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 May 28, 2024, the Navy included 296 battle force ships.

In December 2016, the Navy released a force-structure 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). The 355-ship goal predated the Trump and Biden Administrations' national defense strategies 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.

In June 2023, the Navy sent its preferred new force-level goal to the congressional defense committees. In March 2024, as part of its FY2025 30-year (FY2025-FY2054) shipbuilding plan, the Navy released the details of this new 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 Biden Administration to date has not explicitly endorsed, as an Administration objective and funding priority, either the 381-ship goal, the earlier 355-ship goal, or any other force-structure goal for the Navy.

The Navy's proposed FY2025 budget requests $32.4 billion in shipbuilding funding for, among other things, the procurement of six new ships—a figure that is one less than the seven ships that the Navy's FY2024 budget submission had projected for FY2025, and less than the long-term average of 10 or 11 new manned ships per year that would be need to be achieved over a period of about 35 years to achieve and maintain a fleet of about 355 or 381 manned ships.

The Navy projects that 10 new ships will be delivered to the fleet in FY2025. The Navy's FY2025 budget proposes retiring 19 existing ships in FY2025, including 10 ships that would be retired before reaching the ends of their expected service lives. As a result, the Navy projects that, under the Navy's proposed FY2025 budget, the total number of ships in the Navy would decline by a net 9 ships during FY2025, from 296 ships at the start of FY2025 to 287 ships at the end of FY2025. The Navy's budget submission projects that during the period FY2025-FY2029 (i.e., the years of the FY2025 Future Years Defense Plan [FYDP]), the Navy would include 287, 283, 280, 286, and 291 ships, respectively. Under the Navy's FY2025 30-year (FY2025-FY2054) shipbuilding plan, the fleet would grow to more than 300 ships in FY2032 and reach a total of more than 381 ships in FY2042.

Oversight issues for Congress for FY2025 include whether to amend U.S. law to make the Navy's preferred new 381-ship goal U.S. policy; the Biden Administration's position on a force-level goal for the Navy; significant projected delays in deliveries of several types of Navy ships; industrial base capacity constraints for building Navy ships; inflation in Navy shipbuilding costs; the Navy's request to procure one Virginia-class submarine rather than two in FY2025; the Navy's proposal for retiring 19 ships in FY2025; and the estimated procurement costs of certain ships included in the Navy's FY2025 five-year (FY2025-FY2029) shipbuilding plan.

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Introduction

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]

Oversight issues for Congress for FY2025 include whether to amend U.S. law to make the Navy's preferred new 381-ship force-level goal U.S. policy; the Biden Administration's position on a force-level goal for the Navy; significant delays in deliveries of several types of Navy ships announced by the Navy in April 2024; industrial base capacity constraints for building Navy ships; inflation in Navy shipbuilding costs; the Navy's request to procure one Virginia-class submarine rather than two in FY2025; the Navy's proposal for retiring 19 ships in FY2025; and the pricing of certain ships included in the Navy's five-year (FY2025-FY2029) shipbuilding plan. Decisions that Congress makes on these issues can substantially affect 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 Proposal: 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.

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[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 RS20643, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, by Ronald O'Rourke.
- 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) Class Frigate Program: 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) (Previously Light Amphibious Warship [LAW]) 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 and Undersea Vehicles: 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 May 28, 2024, the Navy included 296 battle force ships. The total number of ships in the Navy each fiscal year since FY1948 is shown in **Table G-1**.

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[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 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. 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 force-structure 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 Trump and Biden Administration's national defense strategies 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. In 2019, the Navy and the Office of the Secretary of Defense (OSD) began working on a successor to the 355-ship goal that would reflect current U.S. defense strategy and a more distributed fleet architecture.

Navy's Preferred New 381-Ship Force-Level Goal of 2023

In June 2023, the Navy sent its preferred new 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 new 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. **Table 1** compares the 355-ship and 381-ship force-level goals. (For Navy force-level goals prior to the 355-ship goal, see **Appendix A**.)

[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.

Table 1. 355-Ship Force-Level Goals

	355-Ship Goal (2016)	381-Ship Goal (2023)	Difference
Battle force ships (i.e., manned ships)			
Ballistic missile submarines (SSBNs)	12	12	0
Attack submarines (SSNs)	66	66	0
Aircraft carriers (CVNs)	12	12	0
Large surface combatants (i.e., cruisers [CGs] and destroyers [DDGs])	104	87	-17
Small surface combatants	52	73	+21
Frigates (FFGs)	*(24)*	*(58)*[a]	*(+34)*
Littoral Combat Ships (LCSs)	*(28)*	*(15)*[a]	*(-13)*
Larger amphibious ships	38	31	-7
LHA/LHD amphibious assault ships	*(12)*	*(10)*	*(-2)*
LPD/LSD amphibious ships	*(26)*	*(21)*	*(-5)*
Smaller amphibious ships (i.e., Medium Landing Ships [LSMs])	0	18[b]	+18
Combat Logistics Force (CLF) ships (i.e., at-sea resupply ships)	34	46	+12
TAO oilers and TAOE replenishment ships	*(20)*	*(20)*	*0*
TAKE dry cargo chips	*(14)*	*(13)*	*(-1)*
TAOL light replenishment oilers	*(0)*[b]	*(13)*	*(+13)*
Command and support ships	37	36[b]	-1
LCC command ships	*(2)*	*(2)*	*(0)*
AS submarine tenders	*(2)*	*(2)*	*(0)*
ESD Expeditionary Transfer Dock ships	*(2)*	*(0)*	*(-2)*
EPF Expeditionary Fast Transport ships	*(10)*	*(8)*	*(-2)*
ESB Expeditionary Sea Base ships	*(6)*	*(6)*	*(0)*
ARS and ATF salvage ships and fleet ocean tugs	*(8)*	*(8)*	*(0)*
TAGOS ocean surveillance ships	*(7)*	*(10)*	*(+3)*
Subtotal battle force ships (i.e., manned ships)	***355***	***381***	**+26**
Large unmanned vehicles			
LUSV and MUSV (Large and Medium Unmanned Surface Vehicles)	0	78	+78
XLUUV Extra Large Unmanned Underwater Vehicles)	0	56	+56
Subtotal large unmanned vehicles	***0***	***134***	***+134***
TOTAL battle force ships and large unmanned vehicles	**355**	**515**	**+160**

Source: Table prepared by CRS based on 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).

a. Under its FY2025 budget submission, the Navy wants 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 in a note to its table: "The 2022 Amphibious Force Requirements Study determined an initial capacity goal of 18 LSM[s], with a total requirements [sic] of 35." The Navy's table categories LSMs as command and support ships, and thus shows a total of 54 command and support ships. CRS and the Congressional Budget Office (CBO) categorize them as smaller amphibious ships—a category that is not shown in the navy table.

Biden Administration Has Not Explicitly Endorsed a Navy Force-level Goal

The Biden Administration to date has not explicitly endorsed, as an Administration objective and funding priority, either the 381-ship goal, the earlier 355-ship goal, or any other force-structure goal for the Navy.

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

Navy force-level goals are 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.[5] 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.[6]

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 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." Under Section 1092, the commission is to submit a report with its findings, conclusions, and recommendations not later than July 1, 2024. As of May 30, 2024, all eight members of the commission reportedly have been named.[7]

Navy's FY2025 Five-Year and 30-Year Shipbuilding Plans

FY2025 Five-Year (FY2025-FY2029) Shipbuilding Program

The Navy's FY2025 five-year (FY2025-FY2029) shipbuilding plan (**Table 2**) includes a total of 57 ships, or an average of 11.4 per year. Given a 35-year average surface life for Navy ships (a planning factor that assumes that all Navy ships would be kept in service to the end of their expected service lives), an average shipbuilding rate of 10 to 11 ships per year, if sustained for 35

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[5] 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.

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

[7] "So, How is that National Commission on the Future of the Navy Doing?" *CDR Salamander*, May 29, 2024.

years, would increase the size of the Navy over a 35-year period to a size about equal to the 355-ship or 381-ship force-level goals.

Table 2. FY2024 Five-Year (FY2025-FY2029) Shipbuilding Plan

	FY25	FY26	FY27	FY28	FY29	Total
Columbia (SSBN-826) class ballistic missile submarine		1	1	1	1	**4**
Virginia (SSN-774) class attack submarine	1	2	2	2	2	**9**
Gerald R. Ford (CVN-78) class aircraft carrier						**0**
Arleigh Burke (DDG-51) class destroyer	2	2	2	2	2	**10**
FFG-62 frigate	1	2	1	2	1	**7**
LHA amphibious assault ship			1			**1**
LPD-17 Fight II amphibious ship	1		1		1	**3**
Medium Landing Ship (LSM)	1	1	2	2	2	**8**
John Lewis (TAO-205) class oiler		2	1	2	1	**6**
Light replenishment oiler (TAOL)			1	1	1	**3**
Submarine tender (AS[X])			1		1	**2**
TAGOS(X) ocean surveillance ship		1	1	1	1	**4**
TOTAL	**6**	**11**	**14**	**13**	**13**	**57**
Projected total size of Navy	**287**	**283**	**280**	**286**	**291**	**n/a**

Source: Table prepared by CRS based on FY2025 Navy budget submission.

The Navy's proposed FY2025 budget requests $32.4 billion in shipbuilding funding. As shown in **Table 2**, this funding would be used for, among other things, the procurement of six new ships, including one Virginia-class attack submarine, two Arleigh Burke (DDG-51) class destroyers, one Constellation (FFG-62) class frigate, one LPD-17 Flight II class amphibious ship, and one Medium Landing Ship (LSM).

The figure of six requested ships is one less than the seven ships that the Navy's FY2024 budget submission had projected would be requested for FY2025, and less than the long-term average of 10 or 11 new manned ships per year that would be need to be achieved over a period of about 35 years to achieve and maintain a fleet about equal in size to the 355-ship or 381-ship force-level goals.

The Navy's FY2023 five-year (FY2023-FY2027) shipbuilding plan included no LPD-17 Flight II class amphibious ships for FY2024-FY2027, and the Navy's FY2024 five-year (FY2024-FY2028) shipbuilding plan included no LPD-17 Flight II class amphibious ships for FY2024-FY2028. As shown in **Table 2**, the Navy's FY2025 five-year (FY2025-FY2029) shipbuilding plan includes the programmed procurement of three LPD-17 Flight II class amphibious ships in FY2025-FY2029 in support of maintaining a force of 31 larger amphibious ships.

As also shown in **Table 2**, the Navy's FY2025 budget submission projects that during the period FY2025-FY2029 (i.e., the years of the FY2025 Future Years Defense Plan [FYDP]), the Navy would include 287, 283, 280, 286, and 291 ships, respectively. The figure of 291 ships in FY2029 is five ships less than the figure of 296 ships that the Navy's FY2025 budget submission projects for the end of FY2024.

FY2025 30-Year (FY2025-FY2054) Shipbuilding Plan

The top half of **Figure 1** shows the primary 30-year ship-procurement profile in the Navy's FY2025 30-year (FY2025-FY2054) shipbuilding plan. The Navy refers to this profile as the PB2025 (President's [proposed] Budget for FY2025) Shipbuilding Plan, and states that it

> reflects growing a larger Navy to approach the requirement reflected in the [June 2023] BFSAR [i.e., the 381-ship force-level goal]. This profile assumes industry eliminates excess construction backlogs and produces future ships on time and within budget. This profile reflects growth matched to planned, but not yet achieved, industrial capacity and a larger force requiring additional resources beyond the FYDP….
>
> The first profile, the PB2025 Shipbuilding Plan, is based on showing a potential path to a larger Navy based on the BFSAR objective. It is however, constrained beyond the FYDP by the Navy's assessment of current industrial base capacity and the expectation of funding efforts to improve production. This plan would requires additional resources beyond the FYDP to procure the platforms necessary to reach the objective inventory requirement….
>
> The cost to procure a larger Navy is represented by the PB2025 shipbuilding plan in support of the BFSAR objective… and assumes industry produces future ships on-time and within budget. The high range represents an average of $2.7B per year in real growth beyond the FYDP in FY2024 constant dollars.[8]

The bottom half of **Figure 1** shows an additional 30-year ship-procurement profile in the Navy's FY2025 30-year (FY2025-FY2054) shipbuilding plan. The Navy refers to this profile as the Resource Constrained Alternative or the Alternative Profile, and states that it

> reflecting a budget with no real topline growth above inflation. The Alternative Profile assumes industry eliminates excess construction backlog and produces future ships on time and within budget. The alternative was constrained to 2.1% SCN inflation growth after the FYDP….
>
> The Alternative Profile provides ready and battle-worthy platforms to operational commanders with minimal budget growth.[9]

Projected Force Levels Under FY2025 30-Year Shipbuilding Plan

As shown in the top half of **Figure 2**, under the PB2025 Shipbuilding Plan, the fleet would grow to more than 300 ships in FY2032, reach a total of more than 381 ships in FY2042, and include 387 ships at the end of the 30-year period. As shown in the bottom half of **Figure 2**, under the Resource Constrained Alternative, the fleet would again grow to more than 300 ships in FY2032, reach a peak total of 346 ships in FY2040, and include 342 ships at the end of the 30-year period.

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[8] U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2024*, March 2023, with cover letters dated March 30, 2023, released April 18, 2023, pp. 8, 17-18, 21.

[9] U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2024*, March 2023, with cover letters dated March 30, 2023, released April 18, 2023, pp. 8, 18.

Figure 1. Ship-Procurement Profiles in FY2025 30-Year Shipbuilding Plan

PB2025 Shipbuilding Plan in support of the BFSAR objective

Fiscal Year	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Aircraft Carrier						1				1					1				1					1				1		
Large Surface Combatant	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
Small Surface Combatant	1	2	1	2	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Attack Submarines	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Ballistic Missile Submarines		1	1	1	1	1	1	1	1	1	1																			
Cruise Missile Submarines														1			1			1			1			1			1	
Amphibious Warfare Ships	1		2		1		2		1	1				1	1	1	2	1	1	1	1	1	1	2	1		1	1	1	
Combat Logistics Force		2	2	3	2	2	3	3	3	4	4	4	2					1		2	2	3	3	3	1	1	2	2	2	2
Support Vessels	1	2	4	3	4	3	4	3	4	4	3	2	3	2	3	2						2	2	2	2	2	3	2	3	3
Total New Construction Plan	6	11	14	13	13	13	17	14	16	16	15	13	12	10	12	9	10	8	9	10	10	12	14	14	11	10	13	12	14	11

Alternative to the Shipbuilding Plan

Fiscal Year	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Aircraft Carrier						1					1					1					1					1				
Large Surface Combatant	2	2	2	2	2	1	1	1	1	1	2	2	3	1	1	1	1	1	2	1	1	1	2	1	2	1	2	1	1	1
Small Surface Combatant	1	2	1	2	1	1	1	2	1	2	1	2	2	2	3	2	2	3	2	3	2	3	2	3	2	2	2	3	2	3
Attack Submarines	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	2	1	2
Ballistic Missile Submarines		1	1	1	1	1	1	1	1	1	1																			
Cruise Missile Submarines														1			1			1			1			1			1	
Amphibious Warfare Ships	1		2		1	1	1		1		1		1	1	1	1	1	1	1	1	2	1		1	1		1	1	1	1
Combat Logistics Force		2	2	3	2	3		3	1	3							1	1	1	2	1	3	2	3	1		3	3	1	3
Support Vessels	1	2	4	3	4	3	3	3	3	3	3	3	2	2	3		2						3	2	2		3	3	3	4
Total New Construction Plan	6	11	14	13	13	13	9	12	10	12	11	9	10	9	10	7	10	8	8	9	9	10	11	12	10	7	13	13	10	14

[1] The ability of the industrial base to support the Alternative has not been independently assessed.
[2] The profiles shown in Tables A1-2 through A1-5 do not reflect future adjustments to support the AUKUS trilateral agreement. Future Procurement Profiles, Battle Force Delivery, Retirement and Inventory Plans will be updated in future reports after further analysis refines future SSN workload.

Source: U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2024*, March 2023, with cover letters dated March 30, 2023, released April 18, 2023, p. 18 (Table A1-2).

Figure 2. Projected Force Levels Under FY2025 30-Year Shipbuilding Plan

PB2025 Shipbuilding plan in support of the BFSAR objective

Fiscal Year	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Aircraft Carrier	12	11	11	11	12	11	11	12	11	11	11	11	10	10	10	11	10	10	11	11	11	10	9	9	9	9	9	10	9	9
Large Surface Combatant	83	82	83	84	83	81	80	79	79	77	82	83	84	86	86	89	86	86	83	80	78	77	77	76	75	74	74	74	76	77
Small Surface Combatant	30	29	25	27	29	31	33	35	36	38	40	43	46	49	52	55	56	59	56	56	56	59	56	59	59	60	63	66	67	68
Attack Submarines	49	48	48	47	49	47	48	50	52	53	54	54	55	56	55	56	55	57	57	56	59	60	61	62	62	62	62	64	64	66
Cruise Missile Submarines	4	2	2																		1	1	1	2	2	2	3	3	3	4
Ballistic Missile Submarines	14	14	13	13	13	12	12	12	12	12	12	12	12	12	12	13	13	12	12	12	12	12	12	12	12	12	12	12	12	12
Amphibious Warfare Ships	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Combat Logistics Force	32	32	30	33	31	33	34	36	37	38	40	43	45	48	52	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
Support Vessels	32	34	37	40	43	46	49	51	54	56	60	61	63	65	66	67	69	72	73	72	71	70	70	69	69	67	67	66	64	64
Total Naval Force Inventory	287	283	280	286	291	294	298	306	312	316	330	336	348	357	366	378	378	383	381	378	377	376	375	376	375	373	377	382	382	387

Alternative to the Shipbuilding Plan

Fiscal Year	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Aircraft Carrier	12	11	11	11	12	11	11	12	11	11	11	11	10	10	10	11	10	10	10	11	11	10	9	8	9	9	9	9	8	9
Large Surface Combatant	83	82	83	84	83	81	80	79	79	77	81	81	82	83	84	84	81	80	80	76	73	72	71	70	69	68	67	67	69	70
Small Surface Combatant	30	29	25	27	29	31	33	35	36	38	39	40	42	43	45	48	48	48	48	48	45	45	44	44	44	44	47	49	50	50
Attack Submarines	49	48	48	47	49	47	48	50	52	53	54	54	55	56	55	56	55	57	57	56	59	60	61	62	62	62	61	63	63	64
Cruise Missile Submarines	4	2	2																		1	1	1	2	2	2	3	3	3	4
Ballistic Missile Submarines	14	14	13	13	13	12	12	12	12	12	12	12	12	12	12	13	13	12	12	12	12	12	12	12	12	12	12	12	12	12
Amphibious Warfare Ships	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Combat Logistics Force	32	32	30	33	31	33	34	36	37	38	39	40	42	41	41	41	41	41	41	41	43	43	43	42	42	41	41	41	40	40
Support Vessels	32	34	37	40	43	46	49	51	54	57	59	59	61	63	64	64	66	69	68	69	68	67	67	66	64	63	63	62	58	59
Total Naval Force Inventory	287	283	280	286	291	294	298	306	312	315	328	328	335	339	342	348	345	348	345	344	340	341	339	337	335	332	334	337	334	342

Source: U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2024*, March 2023, with cover letters dated March 30, 2023, released April 18, 2023, p. 20 (Table A1-5).

Issues for Congress

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

Amending U.S. Law to Reflect Navy's Preferred New 381-Ship Goal

One issue for Congress 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 Navy's preferred new 381-ship force-level objective, and/or include an enforcement mechanism.

Biden Administration's Position on Force-Level Goal for the Navy

Another issue for Congress concerns the Biden Administration's position regarding the Navy's force-level goal. As mentioned earlier, the Biden Administration to date has not explicitly endorsed, as an Administration objective and funding priority, either the 381-ship goal, the earlier 355-ship goal, or any other force-structure goal for the Navy. Potential questions for Congress include the following:

- Why has the Administration to date not explicitly endorsed, as an Administration objective and funding priority, either the 381-ship goal, the earlier 355-ship goal, or any other force-structure goal for the Navy?
- What future Navy force-level and fleet composition does the Administration support as an Administration goal and funding priority?
- In the absence of an Administration endorsement of a specific Navy force-level goal as an Administration goal and funding priority, how well can Congress assess the intention and funding adequacy of the Administration's proposed budgets for the Navy?
- Should Congress respond to the absence of an Administration endorsement of a specific Navy force-level goal as an Administration goal and funding priority by amending 10 U.S.C. 8062 to include mandatory minimum force-level figures not just for aircraft carriers and amphibious ships, but for other ship categories as well?

Appropriateness of Navy's Preferred New 381-Ship Goal

Another issue for Congress is whether the Navy's preferred new 381-ship force-level goal would be appropriate for performing the Navy's missions in coming years. Factors that Congress may consider in assessing this question include but are not limited to the following:

- 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 Department of Defense (DOD) priorities; and
- industrial base capacity for building and maintaining Navy ships, aircraft, weapons, and other assets.

As mentioned above, 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.

The question of the size and composition of the Navy needed to perform the Navy's missions in coming years is a perennial matter of congressional oversight. In assessing this issue, 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),[10] in Section 1067 of the FY2016 National Defense Authorization Act (S. 1356/P.L. 114-92 of November 25, 2015),[11] 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."

Delays in Navy Shipbuilding Programs

Overview

Another issue for Congress concerns delays in Navy shipbuilding programs. On April 2, 2024, the Navy announced significant projected delays in several of its shipbuilding programs.[12] The Navy's announcement reflected the results of a 45-day Navy review of its shipbuilding programs that Secretary of the Navy Carlos Del Toro directed on January 11, 2024.[13] **Figure 3** shows the Navy's one-page summary of the 45-day review and its findings regarding delays in its shipbuilding programs.

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

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

[12] 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.

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

Figure 3. 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

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, have characterized the situation as strategic liability or major cause for concern for the United States in competing militarily with China.[14]
- 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)[15] and maintaining ships (particularly nuclear-powered attack submarines, but also certain conventionally powered surface ships).[16]

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[14] See, for example

- Jeffrey M. Voth, "Charting a New Course: Why the US Navy Must Confront Unrealistic Optimism," *Diplomat*, April 15, 2024, which states that "Admiral Phil Davidson's warning of potential Chinese aggression toward Taiwan by 2027—now termed the "Davidson Window"—underscores the strategic vulnerabilities these [shipbuilding] delays could exacerbate…. This is no longer an issue of delayed timelines; it has become a strategic liability."
- Thomas Black, "US Navy Shipbuilding Has Fallen Dangerously Behind," *Bloomberg*, April 17, 2024, which states that the United States is "clinging to its position as the world's leading naval power as yearslong production delays jeopardize America's national security while China's seafaring might surges."
- Steve Cohen, "Almost All Navy Shipbuilding Is Hopelessly Behind Schedule," *The Hill*, May 2, 2024, which states "The Chinese aren't waiting for us to get our [shipbuilding] act together as they enlarge and modernize their fleet to dominate the western Pacific."
- Gil Barndollar and Matthew C. Mai, "The U.S. Navy Can't Build Ships," *Foreign Policy*, May 17, 2024, which states "The United States is unable to keep pace with Chinese shipbuilding and will fall even further behind in the coming years. Where does that leave the U.S. Navy and the most critical U.S. foreign-policy imperative: deterring a war in the Pacific?"

[15] See, for example, 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; 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, "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; Jared Serbu, "Navy Grapples With At-Sea Shortages as Recruiting Lags," *Federal News Network*, May 20, 2024.

[16] 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

(continued...)

- 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.[17] Several of the initiatives listed in the Navy's one-page summary for responding to the projected delays relate to workforce development.
- 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. Programs reportedly affected by limitations on the design workforce include the FFG-62 frigate program[18] and the Coast Guard's Polar Security Cutter (PSC, i.e., polar icebreaker) program, which is a program being jointly managed by the Coast Guard and Navy.[19]
- 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

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.

[17] See, for example, 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.

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

[19] 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.

and executing this program with a goal of avoiding a schedule delay.[20] That this program faces an approximate delay of 12 to 16 months in spite of these efforts can be viewed as an indication of 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.[21]

An April 9, 2024, press report stated

> A new Navy office is assessing how to fix the years of delays plaguing the service's major shipbuilding programs, Secretary of the Navy Carlos Del Toro said on Tuesday.
>
> 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."[22]

Oversight Questions

Potential oversight questions for Congress include the following:

- When will the follow-on study discussed in the above April 9, 2024, press report be completed?
- 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?

[20] 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.

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

[22] 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.

- 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?

Industrial Base Capacity Constraints for Building Navy Ships

Overview

A related issue for Congress—one that has become more prominent as an oversight matter for the congressional defense committees since about 2022—is 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.[23]

Submarines

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 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 1.2 to 1.4 Virginia-class boats per year. The Navy aims to increase the completion rate two 2.0 Virginia-class boats per year by 2028.

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 five times what the industry was contracted to do in FY2010 and prior years.[24] 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

[23] 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.

[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, and CRS Report RL32418, *Navy Virginia-Class Submarine Program and AUKUS Submarine Proposal: Background and Issues for Congress*, by Ronald O'Rourke.

the AUKUS (Australia-UK-U.S.) trilateral security arrangement.[25] 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 workforce development.

Using Navy-provided industrial base funding for these efforts reduces 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 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 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, meaning that the shipyards are now offloading some of their submarine-construction work to industrial facilities in other locations.[26] As of mid-2024, there were about 20 strategic outsources for submarine production, including three that are referred to as focus factories because of the details of their production relationships with the two submarine construction shipyards.[27]

Surface Ships

Shipbuilding capacity constraints are also affecting the construction rates for surface ships such as DDG-51 class destroyers.[28] Similar to the submarine construction industrial base, the Navy is

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[25] 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.

[26] 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.

[27] 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.

[28] 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* (continued...)

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.

Options for Addressing Shipbuilding Capacity Constraints

In addition to using strategic outsourcing for building submarines and providing industrial base funding for shipyards and supplier firms, there are a number of other options for addressing industrial base capacity constraints for building Navy ships, including but not limited to those discussed briefly below, which are not mutually exclusive.

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 of openings for submarine construction jobs across the country through advertising efforts such as the Build Submarines advertising campaign and its associated website, buildsubmarines.com. Similar 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, unions, and other organizations to not only increase awareness within the regional labor markets surrounding shipbuilding firms of shipbuilding as a potential line of work or career option, but also to encourage instruction of students in basic skills that could help prepare them for potential future work in shipbuilding. Such efforts have been underway for years and have been expanded in part with Navy-provided industrial base funding, and could be expanded to other parts of the country not currently involved in Navy shipbuilding.[29]

Worker Immigration

An April 23, 2024, press report stated

> The secretary of the Navy said the shortage of workers in the U.S. shipbuilding industry could be partially alleviated by allowing more legal immigrants into the country to work in the shipyards.
>
> Speaking April 23 at the Stimson Institute, a Washington think tank, SECNAV [Secretary of the Navy] Carlos Del Toro acknowledged that supply chain issues caused by the COVID-19 pandemic negatively affected the ability on shipyards to meet delivery

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.

[29] See, for example, 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.

> schedules of Navy ships, said he thought "the bigger problem than that … is actually the lack of blue-collar workers that we have in this country.
>
> "Regretfully, we're a pretty divided country politically, you might say, but it really is time for Congress to get together and pass comprehensive reform and increase the amount of legal immigration that we actually allow into this country [and] increase the amount of work visa programs that are authorized for blue-collar workers to come from other nations and actually do the work here as has actually existed since the founding of our government, very much so," Del Toro said.
>
> The SECNAV noted the current unemployment rate in many U.S. states is low, "but what we've got to do is open up the spigot a bit, basically, on legal immigration to allow blue-collar workers to come here and also to devote an enormous amount of resources into re-training individuals so they can actually work in our shipyards and be employed by the types of trades that are open to shipyard workers, for example."[30]

One issue that could arise in connection with this option would concern the citizenship status of such workers, as U.S. Navy shipbuilding programs may require that workers building the ships be U.S. citizens.

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, workers are now more likely to choose service and retail jobs, where the work, while 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, and take place in locations offering easier daily commutes.[31] 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

Efforts to improve retention of shipbuilding workers can 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, or paying retention bonuses to workers.

Federated Shipbuilding/Nation as a Shipyard

Another option—one that might be called federated shipbuilding or nation as a shipyard,[32]—would involve expanding the use of strategic outsourcing to the construction to surface ships as well, so as to apply strategic outsourcing to Navy shipbuilding programs in a more systematic and

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[30] Richard R. Burgess, "SECNAV [Secretary of the Navy] Advocates Increased Legal Immigration to Increase Shipbuilder Workforce," *Seapower*, April 23, 2024.

[31] See, for example, Paul McLeary and Lee Hudson, "Navy Shipyards Compete with Fast Food, and Are Losing," *Politico Pro*, April 9, 2024.

[32] RAND has referred to it 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.

comprehensive manner, and design 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 regional labor markets in parts of the country that currently are not significantly involved in Navy shipbuilding.[33]

Ships that have been built with modules produced at locations distant from the final assembly yard include every Virginia-class submarine procured since the start of Virginia-class procurement in FY1998[34] 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 LPD-17 Flight I class amphibious ships that was caused by Hurricane Katrina in 2005 (**Figure 4**).[35]

Figure 4. 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).

33 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.

34 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.

35 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.

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, 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. 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.[36]

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. An April 23, 2024, press report stated

> Navy Secretary Carlos Del Toro today said he'd be open to having foreign shipyards assemble certain US Navy warship modules overseas to increase domestic production rates.
>
> "We do this in the aircraft industry … where in India for example, we're building aircraft engines now and … re-instituting them here in the United States," he said during an event at the Stimson Center. "So, there are opportunities that I think we can pursue and we need to keep open minded about those opportunities."….
>
> Del Toro did not elaborate today on whether co-production was a subject of discussion when he visited Asia, but the idea would almost certainly be met with resistance from American industry.
>
> "There is more than enough capacity to accomplish all the fleet's maintenance needs, and yet the Navy is looking abroad for ship maintenance, as well as the capability to build combatant and logistics ships, plus vessels for the Coast Guard and the Army," Matthew Paxton, president of the Shipbuilders Council of America, wrote in a Defense News op-ed.

[36] See, for example, 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.

> "These efforts are driving layoffs to the very domestic workforce Navy leadership says it wants to preserve."
>
> "This shortsighted approach creates market uncertainty and instability, complicating additional investments in the industrial base, and undermines the substantial capital investments the U.S. shipbuilding industry has made in its workforce and facilities," he continued.[37]

One issue that would arise in connection with this option are U.S. laws that prohibit U.S. Navy ships or major components of Navy ships from being built in foreign shipyards. These laws include, among others, 10 U.S.C. 8679, which includes a presidential waiver for national security interest,[38] and a recurring provision in the annual DOD Appropriations Act.[39]

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 not be U.S. nationals. This issue currently arises in connection with repairing and maintaining certain U.S. Navy ships in shipyards in locations such as Japan; one question would be how this issue might differ for a situation of building (rather than repairing and maintaining) U.S. Navy ships.

Inflation in Navy Shipbuilding Costs

Another issue for Congress concerns inflation in Navy shipbuilding costs. Shipbuilding, like other sectors of defense procurement and the U.S. economy in general, has experienced significant inflation since the start of the COVID-19 pandemic due to supply chain disruptions and other impacts. The Department of the Navy states in its FY2025 budget highlights book that "the residual effects of inflationary pressures of the past few years, workforce challenges, plus

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[37] Justin Katz, "SECNAV [Secretary of the Navy] Floats Idea of Co-Production with Foreign Shipyards," *Breaking Defense*, April 23, 2024. See also Choi Kang and Peter K. Lee, "Why U.S. Naval Power Needs Asian Allies," *War on the Rocks*, January 12, 2024; Douglas Robb, "Japan, South Korea and the US Should Mirror AUKUS for Destroyers," *Defense News*, October 5, 2023.

The op-ed by Matthew Paxton that is mentioned in the quoted passage is Matthew Paxton, "Outsourcing Navy Shipbuilding Weakens the United States," *Defense News*, March 21, 2024.

[38] The text of U.S.C. as of May 29, 2024 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.
>
> (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).

[39] The provision, which is included each year in the paragraph of the annual DOD Appropriations Act that makes appropriations for the Navy's shipbuilding account (i.e., the Shipbuilding and Conversion, or SCN, account) states

> … *Provided further*, That none of the funds provided under this heading 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:…

increased labor and supply costs across the defense enterprise, all drove costs associated with our shipbuilding account up roughly 20% over the past couple of years."[40]

This inflation has increased the estimated procurement costs of multiple Navy shipbuilding programs, reducing the purchasing power of the Navy's shipbuilding budget. For an annual Navy shipbuilding account of about $32 billion, a 20% inflation rate applied across the account could reduce the purchasing power of the account to a pre-inflation equivalent of about $26.7 billion, or about $5.3 billion less. Stated differently, a 20% inflation rate applied across the new-construction portion of the Navy's shipbuilding account could reduce the number of ships that could be procured for a certain amount of funding from 12 ships to 10 ships.

Inflation can also affect shipyards and their associated supplier firms, particularly those operating under fixed-price contracts. Contracts for building Navy ships sometimes include Economic Price Adjustment (EPA) clauses that permit costs within the contract to be adjusted up to certain amounts to account for inflation. EPA clauses may cover some of the ships being built at a shipyard but not others, and might cover changes in costs for labor but not materials (or vice versa).[41] Firms also have the option of filing a Request for Equitable Adjustment (REA).[42]

FY2025 Request for Procuring One Rather than Two Virginia-Class Submarines

Another issue for Congress concerns the Navy's request to procure one Virginia-class submarine rather than two Virginia-class submarines in FY2025, as was projected for FY2025 under the Navy's budget submissions for FY2024 and prior years. Navy officials state that the Navy's decision to request the procurement of one Virginia-class submarine rather than two Virginia-class submarines in FY2025 was due to limits on the Navy's overall budget combined with the growing backlog of Virginia-class submarines procured in prior years but not yet completed.[43]

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[40] Department of the Navy, *Highlights of the Department of the Navy FY 2025 Budget*, 2024, page 1-12.

[41] For more on EPA clauses, see Garry Murphy and Amy Hoffer, "Economic Price Adjustment (EPA)," Naval Facilities Engineering Systems Command (NAVFAC) briefing, March 22, 2023, 16 slides, accessed May 21, 2024, at https://atlantic.navfac.navy.mil/Portals/71/NAVFAC_SOUTHEAST/Documents/Industry%20Day%20Briefs/Unique%20Challenges%20and%20Innovation.pdf; and Leslie Overturf, "Striking the Balance: Constructing Fair Economic Price Adjustment (EPA) Clauses," DOD briefing, August 23, 2022, 112 slides, accessed May 21, 2024, at https://www.dau.edu/sites/default/files/Migrate/EventAttachments/679/Striking%20the%20Balance_Constructing%20EPA%20clauses_22%20Aug.pdf.

[42] For more on REAs, see CRS Legal Sidebar LSB10640, *Legal Mechanisms for Dealing with Changed Circumstances in Federal Contracting*, by David H. Carpenter; "Request for Equitable Adjustment (REA)," Defense Acquisition University (DAU), undated, accessed May 21, 2024, at https://www.dau.edu/acquipedia-article/request-equitable-adjustment-rea; and "Request for Equitable Adjustment (REA)," AcqNotes, The Defense Acquisition Encyclopedia, 2024, accessed May 21, 2024, at https://acqnotes.com/acqnote/careerfields/request-for-equitable-adjustment-rea.

[43] Source: Navy FY2025 budget rollout briefing for CBO and CRS, March 12, 2024. See also the Department of the Navy's FY2025 budget highlights book, which states:

> Aligned with Congressional intent, this budget request delivers the most ready and lethal Naval Forces feasible under the FRA [Fiscal Responsibility Act—H.R. 3746/P.L. 118-5 of June 3, 2023] budget caps. These caps, paced well below even historical inflation targets, force hard choices. Due to the residual effects of inflationary pressures of the past few years, workforce challenges, plus increased labor and supply costs across the defense enterprise, all drove costs associated with our shipbuilding account up roughly 20% over the last couple of years. Hard choices were made, particularly in the procurement accounts. An analytic review of production performance identified areas where we could take risk to comply with the congressional fiscal caps. The Department requests only 1 Virginia Class submarine in PB25 [the President's [proposed] budget for FY2025], dropping the total number of ships requested down one from what we estimated we would request

(continued...)

Supporters of procuring two Virginia-class submarines in FY2025 argue that procuring two is needed to maintain stability for the submarine construction industrial base and to send a strong signal of resolve to China and other potential adversaries. The issue of the Virginia-class attack submarine procurement rate is discussed further in the CRS report on the Virginia-class program.[44]

Proposed Retirement of 19 Ships in FY2025

Another issue for Congress concerns the Navy's proposal for retiring 19 ships in FY2025, including 10 ships that would be retired prior to reaching the ends of their service lives. The Navy states that "decommissioning these ships frees up additional resources to construct more capable and lethal platforms relative to current threats. Legacy platforms that are expensive to repair and maintain and unable to provide relevant capability in contested environments must be retired in order to invest in essential capabilities the Navy needs for our national security."[45]

In acting on proposed Navy budgets for FY2024 and prior fiscal years, Congress has approved the Navy's proposals for retiring some ships but not others, and has included legislative provisions in NDAAs and annual DOD Appropriations Acts prohibiting the Navy from retiring certain ships. Opponents of retiring ships that the Navy has proposed for retirement have argued that doing so would reduce Navy ship force levels and associated missile capacities, which would reduce the Navy's ability to deter or respond to potential aggression by China or other potential adversaries, and that keeping the ships in service is a higher priority than other elements of the Navy's proposed budget.

Procurement Costs of Certain Ships in Five-Year Shipbuilding Plan

Another issue for Congress concerns the estimated procurement costs shown for certain ships in the Navy's FY2025 five-year (FY2025-FY2029) shipbuilding plan, including

- seven Medium Landing Ships (LSMs) programmed for procurement in FY2026-FY2029;
- one AS(X) submarine tender programmed for procurement in FY2027; and
- four TAGOS ocean surveillance ships programmed for procurement in FY2026-FY2029

The estimated procurement costs shown for these 12 ships are noticeably lower than those for ships in those same classes with procurement dates in fiscal years prior to FY2026 and/or after FY2029. This could raise a question as to whether the Navy reduced the estimated procurement costs of these 12 ships to unrealistically low figures for some reason, such as to help keep total programmed Navy spending below a certain level during FY2026-FY2029 (i.e., the final four years of the FY2025 Future Years Defense Plan, or FYDP).

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in FY 2025 during last year's budget.

(Department of the Navy, *Highlights of the Department of the Navy FY 2025 Budget*, 2024, pages 1-12 to 1-13.)

[44] CRS Report RL32418, *Navy Virginia-Class Submarine Program and AUKUS Submarine Proposal: Background and Issues for Congress*, by Ronald O'Rourke.

[45] U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2025*, p. 6.

Legislative Activity for FY2024 and FY2025

CRS Reports Tracking Legislation on Specific Navy Shipbuilding Programs

Detailed coverage of legislative activity on certain Navy shipbuilding programs (including funding levels, legislative provisions, and report language) 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 Proposal: 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 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) Class Frigate Program: 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) (Previously Light Amphibious Warship [LAW]) 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 and Undersea Vehicles: Background and Issues for Congress*, by Ronald O'Rourke.

Legislative activity on individual Navy shipbuilding programs that are not covered in detail in the above reports is covered below.

Summary of Congressional Action on FY2024 Shipbuilding Funding Request

The Navy's proposed FY2024 budget requested $32.8 billion in shipbuilding funding for, among other things, the procurement of nine new ships, including one Columbia (SSBN-826) class ballistic missile submarine, two Virginia (SSN-774) class attack submarines, two Arleigh Burke (DDG-51) class destroyers, two Constellation (FFG-62) class frigates, one AS(X) submarine tender, and one John Lewis (TAO-205) class oiler. The Navy's proposed FY2024 budget proposed retiring 11 ships, including two relatively young LCSs.[46]

Table 3 summarizes congressional action on the Navy's FY2024 funding request for Navy shipbuilding. The table shows the amounts requested and congressional changes to those requested amounts, with blank cells indicating no change from the requested amount.

[46] For a press report about the 11 ships, including the two LCSs and six other ships that would be retired before the end of their expected service lives, see Megan Eckstein, "Why the US Navy Wants to Retire Eight Ships Early," *Defense News,* March 13, 2023.

Table 3. Summary of Congressional Action on FY2024 Funding Request

Millions of dollars, rounded to nearest tenth; totals may not add due to rounding

			Congressional changes to requested amounts					
			Authorization			Appropriation		
Line number	**Program**	**Request**	**HASC**	**SASC**	**Enacted**	**HAC**	**SAC**	**Enacted**
Shipbuilding and Conversion, Navy (SCN) appropriation account								
001	Columbia-class SSBN	2,443.6	88.0					
002	Columbia-class SSBN (AP)	3,390.7						
003	CVN 80 aircraft carrier	1,115.3	160.0			-10.9		-10.9
004	CVN-81 aircraft carrier	800.5						
005	Virginia-class SSN	7,130.0						
006	Virginia-class SSN (AP)	3,215.5	-325.1				-56.8	-56.8
007	CVN RCOH	0						
008	CVN RCOH (AP)	817.6			-14.7	-14.7	-329.2	-329.2
009	DDG-1000	410.4				-91.7		-17.5
010	DDG-51	4,199.2					300.0	300.0
011	DDG-51 (AP)	284.0	155.0		500.0		1,357.3	1357.3*
012	LCS	0						
013	FFG-62	2,173.7	-10.0		-10.0	-39.8	50.0	10.2
014	LPD-17 Flight II	0		1,863.0	1,000.0			
015	LPD-17 Flight II (AP)	0					500.0	500.0*
016	LPD-17 Flight I	0	750.0					
017	Expeditionary Sea Base (ESB)	0						
018	LHA amphibious assault ship	1,830.1						
019	LHA amphibious assault ship (AP)	0						
020	Expeditionary fast transport ship (EPF)	0	-5.0					
021	AS(X) submarine tender	1,733.2	-1,485.2		-1,485.2	-188.6	-1,733.2	-1,733.2
022	TAO-205 oiler	815.4						
023	TAGOS(X) ocean surveillance ship	0					513.5	513.5
024	TATS towing/salvage/rescue ship	0						
025	LCU 1700 landing craft	62.5						
026	Outfitting	557.4			-17.7	-17.7	-43.4	-45.3
027	Ship to shore connector (SSC)	0				400.0		585.0
028	Service craft	63.8	30.0		30.0	21.3	30.0	30.0
029	Auxiliary Personnel Lighter (APL)	0	72.0	72.0	72.0		72.0	72.0
030	LCAC landing craft SLEP	15.3						
031	Auxiliary vessels (used sealift ships)	142.0						
032	Completion of prior-year ships	1,648.6					-258.5	-358.5
TOTAL		**32,849.0**	**-560.3**	**1,935.0**	**74.4**	**57.9**	**401.7**	**816.5**[a]

Source: Table prepared by CRS based on original Navy FY2024 budget submission, committee reports, and explanatory statements on the FY2024 National Defense Authorization Act and FY2024 DOD Appropriations Act.

Notes: Millions of dollars, rounded to nearest tenth. A blank cell indicates no change to requested amount. Totals may not add due to rounding. **AP** = advance procurement funding; **HASC** = House Armed Services Committee; **SASC** = Senate Armed Services Committee; **HAC** = House Appropriations Committee; **SAC** = Senate Appropriations Committee; **SLEP** = service life extension program.

a. Figures shown in the appropriation-enacted column include $77.3 million in FY2023 funding in line 11 (DDG-51 [AP]) that was realigned (i.e., transferred) from the FY2023 DDG-51 (AP) appropriation, and $250.0 million in line 15 (LPD-17 Flight II [AP]) that was realigned (i.e., transferred) form the FY2023 LPD-17 Flight II (AP) appropriation.

FY2024 National Defense Authorization Act (H.R. 2670/S. 2226/P.L. 118-31)

House

The House Armed Services Committee, in its report (H.Rept. 118-125 of June 30, 2023) on H.R. 2670, recommended the funding levels shown in the HASC column of **Table 3**. Compared with the Navy's proposed FY2024 shipbuilding program, the committee recommended the procurement of

- one additional LPD-17 Flight II amphibious ship, and
- one additional auxiliary personnel lighter (APL, i.e., berthing barge)

Section 133 would provide authority for a block buy contract for up to six Auxiliary Personnel Lighters (APLs; i.e., berthing barges).

Section 135 of H.R. 2670 would require a report on the status of the implementation of the Navy shipbuilding workforce development special incentive under 10 U.S.C. 8696.

Section 136 would require a report on the Navy's use of government docks for a ship repair and maintenance availabilities when sufficient capacity was available in private docks during the period in which such repairs and maintenance were expected to be performed.

Section 137 would direct the Navy to ensure that no government-operated drydock is eligible to compete for the award of a contract for private sector nonnuclear surface ship maintenance unless the Secretary determines, in accordance with 10 U.S.C. 2466, that there is not sufficient private sector dock competition.

Section 344 would amend the requirement under 10 U.S.C. 8013 note to provide briefings on the Shipyard Infrastructure Optimization Plan (SIOP) to require that the briefings include certain additional matters.

Section 1011 would amend the requirement under 10 U.S.C. 231 to provide a 30-year shipbuilding plan to require

- the plan to include "the unaltered assessment of the Chief of Naval Operations and the Commandant of the Marine Corps,"
- the Secretary of the Navy to "take into consideration the most recent biennial report on shipbuilder training and the defense industrial base required by 10 U.S.C. 8693," and
- the Secretary of the Navy—if there is more than one 30-year shipbuilding profile included in the plan—to ensure, to the maximum extent practicable, that the first 10 years of each profile are consistent with one another.

Section 1013 would add a new Section 2219 to Title 10 of the *U.S. Code* providing the Navy authority to make grants to shipyards and other entities that provide ship repair or alteration for nonnuclear ships for capital improvement projects or maritime training programs designed to foster technical skills and operational productivity.

Section 1016 would amend Section 1025 of the FY2018 NDAA (H.R. 2810/P.L. 115-91 of December 12, 2017)—the provision that makes the 355-ship goal a matter of U.S. policy, and which is shown as a note to 10 U.S.C. 8661 (previously numbered 10 U.S.C. 7291)—to read as follows:

> 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—
>
> (1) 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; and
>
> (2) that the United States shipbuilding defense industrial base is fundamental to achieving the shipbuilding requirements of the Navy and constitutes a unique national security imperative that requires sustainment and support by the Navy and Congress.
>
> (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.

Section 1017 would prohibit the obligation and expenditure of FY2024 funds to retire, prepare to retire, inactivate, or place in storage the amphibious ships USS *Germantown* (LSD-42), USS *Gunston Hall* (LSD-44), and USS *Tortuga* (LSD-46); the cruisers USS *Shiloh* (CG-67) and USS *Cowpens* (CG-63); or more than three other cruisers.

Section 1018 would prohibit the obligation and expenditure of FY2024 funds to place an expeditionary fast transport vessel (EPF) into a reduced operating status, and require the Chief of Naval Operations, in consultation with the Commander of the Military Sealift Command, to develop and implement a strategy and concept of operations for the use of EPFs in support of operational plans in the area of operations of United States Indo-Pacific Command, and to report to the congressional defense committees on that strategy and concept of operations.

Section 1021 would provide authority to use FY2024 funds to enter into an incrementally funded contract for the advance procurement and construction of a submarine tender (AS[X]).

Section 1022 would require the Secretary of Defense—for any ship or class of ship for which a provision of the FY2024 NDAA limits the availability of funds authorized to be appropriated for the purposes retiring, preparing to retire, inactivating, or placing in storage any such ship—to include in the FY2025 budget submission a plan to resource and retain such ship or class of ships until the end of FY2027 or the end of the expected service life of the ships.

Section 1023 would require the Navy to provide the House and Senate Armed Services Committees, not later than 90 days before the retirement of any naval vessel that is a viable candidate for artificial reefing, a notice of the pending retirement of that vessel.

Section 1026 would direct the Secretary of Defense, in cooperation with the Commander of the Special Operations Command, to conduct an operational performance study on alternative vessels with M-shape hull designs for reduction of wave slap, mitigation of shock impact on special operations forces, and improved operational and cost efficiencies, and to submit a report on the results of the study.

Section 3522 would direct the Commander of the U.S. Transportation Command, in consultation with the Administrator of the Maritime Administration, to conduct a market analysis to determine the availability of used sealift vessels that meet military requirements and may be purchased using the authority provided under 10 U.S.C. 2218 within five years following the enactment of the FY2024 NDAA, and to submit a report on the results of the market analysis.

Section 3532, which concerns the recapitalization of National Defense Reserve Fleet (NDRF), would amend Section 3546 of the FY2023 NDAA (H.R. 7776/P.L. 117-263 of December 23, 2022) and provide limitations on certain Navy expenditures until a report is submitted containing a detailed description of the acquisition strategy for a domestic new build sealift program.

Section 3535 would require the Secretary of Transportation to consider the life-cycle cost estimates of new National Defense Reserve Fleet (NDRF) vessels during design and evaluation.

Section 3636 would require the Secretary of Defense to finalize the rule from the *Federal Register* on September 29, 2020, titled "Source Restrictions on Auxiliary Ship Components."

Section 3537 would authorize $2.0 million for developing a national maritime strategy as required by Section 3542 of the FY2023 NDAA (H.R. 7776/P.L. 117-263 of December 23, 2022).

Section 3539 would require briefings not less than twice annually on the status of establishing the type of national maritime strategy required in 46 U.S.C. 50114.

H.Rept. 118-125 states

> *U.S. Ship Design Capabilities*
>
> The committee recognizes the importance of maintaining vibrant national shipbuilding infrastructure as our nation's shipyards are a critical national security asset. The committee also believes that ship design and maritime engineering capability in the United States has not been adequately prioritized in recent years. This workforce is critical in solving emerging maritime challenges, supporting our nation in time of national emergency, and providing high quality STEM careers for both high school and college graduates. The United States has enjoyed a long history of leadership in ship design and continued advancement of this skillset is critical to our maritime future particularly in large volume ship design. Therefore, the committee directs the Secretary of Defense, in coordination with the Secretary of Transportation, to provide a briefing to the House Armed Services Committee not later than March 1, 2024, detailing efforts to engage U.S. companies with U.S. based workforces for design of future sealift and other vessels to ensure that the United States maintains a robust and skilled ship design and engineering workforce. (Page 21)

H.Rept. 118-125 also states

> Laser Peening Application to Ship and Submarine Construction, Maintenance, and Repair
>
> The committee notes that the Navy is facing challenges related to maintaining its aging fleet and procuring new ships and submarines. To address some of these challenges, the Navy continues to examine technologies that can extend the service life of newly constructed ships and submarines, as well as maintain the current fleet. Laser shock peening (laser peening) is a technology that has been proven to provide significant cost savings over the past 35 years in the aerospace, transportation, and power generation industries and will provide significant cost savings for the Navy and its shipbuilders as well.
>
> In ships and submarines, metal fatigue and resultant cracking can result in damage to key metal components such as propulsion shafting, propellers, rudders, water jets, etc. Without repairing these critical ship components, the damage can potentially lead to a part's unexpected failure. Material treated by laser peening is significantly more resistant to metal fatigue failures, thus extending the system's life. Laser peening has been supported in Congress since at least 2014 as a proven technology that has the potential of saving significant funding that would otherwise be necessary for future repairs or replacement of critical shipboard and submarine components. Similar savings have been seen in commercial industry and Department of Defense aviation.

> Therefore, the committee directs the Deputy Assistant Secretary of the Navy for Research, Development, Test and Evaluation (DASN RDTE) to provide a briefing to the House Committee on Armed Services by February 1, 2024, on the resources required for the U.S. Navy to fully implement a coordinated laser peening program, particularly to support the Columbia-class, to address the numerous metal fatigue related issues and costs rampant throughout the aviation, surface, and submarine fleet. (Page 110)

H.Rept. 118-125 also states

> Large Medium-Speed Diesel Engines for Auxiliary Ships Briefing
>
> The Fiscal Year 2020 National Defense Authorization Act (Public Law 116–92, Section 853) included a provision that required large medium-speed diesel engines for most auxiliary ships to be procured within the National Technology and Industrial Base (NTIB). The conferees included this provision based on a report from the Department of the Navy that stated, given the large number of such engines in the Navy fleet and the limited demand for such engines in the commercial sector, loss of this manufacturing and sustainment capability could result in a ‘‘significant national security risk.’’
>
> The committee is aware that a proposed rule was published in September 2020 to ensure that an exception contained in the Defense Federal Acquisition Regulations allowing commercial items to be exempt from this requirement (DFARS 212.504) would not apply to these engines. However, the committee is also aware that this rule has never been finalized and is concerned with the lack of urgency in implementing Congressional intent in this matter. The committee directs the Secretary of Defense to provide a briefing report to the House Armed Services Committee by January 31, 2024, on the status of this rule and the expected finalization. In the interim, the committee fully expects the Secretary of the Navy to fulfill congressional intent by ensuring that large medium-speed diesel engines for auxiliary ships are procured within the NTIB, subject to 10 USC 4864(a)(3). (Pages 239-240)

H.Rept. 118-125 also states

> Foreign Ports Ship Repair
>
> The committee directs the Secretary of the Navy to submit a report to the Senate Committee on Armed Services and House Committee on Armed Services by December 31, 2023, on shipbuilding and ship repair operations conducted in foreign ports. The report shall include:
>
> (1) name and location of foreign shipyards utilized by the Department of the Navy;
>
> (2) types of shipbuilding and ship repair activities utilized by the Department of the Navy, disaggregated by location and type of service;
>
> (3) a discussion of why these activities were unable to be completed at domestic shipyards; and
>
> (4) a discussion of how these activities may be beneficial for operations in a contested environment. (Page 271)

H.Rept. 118-125 also states

> Littoral Combat Ships Divestments
>
> The committee is aware that there may be opportunities for littoral combat ships (LCS) that are decommissioned before the end of their service life to support other missions globally by leveraging the Excess Defense Articles (EDA) program. The committee supports the EDA process and encourages its use. In particular, the LCS may be a prime candidate for other nations, including priority nations like the Philippines, to employ on missions such as counternarcotic operations, or other operations where speed, maneuverability, and the

> access to a helicopter hangar are necessary. Further, these vessels may be well suited for areas where People's Liberation Army presence and influence is expanding. (Page 273)

H.Rept. 118-125 also states

> Shipyard Cybersecurity
>
> The committee notes that the shipbuilding and repair industrial base constitutes an essential component of U.S. national security. As noted in the Navy's report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2024, current national security threats demonstrate ''the need for a larger, more capable Navy ... '' and that ''[T]imely industrial base delivery of systems and platforms within cost estimates is a key consideration as it quickly enhances warfighting performance and controls cost growth.''
>
> The committee is concerned that potential private and public shipyard vulnerability to cyberattacks puts at risk the shipbuilding industrial base's ability to construct and maintain naval systems and platforms in a timely and efficient manner.
>
> Therefore, the committee directs the Secretary of the Navy to submit a report to the House Committee on Armed Services, not later than December 31, 2023, on the potential vulnerability of U.S. private and public shipyards to cyberattacks. The report should include:
>
> (1) an analysis of current or potential cyber threats to the nation's public and private shipyards, including from both state and non-state actors;
>
> (2) an analysis regarding potential vulnerabilities of the nation's shipyards to cyber attack, and any constraints or limitations encountered in the analysis of potential vulnerabilities;
>
> (3) an analysis of the potential impact of a cyberattack upon public and private shipyards to the Navy's fleet maintenance and procurement requirements;
>
> (4) a comparison of the Navy's visibility into the networks and security posture of public shipyards versus private shipyards;
>
> (5) a comprehensive evaluation of the delineation in responsibilities for cybersecurity between Navy Cyber Defense Operations Command, Naval Sea Systems Command, and any localized shipyard cybersecurity elements separate from either of the aforementioned commands; and
>
> (6) identification of any gaps in coverage from the preceding evaluation of the delineation in responsibilities.
>
> The report should be submitted in an unclassified form but may include classified annex. (Pages 328-329)

Senate

The Senate Armed Services Committee, in its report (S.Rept. 118-58 of July 12, 2023) on S. 2226, recommended the funding levels shown in the SASC column of **Table 3**. Compared with the Navy's proposed FY2024 shipbuilding program, the committee recommended the procurement of

- one additional LPD-17 Flight II amphibious ship, and
- one additional auxiliary personnel lighter (APL, i.e., berthing barge)

S.Rept. 118-58 states

> **Auxiliary Personnel Lighter**

> The budget request did not include any funding in line number 29 of SCN for Auxiliary Personnel Lighter (APL) procurement. APL barracks craft provide berthing and messing facilities for sailors up to an aircraft carrier size ship. The Navy inventory includes 20 APLs, with 12 of those craft having been built from 1944–1946 that were not designed to current safety standards. The committee recommends an increase of $72.0 million in SCN line number 29 for an additional APL–67 class berthing barge. (Page 11)

S.Rept. 118-58 also states

> **Shipbuilding and ship repair workforce development**
>
> The budget request included $1.0 billion in Research, Development, Test, and Evaluation, Defense-wide (RDDW) for PE 67210D8Z Industrial Base Analysis and Sustainment Support. The committee recognizes the shipbuilding industry faces a significant challenge in achieving and sustaining required workforce levels, and the industrial base today lacks the capacity to meet the required demand. Current efforts to establish, accelerate, and grow the trades workforce are imperative to shipbuilding and ship repair, and must be adequately resourced, prioritized, scaled, and maintained over the next 20 years or more.
>
> Therefore, the committee recommends an increase of $3.0 million in RDDW PE 67210D8Z to support initiatives that build a skilled and competent shipbuilding workforce. (Page 61)

Section 332 of S. 2226 would direct the Secretary of Navy, in coordination with the Shipyard Infrastructure Optimization Program (SIOP), to develop and implement a strategy to leverage commercial best practices used in shipyards to make operations more efficient and demonstrate a digital maintenance artificial intelligence platform that analyzes data on the maintenance and health of shipboard assets of the Navy at shipyards, so as to improve readiness of the Armed Forces, predict and diagnose issues before they occur, and lower maintenance costs. The provision would also direct the Secretary of Navy to assess the costs of maintenance delays on shipboard assets of the Navy and assess the potential cost savings of adopting artificial intelligence predictive maintenance technology techniques that help determine the condition of in-service equipment to estimate when maintenance should be performed rather than waiting until failure or end of life. The provision would also require the Navy to provide a briefing on the strategy, the assessment, and a plan to execute any measures pursuant to the assessment.

Regarding Section 332, S.Rept. 118-58 states

> **Strategy and assessment on use of automation and artificial intelligence for shipyard optimization (sec. 332)**
>
> The committee recommends a provision that would require the Secretary of the Navy to develop and implement a strategy to leverage commercial best practices used in shipyards to make operations more efficient. The committee remains concerned at the current rate of maintenance delays and increased costs at public shipyards. While the Navy's Shipyard Infrastructure Optimization Program is one critical and important component to the modernization of the public shipyards through military construction projects, the committee believes that public shipyard operations must be optimized for the future as well. (Page 86)

Section 357 would limit the obligation and expenditure of funds from the Administration and Servicewide Activities part of the Operation and Maintenance, Navy (OMN) appropriation account until the Navy submits to the congressional defense committees a 30-year shipbuilding plan that meets the statutory requirement in 10 U.S.C. 8062(b) to maintain 31 amphibious warships.

Section 866 would amend U.S. content requirements for Navy shipbuilding programs by requiring certain percentages of manufactured articles, materials, or supplies procured as part of a

Navy shipbuilding program to be manufactured substantially all from articles, materials, or supplies mined, produced, or manufactured in the United States, with the percentage to exceed 65% of the cost for articles, materials, or supplies provided between January 1, 2026, and December 31, 2027, to exceed 75% for articles, materials, or supplies provided between January 1, 2028, and December 31, 2032, and to equal 100% for articles, materials, or supplies provided on or after January 1, 2033. The requirements would apply to contracts relating to Navy shipbuilding programs entered into for carrying out research, development, test, and evaluation activities. An exception to the requirements would be provided for manufactured articles that consist wholly or predominantly of iron, steel, or a combination of iron and steel. The Secretary of Defense would be permitted to request a waiver from the requirements under certain conditions so as to expand sourcing to members of the national technical industrial base, would be directed to issue certain rules relating to the requirements, and would be directed to submit an annual report to Congress on country of origin tracking and reporting as it relates to manufactured content procured as part of Navy shipbuilding programs, including through primary contracts and subcontracts at the second and third tiers.

Section 1021 would amend 10 U.S.C. 2218 to allow the Department of Defense to continue modernizing the Ready Reserve Force and the Military Sealift Command surge sealift fleet.

Section 1023 would prohibit the obligation and expenditure of FY2024 funds to retire, prepare to retire, or place in storage the amphibious ships USS *Germantown* (LSD-42), USS *Gunston Hall* (LSD-44), and USS *Tortuga* (LSD-46), and the cruiser USS *Shiloh* (CG-67).

S.Rept. 118-58 also states

> **Littoral Combat Ship retirements**
>
> The Navy plans to retire seven Littoral Combat Ships (LCS) vessels over the next 3 years. The committee is concerned that proceeding with these LCS retirements without a plan in place for future vessels to replace them will lead to uncertainty among our industry partners that support the fleet.
>
> Therefore, the committee directs the Secretary of the Navy to submit to the congressional defense committees a 10-year plan for ship homeporting that would reflect proposed LCS retirements, and how the Navy's plan will ensure stability in industries supporting the fleet concentration areas. That report should be submitted not later than April 1, 2024. (Page 231)

Enacted

The conference report (H.Rept. 118-301 of December 6, 2023) on H.R. 2670/P.L. 118-31 of December 22, 2023, recommended the funding levels shown in the authorization enacted column of **Table 3**. Compared with the Navy's proposed FY2024 shipbuilding program, the committee recommended the procurement of

- one additional LPD-17 Flight II amphibious ship, and
- one additional auxiliary personnel lighter (APL; i.e., berthing barge)

Section 121 of H.R. 2670 amends 10 U.S.C. 8062(e) to require the Navy to maintain a minimum of nine carrier air wings, each with a dedicated and fully staffed headquarters, with the amendment to take effect one year after the Navy submits to Congress a report on potential approaches to the manning, operation, and deployment of a 10th aircraft carrier and associated carrier air wing to determine how the Navy can mobilize such a carrier and air wing if required by operational needs. H.Rept. 118-301 states

> *Sec. 121—Modification of requirements for minimum number of carrier air wings of the Navy*
>
> The Senate amendment contained a provision (sec. 121) that would amend section 8062(e) of title 10, United States Code, to relieve the Navy of a requirement to maintain 10 carrier air wings.
>
> The House bill contained no similar provision.
>
> The House recedes with an amendment that would provide a sunset for the requirement to maintain 10 carrier air wings 12 months after the Secretary of the Navy submits a report on potential approaches to manning, operating, and deploying a 10th aircraft carrier and associated carrier air wing to determine how the Navy could mobilize such a carrier air wing if required by operational needs. (Page 995)

Section 348 directs the Navy to submit, as part of its FY2025 budget submission, a 30-year shipbuilding plan that "meets the statutory requirement to maintain 31 amphibious warships as found in section 8062(b) of title 10, United States Code," and prohibits the obligation and expenditure of more than 50% of FY2024 funds for Administration and Servicewide Activities within the Operation and Maintenance, Navy (OPN), account until such a plan is submitted.

Section 1015 amends 10 U.S.C. 231, the provision that requires the annual submission of a 30-year shipbuilding plan. Regarding section 1015, H.Rept. 118-301 states

> *Sec. 1015—Modifications to annual naval vessel construction plan*
>
> The House bill contained a provision (sec. 1011) that would provide for greater transparency and representation by the military services with regard to their views on the annual naval vessel construction plan. The provision would require, among other things, that the Secretary of the Navy ensure consistency among plans in the first 10 years if more than one shipbuilding plan is submitted.
>
> The Senate amendment contained no similar provision.
>
> The Senate recedes with an amendment that would remove the requirement about consistency in the first 10 years of multiple shipbuilding plans. (Page 1168)

Section 1019 amends 10 U.S.C. 8695(e), which sets forth the role of the Commandant of the Marine Corps in the preparation of an annual Navy battle force ship assessment and requirement, to state that the Commandant shall be specifically responsible for not only "for developing the requirements relating to amphibious warfare ships," as previously stated in 10 U.S.C. 8695(e), but also "for naval vessels with the primary mission of transporting Marines."

Regarding Section 1019, H.Rept. 118-301 states

> *Sec. 1019—Responsibility of Commandant of the Marine Corps with respect to naval battle force ship assessment and requirement reporting*
>
> The House bill contained a provision (sec. 1015) that would provide the Commandant of the Marine Corps the responsibility for developing requirements related to all naval vessels with the primary mission of transporting Marines within the Naval Battle Force Ship Requirements and Assessment.
>
> The Senate amendment contained no similar provision.
>
> The Senate recedes with a clarifying amendment to the provision's title.
>
> The conferees agree that the Commandant of the Marine Corps has not been provided an adequate voice in the generation of requirements for naval vessels that support Marine Corps missions. Section 1025 of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023 (Public Law 117–263) provided that the Commandant of the Marine

> Corps would have responsibility for preparation of amphibious warfare ship requirements. The section did not deal with requirements for smaller vessels, such as the Landing Ship Medium (LSM). However, the Commandant called for a program of 35 LSMs to support operations of three Marine Littoral Regiments, with affordability and speed to delivery as key considerations. However, the Navy's program only includes 18 LSMs, a number insufficient to provide continuous support for two Marine Littoral Regiments. (Page 1169)

Section 1020 amends Section 1025(a) of the FY2018 NDAA (H.R. 2810/P.L. 115-91 of December 12, 2017), which made the Navy's 3455-ship force-level goal of 216 a matter of U.S. policy.[47] Section 1025(a) of P.L. 115-91 currently states

> 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.

Section 1020 of H.R. 2670 amends this subsection to read

> Policy.—It shall be the policy of the United States—
>
> (1) 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; and
>
> (2) that the United States shipbuilding defense industrial base is fundamental to achieving the shipbuilding requirements of the Navy and constitutes a unique national security imperative that requires sustainment and support by the Navy and Congress.

Section 1021 prohibits funds authorized by H.R. 2670 for FY2024 from being obligated or expended to retire, prepare to retire, or place in storage the LSD-41/49 class amphibious ships USS *Germantown* (LSD-42), *USS Gunston Hall* (LSD-44), and USS *Tortuga* (LSD-46), and the CG-47 class Aegis cruiser USS Shiloh (CG-67).

Section 1023 provides authority for using FY2024 funds for entering into a contract for the procurement of an incrementally funded submarine tender (AS[X]).

Section 3522 directs U.S. Transportation Command, in consultation with the Maritime Administration (MARAD), to conduct a market analysis to determine the availability of used sealift vessels that meet military requirements and may be purchased under 10 U.S.C. 2218 within five years of the enactment of H.R. 2670, and to submit, within 180 days of the enactment of H.R. 2670, a report on the results of the analysis.

Section 3532 amends Section 3546 of the FY2023 NDAA (H.R. 7776/P.L. 117-263), which addresses the recapitalization of the National Defense Reserve Fleet (NDRF). Regarding Section 3532, H.Rept. 118-301 states

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[47] Section 1025(a) of P.L. 115-91 currently 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.

The term *battle force ships* in the above provision refers to the ships that count toward the quoted size of the Navy in public policy discussions about the Navy. 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).

> *Sec. 3532—Recapitalization of National Defense Reserve Fleet*
>
> The House bill contained a provision (sec. 3532) that would amend section 3546 of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023 (Public Law 117–263) regarding a plan for recapitalizing the National Defense Reserve Fleet (NDRF), provide limitations on certain Navy expenditures until a report is submitted containing a detailed description of the acquisition strategy for a domestic new build sealift program for recapitalizing the NDRF, and eliminate a provision that would make a requirement to complete of a design of a roll-on, roll-off cargo vessel subject to the availability of appropriations.
>
> The Senate amendment contained no similar provision.
>
> The Senate recedes with an amendment that would make the requirement to complete the cargo vessel design subject to the availability of appropriations made specifically available to the Navy for reimbursements to the Ready Reserve Force (RRF), a subset of the NDRF.
>
> The conferees believe that the Department of Defense needs a modernized RRF to support potential wartime demands for hauling equipment and cargo, and that a new build sealift program for the RRF, based on a possible design by the Department of Transportation, could help in that effort. (Page 1387)

Section 3535 directs the Secretary of Transportation, acting through the Administrator of the Maritime Administration (MARAD), to consider, in carrying out the acquisition and procurement of vessels in the National Defense Reserve Fleet (NDRF), the life-cycle cost estimates of vessels during the design and evaluation processes to the maximum extent practicable.

H.Rept. 118-301 also states

> *Report on Navy shipbuilding workforce development special initiative*
>
> The House bill contained a provision (sec. 135) that would require the Secretary of the Navy to provide a report to the congressional defense committees on the implementation of the Navy shipbuilding workforce development special incentive.
>
> The Senate amendment contained no similar provision.
>
> The House recedes.
>
> The conferees direct the Secretary of the Navy, not later than one year after the date of enactment of this Act, to submit to the congressional defense committees a report on the status of the implementation of the Navy shipbuilding workforce development special incentive under section 8696 of title 10, United States Code.
>
> The report shall include, at a minimum:
>
> (1) A description of each activity carried out under subsection (c)(2)(A) of such section to provide short- and long-term workforce housing, transportation, and other support services to facilitate attraction, relocation, and retention of workers; and
>
> (2) An evaluation of the effectiveness of such activities. (Page 1004)

H.Rept. 118-301 also states

> *Use of Industrial Base Fund for support for the workforce for large surface combatants*
>
> The House bill contained a provision (sec. 862) that would modify the use of the Industrial Base Fund to include supporting the large surface combatant [LSC] industrial base.
>
> The Senate amendment contained no similar provision.
>
> The House recedes.

> The conferees note the effective use of the Industrial Base Analysis and Sustainment (IBAS) program to support the submarine industrial base. Given the importance of the shipbuilding industrial base as a whole, the Department of Defense should find ways to expand this model to support surface combatant production, as well as submarines. (Page 1147)

H.Rept. 118-301 also states

> *Expeditionary fast transport vessels*
>
> The House bill contained a provision (sec. 1018) that would prohibit the Navy from shifting expeditionary fast transport vessels into a reduced operational status and would require the development of a new concept of operations for use in the U.S. Indo-Pacific Command area of responsibility.
>
> The Senate amendment contained no similar provision.
>
> The House recedes.
>
> The conferees agree that the Chief of Naval Operations (CNO) should:
>
> (1) Develop, in consultation with the Commander of the Military Sealift Command, a strategy and concept of operations for the use of expeditionary fast transport vessels in support of operational plans in the area of operations of Unites States Indo-Pacific Command; and
>
> (2) Provide a report to the congressional defense committees describing this strategy and concept of operations. The conferees expect the CNO to complete the development of a strategy and concept of operations not later than 180 days after enactment of this Act, and to provide the report to the congressional defense committees within 30 days thereafter.
>
> *Guam shipyard assessment*
>
> The House bill contained a provision (sec. 1019) that would require the Secretary of the Navy to submit an assessment of the ship building and repair capabilities located on Guam and the feasibility of reestablishing the former Ship Repair Facility, Guam.
>
> The Senate amendment contained no similar provision.
>
> The House recedes.
>
> The conferees direct the Secretary of the Navy to conduct and complete an assessment, not later than June 1, 2024, regarding the ship building and repair capabilities located on Guam. The assessment shall include: (1) A description of the capabilities to conduct shipbuilding and ship repair activities in Guam; (2) A description of any planned improvements to shipbuilding and ship repair infrastructure in Guam; and (3) An evaluation of the feasibility and advisability of reestablishing a depot-level ship repair capability with dry-docking in Guam at the site of the former Ship Repair Facility, Guam, including an identification of options for operating the ship repair capability through a public-private partnership. The Secretary of the Navy shall brief the Committees on Armed Services of the Senate and the House of Representatives not later than 30 days after the completion of such analysis.
>
> *Modification of authority to purchase used vessels under the National Defense Sealift Fund*
>
> The Senate amendment contained a provision (sec. 1021) that would amend section 2218 of title 10, United States Code, to allow the Department of Defense to continue modernizing the Ready Reserve Force and the Military Sealift Command surge sealift fleet.
>
> The House bill contained no similar provision.
>
> The Senate recedes.
>
> *Plan for extended prohibition on retirement of ships*

> The House bill contained a provision (sec. 1022) that would require the Secretary of Defense to provide a plan to resource and retain any ships prevented from divestment by this Act through the end of fiscal year 2027 or the end of their expected service life.
>
> The Senate amendment contained no similar provision.
>
> The House recedes.
>
> The conferees agree that, if the Secretary proposes to divest any of these vessels in the future, the Secretary should submit plan to resource and retain such ship or class of ships until:
>
> (1) The end of fiscal year 2027; or
>
> (2) The end of the expected service life of the ships. (Pages 1187-188)

FY2024 DOD Appropriations Act (H.R. 4365/S. 2587/Division A of H.R. 2882/P.L. 118-47)

House

The House Appropriations Committee, in its report (H.Rept. 118-121 of June 27, 2023) on H.R. 4365, recommended the funding levels shown in the HAC column of **Table 3**. Compared with the Navy's proposed FY2024 shipbuilding program, the committee recommended, among other changes,

- four additional Ship-to-Shore Connector (SSC) landing craft, and
- one additional service craft.

Section 8073 of H.R. 4365 would prohibit the obligation or expenditure of funds made available by the act for the purpose of decommissioning any LCS or the amphibious ships USS *Germantown* (LSD-42) and USS *Tortuga* (LSD-46).

Section 8087 states that of the amounts appropriated in the act for the Shipbuilding and Conversion, Navy (SCN) account, $142.008 million may, with certain conditions, be used for the purchase of two used sealift vessels for the National Defense Reserve Fleet (NDRF).

Section 8094 would prohibit the use of funds made available in the act to award new contracts for acquisition activities for TARC(X) cable laying and repair ships and TAGOS-25 oceanographic surveillance ships unless the contracts include specifications that all auxiliary equipment, including pumps and propulsion shafts, are manufactured in the United States.

H.Rept. 118-121 states

> NAVY LITTORAL COMBAT SHIPS
>
> The Committee is troubled that, despite repeated rejections by Congress, the Navy is once again proposing to decommission several Littoral Combat Ships well before the end of their expected service lives. The Committee strongly believes that these ships, though not aligned with the Navy's original plan, can provide operational value in support of combatant commander initiatives. Further, it is noted that the Navy is studying platforms that could be repurposed to serve as a mothership for a variety of future unmanned capabilities. The Committee believes it is premature to divest these ships before the completion of this study or a thorough review of combatant commander requirements for such capability. Therefore, the Committee directs the Secretary of the Navy to submit a report to the congressional defense committees, not later than 30 days after the enactment of this Act, on these proposed alternatives. Further, the Committee strongly urges the

> Secretary of the Navy to abstain from further proposals to decommission any Littoral Combat Ship. (Page 11)

H.Rept. 118-121 also states

> DIVESTMENTS AND DECOMMISSIONINGS
>
> The Committee is concerned the Services are reducing personnel, operations, and sustainment for aircraft and ships prior to the congressional approval of corresponding divestment and decommissioning proposals. The Committee notes that over the past several fiscal years, Congress has rejected many of these proposals and has provided increased funding for the costs of keeping these assets in service. The Committee is specifically concerned by these actions as they relate to the Navy Littoral Combat Ships, Air National Guard aircraft, and Air Force Reserve Command aircraft. In the case of the Air National Guard and Air Force Reserve Command, the divestment of aircraft without identified replacement missions increases uncertainty for personnel and local communities. While the Committee understands the phasing required for a divestment or decommissioning action, the Committee expects the Services to not initiate these actions until formally approved by the congressional defense committees. (Page 12)

H.Rept. 118-121 also states

> EXPEDITIONARY MEDICAL SHIP
>
> The Committee remains supportive of the Expeditionary Medical Ship (EMS) class and recognizes the operational utility of these ships, especially in the Indo-Pacific Command area of operations. The Committee notes the Navy awarded contracts for the three ships funded in fiscal years 2022 and 2023, with an option to add EMS 4 to the contract. Therefore, the Committee supports the expeditionary capabilities of the EMS ship class and recognizes the need for additional ships to be funded in future fiscal years. (Page 147)

Senate

The Senate Appropriations Committee, in its report (S.Rept. 118-81 of July 27, 2023) on S. 2587, recommended the funding levels shown in the SAC column of **Table 3**. Compared with the Navy's proposed FY2024 shipbuilding program, the committee recommended, among other changes,

- no procurement funding for the AS(X) submarine tender program;
- one additional service craft—a yard, repair, berthing, and messing barge (YRBM) barge; and
- one additional auxiliary personnel lighter (APL, i.e., berthing barge)

The report recommends reducing by $3.3 million cost-to-complete funding for the TATS towing, salvage, rescue ship program. (Page 35, line 32)

Section 8076 of S. 2587 would permit the Secretary of Defense, with certain limitations, to transfer funds from any available DON appropriation to any available Navy ship construction appropriation for the purpose of liquidating necessary changes resulting from inflation, market fluctuations, or rate adjustments for any ship construction program appropriated in law.

Section 8090 states that of the amounts appropriated in the act for the Shipbuilding and Conversion, Navy (SCN) account, $142.008 million may, with certain conditions, be used for the purchase of two used sealift vessels for the National Defense Reserve Fleet (NDRF).

Section 8096 would prohibit the use of funds made available in the act to award new contracts for acquisition activities for TARC(X) cable laying and repair ships and TAGOS-25 oceanographic surveillance ships unless the contracts include specifications that all auxiliary equipment, including pumps and propulsion shafts, are manufactured in the United States.

S.Rept. 118-81 states

> *Managing Navy Shipbuilding Programs*.—The fiscal year 2024 President's budget request includes $1,648,559,000 to address fiscal year 2024 cost overruns on 17 previously fully funded ships, and the Committee understands that additional funds will be required in future years to pay for additional cost overruns. The Committee notes that increased prices of certain commodities, such as steel, as well as the growing cost of labor contribute substantially to these increased construction costs. The Committee further notes, however, that additional factors contribute to these liabilities, including changes to requirements, subsystem immaturity, and the failure to accurately estimate the full costs of shipbuilding programs. The Committee is concerned that failure to properly understand and budget for the costs of ships impacts the Navy's ability to procure and sustain the force structure it requires, and negatively impacts the stability of the shipbuilding industrial base, its suppliers and workforce.
>
> For instance, the Committee notes that in fiscal year 2022, the Navy requested and received appropriations to procure the first of seven new T–AGOS Class ocean surveillance ships. However, the Navy significantly underestimated the requirements and costs of those ships, resulting in the cost for the lead ship to increase by more than 80 percent. Given the criticality of this platform, the Committee recommends fully funding the lead ship and encourages the Navy and the industrial base to better manage costs for additional ships of this class planned to be procured. Similarly, in this year's budget request, the Navy included funds for Auxiliary Personnel Lighter [APL] berthing ships, but did not fully budget for the costs of these ships in the future years. The Committee recommends procurement of an additional APL to stabilize the industrial base and reduce costs of future ships. Further, the Committee notes that the Navy removed two T–AO Fleet Replenishment Oilers from its shipbuilding program despite congressional authority to award these ships en bloc and reduce costs. Finally, the Navy proposes to accelerate a new program for a submarine tender, yet it has failed to fully budget for the costs of these two ships, thereby creating future budget shortfalls.
>
> The Committee is well aware of the many factors that affect the acquisition and budgeting of ships, and points to those past Navy budgeting and acquisition best practices that have resulted in reducing costs and stabilizing the industrial base. The Committee believes the Navy would be well-served to rededicate itself to implementing and enforcing these practices. Further, the Committee believes such actions are necessary to re-introduce stability and predictability to Navy shipbuilding programs and budgets, and that the Secretary of Navy, through the Assistant Secretary of the Navy (Research, Development and Acquisition) should manage the Navy's and Marine Corps' shipbuilding programs based on their identified force structure needs. (Pages 135-136)

S.Rept. 118-81 also states

> *Stability in Navy Shipbuilding*.—The Committee notes that the fiscal year 2024 Navy shipbuilding plan projects a decline in fleet size from 299 ships in July 2023 to 290 ships in fiscal year 2030. However, the Chief of Naval Operations recently increased the Navy's fleet size requirement from 373 ships to 381 ships. The Committee believes that Navy leaders must make a concerted effort to manage existing Navy shipbuilding production lines to ensure they are sustained, modified, or expanded to meet evolving Navy requirements in a manner that promotes shipbuilder, supplier, and workforce stability, and reverses the growing gap between the Navy's fleet requirements and the size of the fleet.
>
> Accordingly, the Committee recommends adding advance procurement funding for an amphibious ship, LPD–33, to continue SAN ANTONIO class production and advance procurement funding for a third fiscal year 2025 DDG–51 pursuant to the multi-year

> procurement authority for up to 15 DDG–51s provided in section 8010 of the Defense Appropriations Act, 2023. Additionally, the Committee supports initiatives to improve the quality-of-life for Navy sailors serving in shipyards through recommendations to fund one additional Auxiliary Personnel Lighter and one additional Repair, Berthing and Messing Barge [YRBM], as well as supporting the request for multi-use and parking facilities at two shipbuilders. (Pages 136-137)

S.Rept. 118-81 also states

> *Domestic Source Content for Navy Shipbuilding Critical Components*.—The Committee remains concerned with the fragility of the domestic shipbuilding supply base and notes the report on ‘‘Domestic Source Content for Navy Shipbuilding’’ submitted to the congressional defense committees in accordance with direction accompanying the Department of Defense Appropriations Act, 2023. Given the long-term impact of shipbuilding programs, the Committee believes that understanding and managing the domestic supply base is critical. Therefore, the Committee directs the Assistant Secretary of the Navy (Research, Development and Acquisition) to submit to the congressional defense committees, concurrent with submission of the fiscal year 2025 President's budget request, a plan to incorporate upfront domestic sourcing requirements for key materials, components and subsystems into current and future acquisition strategies for shipbuilding programs. Further, the report shall identify a supply chain strategy that identifies existing horizontal and vertical gaps and redundancies in the domestic industrial base to support such acquisition strategies, and efforts by the Navy to ensure the domestic industrial base and supply chain can address domestic source content of Navy shipbuilding requirements. Finally, to the extent the Assistant Secretary of the Navy (Research, Development and Acquisition) plans to prioritize foreign content over domestic content, the Assistant Secretary is directed to provide the statutory basis for doing so, include a detailed risk assessment of such a strategy, as well as to provide the cost estimate of growing a commensurate domestic capability. Such report shall be delivered in unclassified format and may contain a classified annex. (Pages 137-138)

S.Rept. 118-81 also states

> *Hiring and retention of Navy shipbuilding trades workforce*.—The Committee recognizes that the Navy shipbuilding industrial base is comprised of no fewer than three elements: facilities, suppliers, and workforce. Each of these elements is critical to building ships on cost and schedule and increasing the size of the Navy's fleet. With respect to workforce, the Committee notes the significant challenges in hiring and retaining the needed trades workforce [e.g., welders, electricians, pipefitters, and other] to meet Navy shipbuilding demands, and further notes an overall workforce participation decline over the last two decades. Therefore, the Committee directs the Comptroller General to submit a report to the congressional defense committees not later than 120 days after the enactment of this act on key factors affecting hiring and retention of the Navy shipbuilding trades workforce. This report shall include an identification of such key factors, an assessment of the relative significance of such key factors, the extent to which a wage gap is impacting hiring and retention of such workforce, and recommendations for Navy and congressional action to improve the hiring and retention of such workforce. (Page 138)

Enacted

The explanatory statement for Division A of H.R. 2882/P.L. 118-47 of March 23, 2024, provides the funding levels shown in the in the appropriation enacted column of **Table 3**. Compared with the Navy's proposed FY2024 shipbuilding program, the committee recommended, among other changes,

- no procurement funding for the AS(X) submarine tender program;

- four additional Ship-to-Shore Connector (SSC) landing craft;
- one additional service craft—a yard, repair, berthing, and messing barge (YRBM) barge; and
- one additional auxiliary personnel lighter (APL, i.e., berthing barge).

Section 8077 of Division A of H.R. 2882/P).L. 118-47 prohibits the obligation or expenditure of funds made available by the act for the purpose of decommissioning any LCS or the amphibious ships USS Germantown (LSD-42) and USS Tortuga (LSD-46).

Section 8078 permits the Secretary of Defense, with certain limitations, to transfer funds from any available DON appropriation to any available Navy ship construction appropriation for the purpose of liquidating necessary changes resulting from inflation, market fluctuations, or rate adjustments for any ship construction program appropriated in law.

Section 8092 states that of the amounts appropriated in the act for the Shipbuilding and Conversion, Navy (SCN) account, $142.008 million may, with certain conditions, be used for the purchase of two used sealift vessels for the National Defense Reserve Fleet (NDRF).

Section 8098 prohibits the use of funds made available in the act to award new contracts for acquisition activities for TARC(X) cable laying and repair ships and TAGOS-25 oceanographic surveillance ships unless the contracts include specifications that all auxiliary equipment, including pumps and propulsion shafts, are manufactured in the United States.

Summary of Congressional Action on FY2025 Shipbuilding Funding Request

The Navy's proposed FY2025 budget requests $32.4 billion in shipbuilding funding for, among other things, the procurement of six new ships, including one Virginia (SSN-774) class attack submarine, two Arleigh Burke (DDG-51) class destroyers, one Constellation (FFG-62) class frigate, one LPD-17 Flight II amphibious ship, and one Medium Landing Ship (LSM). The Navy's proposed FY2025 budget proposes retiring 19 ships, including 10 that would be retired prior to the ends of their expected service lives.[48]

Table 4 summarizes congressional action on the Navy's FY2025 funding request for Navy shipbuilding. The table shows the amounts requested and congressional changes to those requested amounts, with blank cells indicating no change from the requested amount.

48 The 19 proposed retirements include three nuclear-powered attack submarines (SSNs), four cruisers (CGs), two Littoral Combat Ships (LCSs), one LSD-41/49 class amphibious ship, four mine countermeasures ships (MCMs), one Expeditionary transport dock (ESD) ship, and four expeditionary fast transport (EPF) ships. The 10 ships proposed for retirement prior to the end of their expected service lives include two of the CGs, the two LCSs, the LSD, the ESD, and the four EPFs.

Table 4. Summary of Congressional Action on FY2025 Funding Request

Millions of dollars, rounded to nearest tenth; totals may not add due to rounding

			Congressional changes to requested amounts					
			Authorization			Appropriation		
Line number	Program	Request	HASC	SASC	Enacted	HAC	SAC	Enacted
Shipbuilding and Conversion, Navy (SCN) appropriation account								
001	Columbia-class SSBN	3,341.2						
002	Columbia-class SSBN (AP)	6,215.9						
003	CVN 80 aircraft carrier	1,186.9						
004	CVN-81 aircraft carrier	721.0						
005	Virginia-class SSN	3,615.9						
006	Virginia-class SSN (AP)	3,720.3						
007	CVN RCOH	1,061.1						
008	CVN RCOH (AP)	0						
009	DDG-1000	61.1						
010	DDG-51	6,409.2						
011	DDG-51 (AP)	41.7						
012	LCS	0						
013	FFG-62	1,170.4						
014	LPD-17 Flight II	1,562.0						
015	LPD-17 Flight II (AP)	0						
016	LPD-17 Flight I	0						
017	Expeditionary Sea Base (ESB)	0						
018	LHA amphibious assault ship	0						
019	LHA amphibious assault ship (AP)	61.1						
020	Expeditionary fast transport ship (EPF)	0						
021	Medium Landing Ship (LSM)	268.1						
022	AS(X) submarine tender	0						
023	TAO-205 oiler	0						
024	TATS towing, salvage, and rescue ship	0						
025	Oceanographic ships	0						
026	LCU-1700 landing craft	0						
027	Outfitting	674.6						
028	Ship-to-shore connector (SSC)	0						
029	Service craft	11.4						
030	Auxiliary Personnel Lighter (APL)	76.2						
031	LCAC landing craft SLEP	45.1						
032	Auxiliaries (used sealift ships)	204.9						
033	Completion of prior-year ships	1,930.0						
TOTAL		**32,378.3**						

Source: Table prepared by CRS based on original Navy FY2025 budget submission, committee reports, and explanatory statements on the FY2025 National Defense Authorization Act and FY2025 DOD Appropriations Act.

Notes: Millions of dollars, rounded to nearest tenth. A blank cell indicates no change to requested amount. Totals may not add due to rounding. **AP** = advance procurement funding; **HASC** = House Armed Services Committee; **SASC** = Senate Armed Services Committee; **HAC** = House Appropriations Committee; **SAC** = Senate Appropriations Committee; **SLEP** = service life extension program.

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

The table below shows earlier Navy force-structure 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-Structure 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[j]	0[j]	0[j]	0[j]	0[j]	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,[49] and as of May 28, 2024, included a total of 296 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 May 2024 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 May 2024 fleet in areas such as profusion of precision-guided weapons and the sophistication of C4ISR systems and networking capabilities.[50]

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.[51]

The 568-ship fleet of FY1987 may or may not have been capable of performing its stated missions; the 296-ship fleet of May 2024 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.

[49] 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.

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

[51] 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 294-ship Navy of September 2021 was appropriately sized for meeting the mission requirements of 2021, even though there were differences of opinion among observers on that question, simply because a figure of 294 ships appears in the historical records for 2021, 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 G-1**.

Previous Navy force-structure plans, such as those shown in **Table A-1**, might provide some insight into the potential adequacy of a proposed new force-structure plan, 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-structure plans might not have been appropriate for meeting the mission demands of their times, suggest that some caution should be applied in using past force-structure plans for this purpose, particularly if those past force-structure plans 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.[52]

[52] Navy force-structure plans 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-Structure Plans

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….[53]

[53] 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 lessons learned in Navy shipbuilding, reflecting comments made repeatedly 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 these points have been cited for years. The hard part, arguably, is living up to 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."[54]

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.[55]

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[54] 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.

[55] 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) 46.7 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 field performance requirements can be achieved, and the warranty period of performance.[56]

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.

[56] Department of Defense, *Department of Defense Warranty Guide*, Version 1.0, September 2009, accessed July 13, 2017, at https://www.acq.osd.mil/dpap/pdi/uid/docs/departmentofdefensewarrantyguide[1].doc.

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. Size of the Navy and Navy Shipbuilding Rate

Size of the Navy

Table G-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.[57] 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 May 28, 2024, included 296 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.

[57] 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 G-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		
1959	860	1981	490	2003	297		
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.

Shipbuilding Rate

Table G-2 shows past (FY1982-FY2024) and programmed (FY2025-FY2029) rates of Navy ship procurement.

Table G-2. Battle Force Ships Procured or Requested, FY1982-FY2029

Procured in FY1982-FY2024 and *programmed for FY2025-FY2029*

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	9	9	9	13
20	**21**	**22**	**23**	**24**	***25***	***26***	***27***	***28***	***29***									
13	11	13	11	8	*6*	*11*	*14*	13	13									

Source: 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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