8	5	*19*												

Sources: CRS compilation based on Navy budget data and examination of defense authorization and appropriation committee and conference reports for each fiscal year. The table excludes non-battle force ships that do not count toward the quoted size of the Navy and the Navy's force-level goal, such as certain sealift and prepositioning ships operated by the Military Sealift Command and oceanographic ships operated by agencies such as the National Oceanic and Atmospheric Administration (NOAA).

Notes: (1) **The totals shown for FY2006, FY2007, and FY2008**, reflect the cancellation two LCSs funded in FY2006, another two LCSs funded in FY2007, and an LCS funded in FY2008.

(2) **The total shown for FY2012** includes two JHSVs—one that was included in the Navy's FY2012 budget submission, and one that was included in the Army's FY2012 budget submission. Until FY2012, JHSVs were being procured by both the Navy and the Army. The Army was to procure its fifth and final JHSV in FY2012, and this ship was included in the Army's FY2012 budget submission. In May 2011, the Navy and Army signed a Memorandum of Agreement (MOA) transferring the Army's JHSVs to the Navy. In the FY2012 DOD Appropriations Act (Division A of H.R. 2055/P.L. 112-74 of December 23, 2011), the JHSV that was in the Army's FY2012 budget submission was funded through the Shipbuilding and Conversion, Navy (SCN) appropriation account, along with the JHSV that the Navy had included in its FY0212 budget submission. The four JHSVs that were procured through the Army's budget prior to FY2012, however, are not included in the annual totals shown in this table.

(3) **The figures shown for FY2019 and FY2020** reflect a Navy decision to show the aircraft carrier CVN-81 as a ship to be procured in FY2020 rather than a ship that was procured in FY2019. Congress, as part of its action on the Navy's proposed FY2019 budget, authorized the procurement of CVN-81 in FY2019.

(4) **The figures shown for FY2021 and FY2023** include LHA-9 as a ship procured in FY2021, consistent with congressional authorization and appropriation action for FY2021 and prior fiscal years.

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