

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

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Summary

The current and planned 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.

In December 2016, the Navy released a force-structure goal that calls 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 predates the Trump and Biden Administrations' national defense strategies and does not reflect the new, more distributed fleet architecture (i.e., new mix of ships) that the Navy wants to shift toward in coming years. The Navy and the Office of the Secretary of Defense (OSD) have been working since 2019 to develop a successor for the 355-ship force-level goal that would reflect current national defense strategy and the new fleet architecture, but have not been able to come to closure on a successor goal. A July 18, 2023, press report stated that the Navy on June 20, 2023, had submitted to the congressional defense committees a congressionally mandated Battle Force Ship Assessment and Requirement (BFSAR) report that calls for a future fleet with 381 manned ships. It is not clear whether the Administration endorses the 381-ship fleet as the new force-level goal for the Navy.

The Navy's proposed FY2024 budget requests \$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 also proposes retiring 11 ships, including two relatively young Littoral Combat Ships (LCSs). The Navy's FY2024 five year (FY2024-FY2028) shipbuilding plan includes a total of 55 ships, or an average of 11 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 11 ships per year, if sustained for 35 years, would increase the size of the Navy to 385 ships over a 35-year period (i.e., by the 2060s).

The Navy fell below 300 battle force ships (the kind of ships that count toward the quoted size of the Navy and the Navy's 355-ship force-structure goal) in August 2003, and has generally remained between 270 and 300 battle force ships since then. As of September 25, 2023, the Navy included 295 battle force ships. The Navy projects that under its FY2024 budget submission, the Navy would include 293 battle force ships at the end of FY2024 and 291 battle force ships at the end of FY2028.

The FY2024 30-year (FY2024-FY2053) shipbuilding plan, similar to the FY2023 30-year (FY2023-FY2052) shipbuilding plan, includes three potential 30-year shipbuilding profiles and resulting 30-year force-level projections, referred to as PB2024 (President's budget for FY2024), Alternative 2, and Alternative 3. PB2024 and Alternative 2 assume no real (i.e., above-inflation) growth in shipbuilding funding, while Alternative 3 assumes some amount of real growth in shipbuilding funding. Under PB2024, the Navy would increase to a peak of 331 manned ships in FY2039-FY2040 and then decrease to 319 manned ships in FY2053. Under Alternative 2, the Navy would increase to a peak of 331 manned ships in FY2039, and then decrease to 328 manned ships in FY2053. Under Alternative 3, the Navy would increase to 356 manned ships in FY2042 and continue increasing to 367 manned ships by FY2053.

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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 planned 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.

The issue for Congress is whether to approve, reject, or modify the Navy's force-level goal, its proposed FY2024 shipbuilding program, and its longer-term shipbuilding plans. Decisions that Congress makes on this issue 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.
- 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 Next-Generation Logistics Ship (NGLS) Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS In Focus IF11838, *Navy TAGOS-25 (Previously TAGOS[X]) 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

Navy's Force-Level Goal

Navy's Existing (355-Ship) Force-Level Goal

355-Ship Goal Released in December 2016

The Navy's existing force-level goal, which the Navy released on December 15, 2016, calls for achieving and maintaining a fleet of 355 battle force ships of the types and numbers shown in **Table 1**.¹ (Battle force ships are the ships that count toward the quoted size of the Navy and the Navy's ship force-level goal.) The 355 ships shown in **Table 1** are all manned ships.

Table 1. 355-Ship Force-Level Goal

Ship Category	Number of ships
Ballistic missile submarines (SSBNs)	12
Attack submarines (SSNs)	66
Aircraft carriers (CVNs)	12
Large surface combatants (i.e., cruisers [CGs] and destroyers [DDGs])	104
Small surface combatants (i.e., frigates [FFGs], Littoral Combat Ships, and mine warfare ships)	52
Amphibious ships	38
Combat Logistics Force (CLF) ships (i.e., at-sea resupply ships)	32
Command and support ships	39
TOTAL	355

Source: U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020*, Table A-1, p. 10.

355-Ship Fleet Is a Goal to Be Attained in the Future

The 355-ship fleet is a goal to be attained in the future. As shown in **Table G-1**, the actual size of the Navy in recent years has generally been between 270 and 300 ships. Increasing the numerical size of the Navy from 300 ships to 355 ships would equate to an increase of about 18%.

355-Ship Goal Made U.S. Policy by FY2018 NDAA

Congress made the 355-ship goal U.S. policy via Section 1025 of the FY2018 National Defense Authorization Act, or NDAA (H.R. 2810/P.L. 115-91 of December 12, 2017).² The provision is now included as a note to 10 U.S.C. 8661 (which was previously numbered 10 U.S.C. 7291).

¹ For previous Navy force-level goals, see **Appendix A**.

² Section 1025 of P.L. 115-91 states

(continued...)

Statutory Requirements for Certain Ship Types

In addition to the above provision from the FY2018 NDAA that made the 355-ship goal U.S. policy, 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 within the total of not less than 31 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 Goal Resulted from a Force Structure Assessment (FSA) Done in 2016

The 355-ship force-level goal is the result of a Force Structure Assessment (FSA) conducted by the Navy in 2016. An FSA is an analysis in which 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.³ The Navy in the past has conducted a new FSA or an update to the existing FSA every few years, as circumstances required, to determine its force-level goal.⁴ Previous Navy force-level goals that resulted from earlier FSA are shown in **Appendix A**.

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).

³ For further discussion, see U.S. Navy, *Executive Summary, 2016 Navy Force Structure Assessment (FSA)*, December 15, 2016, pp. 1-2.

⁴ 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.

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

Although the result of an FSA is often reduced for convenience to single number (e.g., 355 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.

355-Ship Figure Includes Only Manned Ships

The 355-ship force-level goal, like previous Navy force-level goals, is a figure for traditional manned ships only. The Navy has operated smaller unmanned surface vehicles (USVs) and unmanned underwater vehicles (UUVs) for many years, but because these unmanned vehicles (UVs) are launched from manned ships to act essentially as extensions of the manned ships, they have not been considered ships in their own right and consequently have not been included in the top-level expression of the Navy's force-level goal or the publicly cited figure for the number of ships in the Navy.

In the years since the 2016 FSA, the Navy has developed plans to acquire large USVs and UUVs. Because of their size and projected capabilities, these large UVs are to be deployed directly from pier, rather than from manned ships, to perform missions that might otherwise be assigned to manned ships and submarines.⁵ The Navy's FY2024 30-year (FY2024-FY2053) shipbuilding plan states that it categorizes these large UVs as nonbattle force ships.⁶

Navy's Next Force-Level Goal

Release of Navy's Next Force-Level Goal Delayed Since Late 2019

The 355-ship goal predates the Trump and Biden Administrations' national defense strategies and does not reflect the new, more distributed fleet architecture (i.e., new mix of ships) that the Navy wants to shift toward in coming years. (This more distributed fleet architecture, which is expected to feature a significant number of large surface and underwater unmanned vehicles [UVs], is discussed in more detail later in this report.) The Navy and the Office of the Secretary of Defense (OSD) have been working since 2019 on a successor to the 355-ship force-level goal that would reflect current national defense strategy and the new fleet architecture, but have not been able to come to closure on a successor goal that has been explicitly endorsed by the Administration.

Navy on June 20, 2023, Reportedly Submits Report Calling for 381-Ship Fleet

A July 18, 2023, press report stated that the Navy on June 20, 2023, had submitted to the congressional defense committees a congressionally mandated Battle Force Ship Assessment and Requirement (BFSAR) report that calls for a future fleet with 381 manned ships, including 31 larger (i.e., LHA/LHA-type and LPD/LSD-type) amphibious ships. No other details on the composition of the 381-ship fleet were reported. The BFSAR report is classified and the Navy does not plan to release an unclassified version.⁷ It is not clear whether the Administration

⁵ For further discussion of these large UVs, see CRS Report R45757, *Navy Large Unmanned Surface and Undersea Vehicles: Background and Issues for Congress*, by Ronald O'Rourke.

⁶ 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. 6, 19.

⁷ Sam LaGrone, "Navy Raises Battle Force Goal to 381 Ships in Classified Report to Congress," *USNI News*, July 18, (continued...)

endorses the 381-ship fleet reportedly called for in the BFSAR report as the new force-level goal for the Navy.

Potential Navy Force-Level Goals in 2020-2022

Prior to the June 2023 BFSAR report, other potential Navy force-level goals in 2020-2022 included the following:

- On December 9, 2020, the Navy released a long-range Navy shipbuilding document that presented the Trump Administration's emerging successor to the 355-ship force-level goal. The document called for a Navy with a more distributed fleet architecture, including 382 to 446 manned ships and 143 to 242 large UVs.⁸
- On June 17, 2021, the Navy released a long-range Navy shipbuilding document that presented the Biden Administration's emerging successor to the 355-ship force-level goal. The document called for a Navy with a more distributed fleet architecture, including 321 to 372 manned ships and 77 to 140 large UVs.⁹
- On February 18, 2022, in remarks at a conference, the Chief of Naval Operations, Admiral Michael Gilday, reportedly stated that, based on analysis, he had concluded that the Navy needs a fleet of 362 or more manned ships and about 150 large UVs to meet the Navy's commitments under the Biden Administration's forthcoming national defense strategy.¹⁰
- A July 19, 2022, press report stated that the Navy earlier that month had submitted to the defense committees a classified BFSAR report calling for a fleet of 373 ships.¹¹
- On July 26, 2022, the Navy released a document, *Chief of Naval Operations [CNO] Navigation Plan 2022*, that, similar to the above-discussed July 2022 BFSAR report, called for a future fleet of 373 manned ships, as well as about 150 large unmanned surface and underwater vehicles, with the 373 manned ships to include 12 ballistic missile submarines, 66 attack submarines, 12 nuclear-powered aircraft carriers, 96 large surface combatants, 56 small surface combatants, 31 larger amphibious ships, 18 smaller Light Amphibious Warships (LAWs), and 83 combat logistics, command, and support ships.¹²

2023. See also Joseph Trevithick, "Navy's New 381-Hull Fleet Plan Recommits To Big Amphibious Warfare Ships," *The Drive*, July 19, 2023.

⁸ U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels*, December 2020, 23 pp.

⁹ U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2022*, June 2021, 16 pp.

¹⁰ See Sam LaGrone and Mallory Shelbourne, "CNO Gilday: 'We Need a Naval Force of Over 500 Ships,'" *USNI News*, February 18, 2022; Justin Katz, "CNO Lays Out Future Fleet He Wants: 500 ships, 12 Carriers, 150 Unmanned Vessels," *Breaking Defense*, February 18, 2022; Richard R. Burgess, "CNO Is 'Sighted on a Bigger, More Capable Navy,'" *Seapower*, February 22, 2022.

¹¹ Sam LaGrone, "New Navy Fleet Study Calls for 373 Ship Battle Force, Details are Classified," *USNI News*, July 19, 2020.

¹² U.S. Navy, *Chief of Naval Operations Navigation Plan 2022*, undated, released July 26, 2022, p. 10.

355-Ship Goal Compared to Emerging New Force-Level Goals

Table 2 compares the 355-ship force-level goal to the emerging force-level goals discussed above.

Table 2. 355-Ship Goal Compared to Emerging New Force-Level Goals

Ship type	355-ship goal	Trump Administration December 9, 2020, document	Biden Administration June 17, 2021, document	Reported remarks of CNO, February 18, 2022	BFSAR and CNO Navigation Plan July 2022	Reported BFSAR of June 2023
Ballistic missile submarines (SSBNs)	12	12	12	12	12	n/a
Attack submarines (SSNs)	66	72 to 78	66 to 72 ^a	70	66	n/a
Aircraft carriers	12	n/a ^b	9 to 11	12	12	n/a
<i>Large aircraft carriers (CVNs)</i>	12	8 to 11 ^b	n/a	12	12	n/a
<i>Light aircraft carriers (CVLs)</i>	0	0 to 6 ^c	n/a ^d	0	0	n/a
Large surface combatants (cruisers and destroyers)	104	73 to 88	63 to 65	60	96	n/a
Small surface combatants (frigates and Littoral Combat Ships [LCSs])	52	60 to 67	40 to 45	50	56	n/a
Amphibious ships	38	61 to 67	48 to 63	58 or 59 (or more)	49	n/a
<i>Large-deck (LHA/LHD)</i>	12	9 to 10	8 to 9	9	31	31
<i>LPD-type</i>	26	n/a	16 to 19	19 or 20		
<i>Medium Landing Ships (LSMs)</i>	0	n/a	24 to 35	30 (or more) ^e	18	n/a
<i>LPD-type and LAWs combined</i>	26	52 to 57	40 to 44	49 or 50 (or more)	n/a	n/a
Combat Logistics Force (CLF) ships	32	69 to 87 ^f	56 to 75 ^g	~100	82	n/a
Command and support ships	39	27 to 30	27 to 29			n/a
Subtotal manned ships	355	382 to 446	321 to 372	~362 or ~363 (or more)	373	381
Unmanned or optionally manned ships	0	143 to 242	77 to 140	~150	~150	n/a
<i>Large and medium unmanned surface vessels (LUSVs and MUSVs)</i>	0	119 to 166	59 to 89	n/a	n/a	n/a
<i>Extra-large unmanned underwater vehicles (XLUUVs)</i>	0	24 to 76	18 to 51	n/a	n/a	n/a
TOTAL manned and unmanned ships	355	525 to 688	398 to 512	~512 or ~513 (or more)	~523	n/a

Sources: Table prepared by CRS based on U.S. Navy data and, for the final column, Sam LaGrone and Mallory Shelbourne, "CNO Gilday: 'We Need a Naval Force of Over 500 Ships,'" *USNI News*, February 18, 2022; Justin Katz, "CNO Lays Out Future Fleet He Wants: 500 ships, 12 Carriers, 150 Unmanned Vessels," *Breaking Defense*,

February 18, 2022; Richard R. Burgess, “CNO Is ‘Sighted on a Bigger, More Capable Navy,’” *Seapower*, February 22, 2022; Sam LaGrone, “New Navy Fleet Study Calls for 373 Ship Battle Force, Details are Classified,” *USNI News*, July 19, 2020; U.S. Navy, *Chief of Naval Operations Navigation Plan 2022*, undated, released July 26, 2022, p. 10.

Notes: n/a = not available. BFSAR is Battle Force Ship Assessment and Requirement.

- a. The document states that the range of 66 to 72 includes Large Payload Submarines—the Navy’s planned next-generation successor to its four current cruise missile submarines (SSGNs).
- b. The document states: “Lower [end of the CVN] range may be enabled by acquisition of cost-effective CVL.”
- c. The document states: “Further study of cost-effective CVL capabilities and capacity required.”
- d. The document states: “New capability concepts like a light aircraft carrier continue to be studied and analyzed to fully illuminate their potential to execute key mission elements in a more distributed manner and to inform the best mix of a future force.”
- e. As reported in the *USNI News* article of February 18, 2022. The *Breaking Defense* article of February 18, 2022, reported the figure as 20 to 30.
- f. The document states: “Includes Next Generation Logistic Ships (NGLS). Logistics force size/mix subject to on-going analysis.”
- g. The document states: “Includes the future next generation logistics ship.”

April 2022 Navy Report on FY2023 30-Year Shipbuilding Plan Presents Results of Studies on Potential New Force-Level Goals

In addition to the information presented in **Table 2**, the Navy’s FY2023 30-year (FY2023–FY2052) shipbuilding plan¹³ presented the results of three studies on possibilities for the Navy’s successor force-level goal. As shown in **Figure 1**, these studies call for a future Navy with 321 to 404 manned ships and 45 to 204 large UVs.

Next Navy Force-Level Goal Will Introduce More Distributed Fleet Architecture

Remarks from Navy and DOD officials since 2019 have indicated that the Navy’s next force-level goal will introduce a once-in-a-generation change in fleet architecture, meaning basic the types of ships that make up the Navy and how these ships are used in combination with one another to perform Navy missions. This new fleet architecture is to be more distributed than the fleet architecture reflected in the 355-ship goal or previous Navy force-level goals. In particular, the new architecture is expected to include a significant number of large unmanned surface and underwater unmanned vehicles (UVs).

Navy and DOD leaders believe that shifting to a more distributed fleet architecture is

- **operationally necessary**, to respond effectively to the improving maritime anti-access/area-denial (A2/AD) capabilities of other countries, particularly China;¹⁴

¹³ U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2023*, April 2022 (released April 20, 2022), 28 pp.

¹⁴ Some observers have long urged the Navy to shift to a more distributed fleet architecture, on the grounds that the Navy’s current architecture—which concentrates much of the fleet’s capability into a relatively limited number of individually larger and more expensive surface ships—is increasingly vulnerable to attack by the improving A2/AD capabilities (particularly anti-ship missiles and their supporting detection and targeting systems) of potential adversaries, particularly China. Shifting to a more distributed architecture, these observers have argued, would

- complicate an adversary’s targeting challenge by presenting the adversary with a larger number of Navy units to detect, identify, and track;
- reduce the loss in aggregate Navy capability that would result from the destruction of an individual Navy platform;

(continued...)

- **technically feasible** as a result of advances in technologies for UVs and for networking widely distributed maritime forces that include significant numbers of UVs; and
- **affordable**—no more expensive, and possibly less expensive, than the current fleet architecture for a given level of overall fleet capability, so as to fit within expected future Navy budgets.

Figure 1. Navy Table Summarizing Studies on Future Navy Force-Level Goal

As shown in Navy's FY2023 30-Year Shipbuilding Plan

Platforms	2016 FSA	2020 INFSA	FNFS FFA Ranges	PB22 Jun 2021 Ranges
Time Frame	Post 2030	Post 2030	2045	2045
Aircraft Carrier	12	12	8-11 ¹	9-11
CVL	0	0	0-6 ²	0
LHA/LHD	12	10	6-10	8-9
Amphibious Warfare Ships (less LHA/LHD)	26	41 ³	30-43 ³	40-54 ³
Large Surface Combatant	104	96	72-80	63-65
Small Surface Combatant	52	56	47-60	40-45
Attack Submarines / Large Payload Submarine	66	66	58-70	66-72
Ballistic Missile Submarines	12	12	12	12
Combat Logistics Force	32	45 ⁴	51-85 ⁴	56-75
Support Vessels	39	52	27-51	27-29
Unmanned Surface	0	27	81-153 ⁵	59-89
Unmanned Subsurface	0	18	18-50 ⁵	18-51
Battle Force	355	390 ⁸	337-404 ⁶	321-372 ⁷
Battle Force + Unmanned Surface	-	417	382-454 ⁶	380-461
Battle Force + Unmanned Surface + Unmanned Subsurface	-	435	440-540 ⁶	398-512

1. Lower range may be enabled by acquisition of cost-effective CVL.

2. Cost-effective CVL capabilities and capacity study would be required.

3. Includes future Light Amphibious Warships (LAW).

4. Includes Next Generation Logistics Ships (NGLS).

5. UxV require follow-on analysis of future objectives.

6. FNFS FFA force mix ranges are not the sum of low and high platform ranges listed above. FNFS ranges were derived from previous campaign analysis, however the ranges represented no real budget growth.

7. The PB22 shipbuilding ranges were the sum of the low and high platform ranges possible in 2045, which were derived from FNFS, and updated with analytic insights.

8. The INFSA reflects the most recent full campaign analysis and force structure assessment completed by the Department of the Navy.

Source: U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2023*, April 2022 (released April 20, 2022), p. 4.

Notes: INFSA = Integrated Naval Force Structure Assessment. FNFS = Future Naval Force Study. FFA = Future Fleet Architecture.

Shifting to a more distributed force architecture, Navy and Marine Corps officials have indicated, will support implementation of the Navy and Marine Corps' new overarching operational concept, called Distributed Maritime Operations (DMO), and a supporting Marine Corps

- give U.S. leaders the option of deploying USVs and UUVs in wartime to sea locations that would be tactically advantageous but too risky for manned ships; and
- increase the modularity and reconfigurability of the fleet for adapting to changing mission needs.

For more on China's maritime A2/AD capabilities, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O'Rourke.

operational concept called Expeditionary Advanced Base Operations (EABO).¹⁵ A key aim of DMO and EABO is to improve the ability of the Navy and Marine Corps to counter China's improving maritime military capabilities. The Navy's FY2024 30-year (FY2024-FY2053) shipbuilding plan states

The concepts of DMO and Littoral Operations in a Contested Environment (LOCE) / Expeditionary Advanced Base Operations (EABO) require a balanced and different mix of traditional battle force ships as well as new unmanned, amphibious, and logistic platforms. Previous warfighting analysis validated that a progressive evolution of existing platforms combined with revolutionary introduction of new technologies results in a more survivable and more lethal force than previous force structures. The Department is committed to continually analyzing, testing, and experimenting with novel concepts and capabilities to ensure they will provide an optimal mix of capability to the warfighters of tomorrow.

DMO addresses challenges to sea control and access in contested and "informationalized" environments. This concept describes required capabilities to execute DMO with massed effects. DMO provides the intellectual framework necessary to evolve our fleet to meet the challenges of the future.

To realize these concepts, the Department continues to experiment and analyze a range of solutions to provide lethal capability for sea control and power projection within the framework of DMO. Study areas include, but are not limited to, aircraft carrier force structure, DDG(X) [next-generation destroyer], SSN(X) [next-generation attack submarine], T-AOL [next-generation logistics ships], LSM [medium landing ship], amphibious ship mix and force structure, and expanded missions for developing unmanned platforms. This analysis and experimentation, in support of warfighting concepts, is informed by operationally relevant metrics including, but not limited to, capacity, lethality, survivability, operational reach, and affordability.¹⁶

Commission on the Future of the Navy

Section 1092 of the FY2023 NDAA establishes 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." The commission is to submit a report with its findings, conclusions, and recommendations not later than July 1, 2024. As of September 2023, some of the members of the commission had not yet been named.¹⁷

¹⁵ For more on DMO, see, for example, Barry Rosenberg, "Distributed Maritime Operations: Making Ships, Subs, And Platforms Nodes On A Network," *Breaking Defense*, August 3, 2021; Edward Lundquist, "DMO is Navy's Operational Approach to Winning the High-End Fight at Sea," *Seapower*, February 2, 2021. For more on EABO, see CRS Report R46374, *Navy Medium Landing Ship (LSM) (Previously Light Amphibious Warship [LAW]) Program: Background and Issues for Congress*, by Ronald O'Rourke.

¹⁶ 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. 7.

¹⁷ See, for example, Brent Sadler, "'Lost at Sea': The Future of the Navy Commission That Congress Created," Heritage Foundation, August 18, 2023. See also Justin Katz, "Congress Lags in Setting Up Its Own 'Future Navy' Panel," *Breaking Defense*, May 10, 2023.

Navy's FY2024 Five-Year and 30-Year Shipbuilding Plans

FY2024 Five-Year Shipbuilding Program

The Navy's FY2024 five-year (FY2024-FY2028) shipbuilding plan (**Table 3**) includes a total of 55 ships, or an average of 11 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 11 ships per year, if sustained for 35 years, would increase the size of the Navy to 385 ships over a 35-year period (i.e., by the 2060s).

Table 3. FY2024 Five-Year (FY2024-FY2028) Shipbuilding Plan

	FY24	FY25	FY26	FY27	FY28	Total
Columbia (SSBN-826) class ballistic missile submarine	1		1	1	1	4
Virginia (SSN-774) class attack submarine	2	2	2	2	2	10
Gerald R. Ford (CVN-78) class aircraft carrier					1	1
Arleigh Burke (DDG-51) class destroyer	2	2	2	2	2	10
FFG-62 frigate	2	1	2	1	2	8
LHA amphibious assault ship				1		1
LPD-17 Fight II amphibious ship						0
Medium Landing Ship (LSM)		1	1	2	2	6
John Lewis (TAO-205) class oiler	1		2	1	2	6
Next-Generation Logistics Ship (NGLS)			1	1	1	3
Submarine tender (AS[X])	1		1			2
TAGOS(X) ocean surveillance ship		1	1	1	1	4
TOTAL	9	7	13	12	14	55
Projected total size of Navy	293	286	285	285	291	

Source: Table prepared by CRS based on FY2024 Navy budget submission.

The Navy fell below 300 battle force ships (the kind of ships that count toward the quoted size of the Navy and the Navy's 355-ship force-structure goal) in August 2003, and has generally remained between 270 and 300 battle force ships since then. As of September 25, 2023, the Navy included 295 battle force ships. As shown in **Table 3**, the Navy projects that under its FY2024 budget submission, the Navy would include 293 battle force ships at the end of FY2024 and 291 battle force ships at the end of FY2028.

FY2024 30-Year (FY2024-FY2053) Shipbuilding Plan

As shown in **Figure 2**, the FY2024 30-year (FY2024-FY2053) shipbuilding plan, released on April 18, 2023, similar to the FY2023 30-year (FY2023-FY2052) shipbuilding plan that was released on April 20, 2022, includes three potential 30-year shipbuilding profiles and resulting 30-year force-level projections, referred to as PB2024 (President's budget for FY2024), Alternative 2, and Alternative 3. PB2024 and Alternative 2 assume no real (i.e., above-inflation) growth in shipbuilding funding, while Alternative 3 assumes some amount of real growth in shipbuilding funding.

Figure 2. Alternative Shipbuilding Profiles in 30-Year Shipbuilding Plan

As shown in Navy's FY2024 30-Year Shipbuilding Plan

Table A1-2. Long-Range Procurement Profiles^{1, 2, 3, 4}**PB2024**

Fiscal Year	24	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
Aircraft Carrier					1					1				1						1					1					1
Large Surface Combatant	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	1	2	2	1	2	1	2	2	2	2	2
Small Surface Combatant	2	1	2	1	2	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Attack Submarines	2	2	2	2	2	2	1	1	2	1	2	1	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	2
Ballistic Missile Submarines	1		1	1	1	1	1	1	1	1	1	1																		
Large Payload Submarines																			1						1				1	
Amphibious Warfare Ships				1						1								1	1		1	1			1		1	1	1	1
Combat Logistics Force	1		3	2	3	2	2	2	2	2	1	1	1					1		2	2	4	3	3	1	1	1	1	1	2
Support Vessels	1	2	3	3	3	3	3	2	2	2	2	2	2	1							1	1	1	2	2	2	2	2	2	4
Total New Construction Plan	9	7	13	12	14	11	10	10	10	11	8	10	9	8	8	8	8	7	7	7	9	11	11	10	13	8	10	11	9	14

Alternative 2 to PB2024

Fiscal Year	24	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
Aircraft Carrier					1					1										1										
Large Surface Combatant	2	2	2	2	2	2	2	1	2	1	1	1	2	1	2	2	2	1	2	1	2	2	1	2	1	2	1	2	2	2
Small Surface Combatant	2	1	2	1	2	2	1	1	1	1	1	2	2	3	2	3	2	3	2	2	2	2	2	2	2	2	2	2	2	2
Attack Submarines	2	2	2	2	2	2	2	2	1	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	1																		
Large Payload Submarines													1					1					1			1			1	
Amphibious Warfare Ships				1								1						2	1	1		2	1		1	1	1	1	1	1
Combat Logistics Force	1		3	2	3	2	2	2	2	2	3	2	2					1	1		1	2	3	3	3	1	1	1	2	2
Support Vessels	1	2	3	3	3	2	1	2	2	2	1	1	1	1	1			1		1	1	2	2	2	2	2	2	2	2	2
Total New Construction Plan	9	7	13	12	14	11	10	9	10	10	9	10	10	9	9	7	7	10	9	9	8	10	12	11	13	10	9	11	12	11

Alternative 3 to PB2024

Fiscal Year	24	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
Aircraft Carrier					1					1								1				1				1				1
Large Surface Combatant	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	3	2	3	2	2	2	2	2	2	2	2	2	2	2	2
Small Surface Combatant	2	1	2	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
Attack Submarines	2	2	2	2	2	2	1	1	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	1																		
Large Payload Submarines																	1						1					1		
Amphibious Warfare Ships				1								1			1	1	1		1	1		1		1		1	1	1	1	1
Combat Logistics Force	1		3	2	3	2	2	2	2	2	3	3	2	2				1	1		2	2	3	3	3	1	1	1	1	2
Support Vessels	1	2	3	3	3	4	4	4	4	4	5	2	2	3	3	2	3	3	1		1	1	2	2	3	3	3	3	3	2
Total New Construction Plan	9	7	13	12	14	13	13	12	14	13	13	11	13	10	11	10	12	10	11	7	10	10	12	12	13	11	11	11	11	11

¹ A decision on CVN 82/83 two-ship buy is required no later than FY2025 and will be evaluated during upcoming force structure and industrial base studies. The Department is reviewing Large and Small Surface Combatant and Attack Submarine procurement quantities in FY2029-2033.

² The ability of the industrial base to support Alternative 3 has not been independently assessed.

³ 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. Based on the March 2023 Tri-Lateral announcement, the Navy anticipates building additional *Virginia* class SSNs in the 2030s as replacements for submarines sold to Australia.

⁴ Amphibious ship inventories reflect a pause in the current LPD line. The analytic results of the medium deck amphibious ship study and the BFSAR will be reflected in future shipbuilding plans.

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, pp. 15-16.

The Navy states that PB2024 and Alternative 2

do not procure all platforms at the desired rate (e.g., DDGs, SSNs, and FFGs at two ships per year), which industry needs to demonstrate the ability to achieve, but does maximize capability within projected resources, industrial factors, and technology constraints to build the most capable force. Overall, this approach accepts risk in capacity in order to field a more capable and ready force....

The primary differences between the baseline PB2024 and Alternative 2 is the focus [in Alternative 2] on procuring more SSNs and unmanned vessels within the constrained [total

amount of shipbuilding funding]... Alternative 2 also continues to procure DDG 51 Flt IIIs longer than PB2024, delays the shift to DDG(X), and procures fewer of both.

Alternative 3 represents procuring to a larger Navy. This alternative shifts CVNs to 4-year centers [i.e., procuring aircraft carriers at a rate of one every four years] and not only shifts [procurement of attack submarines and destroyers to the future SSN(X) [next-generation attack submarine] and DDG(X) [and next-generation destroyer] but also procures the [two types of] platforms at a consistent rate of at least two per year.¹⁸

Projected Force Levels Under FY2024 30-Year Shipbuilding Plan

As shown in **Figure 3**, under all three alternatives presented in the FY2024 30-year shipbuilding plan, the Navy projects that the fleet would include 293 battle force ships at the end of FY2024 and 291 battle force ships at the end of FY2028.

Figure 3. Projected Force Levels Under Alternative Shipbuilding Profiles

As shown in Navy's FY2024 30-Year Shipbuilding Plan

Table A1-5. Resultant Battle Force Inventories and Trade Space

PB2024

Fiscal Year	24	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
Aircraft Carrier	11	12	11	10	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	10	10	10	9	10	9	9	9	9	10	9
Large Surface Combatant	85	84	83	85	85	86	80	77	77	76	77	81	83	84	86	87	86	84	83	82	80	78	78	78	76	76	76	78	76	78
Small Surface Combatant	33	26	26	23	24	26	27	29	31	32	34	35	36	37	39	40	42	44	44	43	44	44	44	42	41	40	41	42	43	44
Attack Submarines	50	49	48	48	47	48	46	47	50	49	50	50	54	56	53	54	53	52	53	53	54	55	56	57	58	58	58	58	60	60
SSGNs/Large Payload Submarines	4	4	2	2																							1	1	1	2
Ballistic Missile Submarines	14	14	14	13	13	12	11	11	11	12	12	12	12	12	12	12	13	13	12	12	12	12	12	12	12	12	12	12	12	12
Amphibious Warfare Ships	29	27	28	28	29	30	30	30	29	29	29	26	25	24	24	24	24	23	24	24	24	23	23	21	21	20	20	21	19	19
Combat Logistics Force	31	31	31	30	32	30	31	33	37	38	38	39	40	41	42	43	43	43	43	43	43	43	43	43	43	44	44	44	43	43
Support Vessels	36	39	42	46	50	52	54	55	58	58	57	58	58	59	60	60	60	61	61	61	59	59	58	57	57	56	54	54	55	54
Total Naval Force Inventory	293	286	285	285	291	295	290	293	304	305	308	312	319	324	327	331	331	330	330	326	326	323	322	320	318	314	315	318	319	321

Alternative 2 to PB2024

Fiscal Year	24	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
Aircraft Carrier	11	12	11	11	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	10	10	10	9	9	9	9	9	9	10	9
Large Surface Combatant	85	84	83	85	85	86	80	77	77	76	77	81	82	83	84	86	84	82	80	79	77	74	73	73	71	71	71	71	71	73
Small Surface Combatant	33	26	26	23	24	26	27	29	31	32	35	36	37	38	39	40	42	44	45	44	46	46	47	45	44	43	44	46	46	47
Attack Submarines	50	49	48	48	47	48	46	47	50	49	50	50	54	57	55	56	55	54	56	57	58	60	61	62	64	66	66	66	66	69
Cruise Missile Submarines	4	4	2	2																	1	1	1	2	2	2	3	3	4	
Ballistic Missile Submarines	14	14	14	13	13	12	11	11	11	12	12	12	12	12	12	12	13	13	12	12	12	12	12	12	12	12	12	12	12	12
Amphibious Warfare Ships	29	27	28	28	29	30	30	30	29	29	29	26	25	24	23	23	23	22	23	23	23	22	22	21	21	20	21	21	20	20
Combat Logistics Force	31	31	31	30	32	30	31	33	37	36	38	40	42	44	46	49	49	49	49	49	51	50	49	49	49	49	49	49	48	47
Support Vessels	36	39	42	46	50	52	54	55	57	55	54	55	55	55	56	54	53	54	54	52	52	51	50	49	47	47	48	48	47	
Total Naval Force Inventory	293	286	285	285	291	295	290	293	303	303	307	311	318	324	325	331	329	328	329	328	328	327	327	324	323	319	322	325	327	328

Alternative 3 to PB2024

	Fiscal Year	24	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	
Aircraft Carrier		11	12	11	10	11	11	11	11	11	11	11	11	11	11	11	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Large Surface Combatant		85	84	83	85	85	86	80	77	77	76	77	81	83	84	85	87	87	85	84	84	82	81	81	82	82	82	82	82	83	85	
Small Surface Combatant		33	26	26	23	24	26	27	29	31	32	35	37	39	41	43	45	47	49	49	48	49	49	49	47	46	45	46	48	48	49	
Attack Submarines		50	49	48	48	47	48	46	47	50	49	50	50	54	56	53	54	54	53	55	55	56	57	58	59	60	61	61	61	63	63	
Cruise Missile Submarines		4	4	2	2																		1	1	1	1	2	2	2	3		
Ballistic Missile Submarines		14	14	14	13	13	12	11	11	11	12	12	12	12	12	12	12	13	13	12	12	12	12	12	12	12	12	12	12	12	12	
Amphibious Warfare Ships		29	27	28	28	29	30	30	30	30	29	29	29	26	25	25	24	24	24	24	24	25	25	26	27	25	25	24	24	25	23	23
Combat Logistics Force		31	31	31	30	32	30	31	33	37	38	38	39	41	43	45	48	48	48	48	48	48	50	49	49	49	49	49	49	49	48	48
Support Vessels		36	39	42	46	50	52	54	55	59	60	61	64	64	65	67	68	69	71	74	75	78	78	77	77	76	75	75	77	78	74	74
Total Naval Force Inventory		293	286	285	285	291	295	290	293	305	307	313	320	329	337	340	349	352	354	356	357	360	365	364	362	360	360	361	366	365	367	

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.

As also shown in **Figure 3**, under PB2024, the Navy would increase to a peak of 331 manned ships in FY2039-FY2040 and then decrease to 319 manned ships in FY2053; under Alternative 2, the Navy would increase to a peak of 331 manned ships in FY2039, and then decrease to 328

¹⁸ 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. 4, 6.

manned ships in FY2053; and under Alternative 3, the Navy would increase to 356 manned ships (i.e., one more than the 355 called for in the Navy's current ship force-level goal) in FY2042 and continue increasing to 367 manned ships by FY2053. The Navy states: "In addition [to these manned ships], it is estimated that the Navy [under the three alternatives] could achieve 89-149 unmanned platforms by 2045."¹⁹

Issues for Congress

Potential issues for Congress concerning Navy shipbuilding relating to the Navy's proposed FY2024 budget include but are not necessarily limited to those discussed below.

Force-Level Goal and Shipbuilding Profile

One issue for Congress concerns the ship force-level goal to replace the 355-ship goal of 2016 and the Navy's presentation, for the second year in a row, of three 30-year shipbuilding profiles rather than a single profile. Potential oversight questions for Congress include the following:

- Does the Administration endorse the 381-ship force-level goal presented in the June 2023 BFSAR report, or is that report only a statement presenting the Navy's own view of what the future ship force-level goal should be?
- Should Congress require the Navy to prepare and release an unclassified version of the June 2023 BFSAR report that would include the numbers and types of ships included in the 381-ship force-level goal?
- In the absence of a clearly defined and definitive new Navy force-level goal that has been explicitly endorsed by the Administration, as well as the presentation of multiple 30-year shipbuilding profiles rather than a single profile, how well can Congress
 - understand the Biden Administration's goals concerning the future size and composition of the Navy, and
 - assess the Navy's proposed FY2024 shipbuilding budget, five-year (FY2024-FY2028) shipbuilding plan, and 30-year (FY2024-FY2053) shipbuilding plan?
- Is the continued absence of a clearly defined and definitive new force-level goal that has been explicitly endorsed by the Administration, and the presentation for the second year in a row of three 30-year shipbuilding profiles rather than a single profile permitting the Administration to avoid stating its specific plans for future Navy force levels and budgets?
- If the Administration does not release and explicitly endorse a clearly defined and definitive new force-level goal to replace the 355-ship goal, should Congress consider the option of legislating a replacement force-level goal of its own devising (including both a total number of ships and, within that total number, required numbers for each ship category), and require DOD to budget the funding needed to achieve such a fleet in a timely manner and maintain it thereafter? What role might the recommendations of the Commission on the Future of the Navy play in such an effort?

¹⁹ 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. 7.

- How many Navy ships of what types and numbers will be needed to adequately perform the Navy's projected missions in coming years, particularly in light of great power competition with China and Russia?

Regarding the final question above, as discussed in the CRS report on China's naval modernization effort and its implications for U.S. Navy capabilities,²⁰ China's military modernization effort, including its naval modernization effort, is the top focus of U.S. defense planning and budgeting. China's naval modernization effort has been underway for about 30 years, since the early to mid-1990s, and has transformed China's navy into a much more modern and capable force. China's navy is, by far, the largest of any country in East Asia, and sometime between 2015 and 2020 it surpassed the U.S. Navy in numbers of battle force ships (meaning the types of ships that count toward the quoted size of the U.S. Navy). DOD states that China's navy "is the largest navy in the world with a battle force of approximately 340 platforms, including major surface combatants, submarines, ocean-going amphibious ships, mine warfare ships, aircraft carriers, and fleet auxiliaries.... This figure does not include approximately 85 patrol combatants and craft that carry anti-ship cruise missiles (ASCM). The ... overall battle force [of China's navy] is expected to grow to 400 ships by 2025 and 440 ships by 2030."²¹ U.S. military officials and other observers are expressing concern or alarm regarding the pace of China's naval shipbuilding effort and resulting trend lines regarding the relative sizes and capabilities of China's navy and the U.S. Navy.²²

A July 31, 2023, press report states

The United States will rely on allies rather than a major expansion of its own forces to counter any Chinese military risk in the Pacific, a US general has told AFP [Agence France-Presse].

Beijing enjoys "very clear" advantages in the region, said Major General Joseph Ryan, commander of the 12,000-strong 25th Infantry Division on Oahu, Hawaii.

He cited China's expanding military defences, its long-range rocket missile capability and the ease with which it can position forces and equipment in the Pacific.

By contrast, in the event of conflict, the United States and its allies would have to traverse international waters or the territories of multiple nations, requiring their permission as well as the mobilisation of air, land and sea transport.

"I don't see a major expansion of US military presence in the region," Ryan said while in Darwin at the weekend for multinational military exercise Talisman Sabre.

²⁰ CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O'Rourke.

²¹ 2022 DOD CMSD, p. 52. See also 2019 DIA CMP, p. 63.

²² See, for example, Chris Bradford, "Point of No Return, US Navy Faces Being Totally Outgunned by China in Just Seven Years—We Need a Fleet Ready to Fight War Now, Says Expert," *U.S. Sun*, March 1, 2023; Keith Griffith, "China's Naval Fleet Is Growing and the US 'Can't Keep Up' with the Warship Buildup as Beijing Uses Its Sea Power to Project an 'Increasingly Aggressive Military Posture Globally,' Navy Secretary Warns," *Daily Mail (UK)*, February 23, 2023; Brad Lendon and Haley Britzky, "US Can't Keep Up with China's Warship Building, Navy Secretary Says," *CNN*, February 22, 2023; Meredith Roaten, "Shipyard Capacity, China's Naval Buildup Worries U.S. Military Leaders," *National Defense*, January 26, 2023; Oliver Parken and Tyler Rogoway, "Extremely Ominous Warning About China From US Strategic Command Chief, Admiral Richard Says 'The Big One' with China Is Coming and the 'Ship Is Slowly Sinking' in Terms of U.S. Deterrence," *The Drive*, November 6, 2022; Xiaoshan Xue, "As China Expands Its Fleets, US Analysts Call for Catch-up Efforts," *VOA*, September 13, 2022.

For articles offering differing perspectives, see, for example, David Axe, "The Chinese Navy Can't Grow Forever—The Slowdown Might Start Soon," *Forbes*, November 12, 2020; Mike Sweeney, *Assessing Chinese Maritime Power*, Defense Priorities, October 2020, 14 pp.

“What I do see is increased partnership, opportunities for partnership and perhaps some increased growth in the region,” he said.²³

Total Number of Ships Projected Through FY2028

Another issue for Congress concerns the total number of Navy ships projected through FY2028, as shown in **Table 3**. Potential oversight issues for Congress include the following:

- Is the total number of Navy ships projected through FY2028 consistent with increasing the size of the Navy substantially above 300 ships? If the goal is to increase the Navy to something substantially more than 300 ships, why does the projection show the total number of ships decreasing rather than increasing through FY2028?
- Is the total number of Navy ships projected through FY2028 consistent with a goal of countering China’s navy, which already has more ships than the U.S. Navy and is projected to grow further in coming years?²⁴

Potential Impacts of a CR on FY2024 Navy Shipbuilding Programs

Overview

Another issue for Congress concerns the potential impacts on FY2024 Navy shipbuilding programs of using one or more continuing resolutions (CRs) to fund DOD operations for at least some portion of FY2024. CRs typically prohibit the use of funding provided for DOD under the CR for

- implementing new program starts (aka “new starts”), meaning initiating new program efforts that did not exist in the prior year—a prohibition that includes not only the initiation of new acquisition programs, but also the shifting of an existing acquisition program from its research and development phase to its procurement phase;
- increasing a procurement quantity for a program compared with the program’s procurement quantities in the prior year (aka year-to-year quantity increases); and
- initiating multiyear procurements using advance procurement (AP) funding for economic order quantity (EOQ) procurement unless specifically appropriated later.²⁵

For general background information on the potential impacts of CRs on Navy shipbuilding programs, see **Appendix H**. As discussed in **Appendix H**, unlike all other DOD acquisition accounts, the Navy’s shipbuilding account, known formally as the Shipbuilding and Conversion, Navy (SCN) appropriation account, is funded in the annual DOD Appropriations Act not just with a total appropriated amount for the entire account, but also with specific appropriated amounts at

²³ Sharon Marris (Agence France-Presse), “US General Says Allies Key To Counter China In Pacific,” *Barron’s*, July 31, 2023.

²⁴ For more on China’s Navy, including projected total numbers in coming years, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by Ronald O’Rourke.

²⁵ For more on multiyear procurements, including the use of AP funding for EOQ purchases, see CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by Ronald O’Rourke.

the line-item level. SCN line items in the DOD Appropriations Act are not just specific to individual shipbuilding programs—they also distinguish between procurement funding and advance procurement (AP) funding within those programs. As a consequence, under a CR, SCN funding is managed not at the account level (like funding is under a CR for other DOD acquisition accounts), but at the line-item level. For the SCN account—uniquely among DOD acquisition accounts—this can lead to line-by-line funding misalignments (excesses and shortfalls) for individual shipbuilding programs, compared with the amounts those shipbuilding programs received in the prior year. The shortfalls in particular can lead to program-execution challenges in shipbuilding programs, particularly under an extended or full-year CR. This unique situation of line-by-line funding misalignments is an important distinction between the potential impacts of CRs on Navy shipbuilding programs and the potential impacts of CRs on other DOD acquisition activities.

The Navy stated in September 2023 that operating under a full-year CR would lead to a total of \$26 billion in funding misalignments across the Navy’s overall budget, including misalignments in the SCN account and misalignments in other Navy appropriation accounts.²⁶

As also discussed in **Appendix H**, the potential impacts of a CR on program execution can be avoided or mitigated if the CR includes special provisions, called anomalies, for exempting individual programs or groups of programs from the general provisions of the CR, or if the CR includes expanded authorities for DOD for reprogramming and transferring funds.

Ships that Could Be Affected

Prohibition on Year-to-Year Quantity Increases

Navy ships and craft requested for procurement for FY2024 whose execution could be affected by a CR’s prohibition on year-to-year quantity increases include

- one Columbia-class class ballistic missile submarine (SSBN) (one such ship is requested for procurement in FY2024; none was procured in FY2023);
- one Constellation (FFG-62) class frigate (two such ships are requested for procurement in FY2024; one was procured in FY2023);
- one AS(X) submarine tender (one such ship is requested for procurement in FY2024; none was procured in FY2023); and
- two LCU-1700 landing craft (two such craft are requested for procurement in FY2024; none was procured in FY2023).

Prohibition on New Program Starts

The AS(X) submarine tender included in the above list of ships that could be affected by a CR’s prohibition on year-to-year quantity increases above would be the lead ship in a new class of ships, so its execution would additionally be affected by a CR’s prohibition on new program starts.

²⁶ Rich Abott, “Navy Comptroller: Sequester Would Cut Navy Budget By \$15 Billion,” *Defense Daily*, September 13, 2023.

Line-by-Line Funding Alignments

Additional impacts to ships requested for procurement in FY2024 could occur as a result of line-by-line funding misalignments between FY2023-enacted funding amounts and FY2024-requested funding amounts.

Cost-to-Complete Funding for Prior-Year Ships

As discussed in **Appendix H**, the Navy states that, for purposes of operating under a CR, cost-to-complete (CTC) work is considered to be a new start and is therefore typically prohibited under a CR.²⁷ CTC funding, which is shown in the Navy's SCN account as Completion of PY (Prior Year) Shipbuilding Programs, is funding that the Navy uses to cover cost growth on the construction of Navy ships that were funded in prior fiscal years. The Navy's FY2024 funding request for CTC funding is much larger than its requests for such funding in prior fiscal years, and includes funding that would be used for work on the following ships and craft that were procured prior to FY2024:

- four Virginia-class attack submarines (SSNs);
- one new Ford (CVN-78) class aircraft carrier (specifically, CVN-79, the second ship in the class);
- the refueling complex overhaul (or RCOH, meaning a mid-life nuclear refueling overhaul) of one existing Nimitz (CVN-68) class aircraft carrier (specifically, CVN-74);
- five Arleigh Burke (DDG-51) class destroyers;
- three Littoral Combat Ships (LCSs);
- one LPD-17 class amphibious ship (specifically, LPD-29);
- six John Lewis (TAO-2005) class oilers;
- one TAGOS-25 class ocean surveillance ship (specifically, TAGOS-25, the lead ship in the program);
- six TATS-6 class towing, salvage, and rescue ships; and
- seven LCAC ship-to-shore connector (SSC) land craft.

Navy Has Requested an Anomaly for the FY2024 Columbia-Class SSBN

The Navy has requested an anomaly to permit the procurement and timely execution under a CR of the Columbia-class SSBN requested for procurement in FY2024.²⁸ As discussed in the CRS report on the Columbia-class program,²⁹ the program is the Navy's top program priority and is being executed on a tight schedule so as to replace retiring Ohio-class SSBNs as they leave service and thereby recapitalize the sea-based leg of the U.S. strategic nuclear deterrent force without experiencing a dip in the SSBN force below a certain number.

²⁷ Source: Navy FY2018 program briefing to CRS and CBO, September 20, 2017.

²⁸ Tony Bertuca, "Columbia-Class Sub Included in White House's CR 'Anomalies' Request," *Inside Defense*, August 31, 2023; Connor O'Brien, "White House Seeks Stopgap Exemption to Prevent Delays to New Sub Fleet," *Politico Pro*, August 31, 2023.

²⁹ CRS Report R41129, *Navy Columbia (SSBN-826) Class Ballistic Missile Submarine Program: Background and Issues for Congress*, by Ronald O'Rourke.

Affordability of Shipbuilding Plan and Budgetary Path for Sustaining a Larger Navy

Overview

The prospective affordability of the Navy's 30-year shipbuilding plan has been a matter of oversight focus for several years. Observers have been especially concerned about the prospective affordability of Navy shipbuilding plans during the decade or so from the mid-2020s through the mid-2030s, when the Navy wants to procure Columbia-class ballistic missile submarines as well as replacements for large numbers of retiring attack submarines, cruisers, and destroyers.³⁰

In the Navy's FY2024 30-year (FY2024-FY2053) shipbuilding plan, PB2024 and Alternative 2 assume no real (i.e., above-inflation) growth in shipbuilding funding, while Alternative 3 assumes some amount of real growth in shipbuilding funding. Under PB2024, the Navy would increase to a peak of 331 manned ships in FY2039-FY2040 and then decrease to 319 manned ships in FY2053. Under Alternative 2, the Navy would increase to a peak of 331 manned ships in FY2039, and then decrease to 328 manned ships in FY2053. Under Alternative 3, the Navy would increase to 356 manned ships in FY2042 and continue increasing to 367 manned ships by FY2053.

Increasing the size of the Navy from about 300 ships to something substantially more than 300 ships (plus additional large UVs) would require increasing not only the Navy's shipbuilding, but the Navy's budget as a whole, so as to provide funding for non-shipbuilding costs associated with achieving and sustaining a larger fleet, including costs for additional ship crews, ship-embarked aircraft, ship- and aircraft-launched weapons, ship and aircraft fuel and supplies, ship and aircraft maintenance and repair, and shore support.

November 2022 CBO Report on FY2023 30-Year Shipbuilding Plan

A November 2022 CBO report on the Navy's FY2023 30-year shipbuilding plan states

The three alternatives in the Navy's [FY]2023 [30-year shipbuilding] plan would require average annual shipbuilding appropriations that were 23 percent to 35 percent more than the average over the past five years. CBO estimates that total shipbuilding costs would average about \$30 billion to \$33 billion (in [constant FY]2022 dollars) over the next 30 years, which is 14 percent to 18 percent more than the Navy estimates. The Navy's total budget would increase from \$220 billion today to roughly \$290 billion (in [constant FY]2022 dollars) in 2052.³¹

The report also states

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

³⁰ The Navy's 30-year plans in recent years have spotlighted for policymakers the substantial increase in Navy shipbuilding funding that would be required to implement the 30-year plan during the decade or so from the mid-2020s through the mid-2030s. As discussed in CRS testimony in 2011, a key function of the 30-year shipbuilding plan is to alert policymakers well ahead of time to periods of potentially higher funding requirements for Navy shipbuilding. (See Statement of Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service, before the House Armed Services Committee, Subcommittee on Oversight and Investigations, hearing on the Department of Defense's 30-Year Aviation and Shipbuilding Plans, June 1, 2011, 8 pp.)

³¹ Congressional Budget Office, *An Analysis of the Navy's Fiscal Year 2023 Shipbuilding Plan*, November 2022, page entitled "At a Glance" (PDF page 2 of 39).

materials for shipbuilding differently. Some of the difference in the estimates stems from uncertainty about the design and capabilities of large ships whose construction would begin in 5 or 10 years—in particular, the next-generation destroyer that would start to replace the Navy’s Arleigh Burke class destroyers and the next-generation attack submarine to follow the service’s Virginia class submarines. The difference between the estimates also increases over time, in part because the Navy’s method of developing constant-dollar estimates (which reflect real costs—that is, costs adjusted to remove the effects of inflation) for most of its shipbuilding programs uses a fixed average real cost per ship; it does not account for the historically faster growth in the costs of labor and materials in the shipbuilding industry than in the economy as a whole. As a result, the Navy’s estimates for the future purchases of ships with the capabilities of today’s ships do not reflect the same increase in real costs that CBO’s estimates reflect.³²

The report also states

The cost of the Navy’s [FY]2023 [30-year] shipbuilding plan is not only high when compared with recent funding, it is high by historical standards. In comparing the plan’s costs with average recent funding, CBO is comparing funding during a period that saw the largest appropriations for ship construction since the Reagan Administration’s defense buildup in the 1980s. Since 2013, lawmakers have appropriated, on average, \$2.2 billion more per year for shipbuilding than the President has requested, partly because of concerns that the fleet is too small to perform all of its missions.... And the most recent two years of appropriations—2021 and 2022—saw two of the three largest increases by the Congress in the past decade. As a point of comparison, shipbuilding appropriations averaged \$28.9 billion (in 2022 dollars) during the Cold War years of 1955 to 1989, a period of intense competition between the United States and the Soviet Union in which the Navy faced challenges that look increasingly similar to those it expects to face over the next two decades. The three alternatives in the Navy’s plan would cost between 3 percent and 13 percent more than that.³³

Navy Statements

An August 26, 2022, press report quoted the Chief of Naval Operations, Admiral Mike Gilday, as stating on August 25, 2022, that the Navy would need an additional \$9 billion to \$10 billion per year to build and maintain a fleet of 355 manned ships and 150 unmanned ships.³⁴

A July 27, 2022, press report states

The U.S. Navy’s planned fleet of 2045 will require annual real [i.e., inflation-adjusted] budget increases of 3 to 5 percent, according to the Navy’s top officer, who called that a “realistic” schedule for amassing the 500 hyperconnected manned and unmanned vessels that national security will require.

“I think it’s going to take a couple of decades to get us to yield that hybrid fleet that we think that we ultimately need in order to fight the way we think we want to fight, which is in a distributed manner,” Adm. Mike Gilday, chief of naval operations, told reporters on Tuesday [July 26].

That budget growth goal “would be unprecedented if they were to be achieved by the Navy,” based on historical statistics, said Travis Sharp, fellow and director of defense

³² Congressional Budget Office, *An Analysis of the Navy’s Fiscal Year 2023 Shipbuilding Plan*, November 2022, pp. 2-3.

³³ Congressional Budget Office, *An Analysis of the Navy’s Fiscal Year 2023 Shipbuilding Plan*, November 2022, p. 5.

³⁴ “The Big News,” Politico Pro Morning Defense, August 26, 2022.

budget studies at the Center for Strategic and Budgetary Assessments based in Washington, D.C....

Historically speaking, the odds are against the Navy getting that kind of money.

“Over the last 75 years, only one-third of the time has the Department of the Navy’s budget grown by 3 percent or more in real terms,” said CSBA’s Sharp. “If you think about those outcomes as being...the odds, it’s like one-third of the time the Navy has gotten that level of resourcing, and two-thirds of the time it has not gotten that level resourcing.”

Since World War II, Sharp said, the longest span of three-percent-or-more growth in the Navy Department’s budget is three years, and that’s only happened twice, during general military buildups: in the early 1980s, across the Carter and Reagan administrations and the early 2000s after 9/11 and amid the buildup to the Iraq war.

Various defense and congressional officials have recommended 3 to 5 percent budget growth since 2018, when both the National Defense Strategy and U.S. Institute of Peace’s 2018 report by the National Defense Strategy Commission called for it, Sharp said.³⁵

As noted earlier, on July 26, 2022, the Navy released a document, *Chief of Naval Operations [CNO] Navigation Plan 2022*, that calls for a future fleet of 373 manned ships, as well as about 150 large unmanned surface and underwater vehicles. Regarding the funding levels needed to achieve this fleet, the document states (emphasis as in the original):

Our central challenge is balancing our investments in the future fleet while sustaining a forward posture that keeps America safe and prosperous. Manpower, operations, and maintenance costs continue to grow above the rate of inflation. Meanwhile, we face the simultaneous task of recapitalizing our strategic nuclear deterrent, our century-old dry dock and ship repair facilities, and our strategic sealift capacity. **To simultaneously modernize and grow the capacity of our fleet, the Navy will require 3-5% sustained budget growth above actual inflation** [i.e., real growth]. **Short of that, we will prioritize modernization** [i.e., improving the capabilities of individual ships and aircraft] **over preserving force structure** [i.e., preserving numbers of ships and aircraft]. This will decrease the size of the fleet until we can deploy smaller, more cost-effective, and more autonomous force packages at scale.³⁶

A November 4, 2021, press report stated

The U.S. Navy needs annual budget increases of three to five percent over inflation if it is to reach its shipbuilding goals and meet China’s “significant threat,” Navy Secretary Carlos Del Toro said Thursday [November 4]....

If the U.S. Navy is to reach 355 ships—the goal service leaders put forth in 2016 and Congress ratified two years later—it needs budget increases of three to five percent over inflation, Del Toro said.³⁷

A June 15, 2021, press report stated

The number of ships in the fleet, now at 296 ships, will decrease if the Navy continues to have flat or declining budgets, the service’s top officer told Congress today.

Despite numerous evaluations showing the Navy needs more ships, Chief of Naval Operations Adm. Mike Gilday told the House Armed Service Committee that without a topline increase to the service’s budget, the fleet will only get smaller.

³⁵ Caitlin M. Kenney, “Navy Fleet Plan Needs 3-5% Annual Budget Increases for the Next Two Decades,” *Defense One*, July 27, 2022.

³⁶ U.S. Navy, *Chief of Naval Operations Navigation Plan 2022*, undated, released July 26, 2022, p. 12.

³⁷ Caitlin M. Kenney, “Navy Secretary Seeks 3-5% Annual Budget Increases,” *Defense One*, November 4, 2021.

“As you all know, the results of analysis done over the past five years—whether inside the Pentagon or outside—have been consistent and clear: America needs a larger, more capable fleet,” Gilday said. “Our latest Future [Naval Force Structure] assessment provided the headlights not only for the size of our future fleet, but importantly for the composition of that fleet, the capabilities that it brings to the joint force. If the Navy’s [budget] top-line remains flat or goes down further, the size of our fleet will definitely shrink.”...

Gilday told lawmakers that the service’s budget is trying to balance the need to pursue new capabilities and technology with its readiness priorities. While the Navy has for years been building toward a goal of 355 ships, Gilday said the service only has enough money for 300 vessels with its current budget.³⁸

In February 2020, Navy officials testified that achieving and supporting a 355-ship fleet over the next 10 years would require increasing the Navy’s budget by a cumulative total of \$120 billion to \$130 billion over the next 10 years, or an average of \$12 billion to \$13 billion per year. This figure, Navy officials stated, included not only the cost of procuring new ships, but costs associated with crewing, arming, operating, and maintaining a 355-ship fleet.³⁹

In January 2020, Admiral Gilday stated that fully funding the Navy’s program goals, including the attainment of a 355-ship fleet, would require allocating a larger share of DOD’s budget to the Navy.⁴⁰

In September and October 2019, Navy officials stated that if Navy budgets in coming years remain at current levels in real (i.e., inflation-adjusted) terms, the Navy would not be able to properly maintain a fleet of more than 302 to 310 ships.⁴¹

Potential Oversight Questions for Congress

Potential oversight questions for Congress include the following:

- Has a clear budgetary path been identified for financing a substantial increase in the size of the Navy?
- Does the Biden Administration support increasing the size of the Navy’s total budget to the level needed to increase the size of the Navy to figures like those shown in **Table 2** or **Figure 1**?
- In light of great power competition with China and Russia, how should funding requirements for the Navy be balanced against funding requirements for other parts of DOD?

³⁸ Mallory Shelbourne, “CNO Gilday: Flat or Declining Navy Budgets ‘Will Definitely Shrink’ the Fleet,” *USNI News*, June 15, 2021.

³⁹ See, for example, Ben Werner, “SECNAV Modly: Navy Needs Additional \$120 Billion To Build 355-Ship Fleet By 2030,” *USNI News*, February 27, 2020.

⁴⁰ See, for example, Marcus Weisgerber, “The US Navy Needs More Money, Its Top Admiral Bluntly Argues,” *Defense One*, January 14, 2020; Sam LaGrone, “CNO Gilday Calls for Budget Increase to Reach 355 Ship Fleet; New Battle Force Count Won’t Include Unmanned Ships,” *USNI News*, January 14, 2020; John M. Doyle, “CNO Wants Larger Slice of Defense Budget to Modernize, Meet China Threat,” *Seapower*, January 15, 2020; Rich Abott, “CNO: Ship Count Will Not Include Unmanned; Bigger Topline Needed For Fleet Goal,” *Defense Daily*, January 15, 2020.

⁴¹ Justin Katz, “Modly Acknowledges 355 Ships Won’t Happen in ‘Reasonable’ Amount of Time,” *Inside Defense*, September 16, 2019; Otto Kreisher, “Modly Doubts Future Budgets Will Allow for 355-Ship Fleet,” *Seapower*, October 27, 2019; Ben Werner, “Admiral: Navy Can Afford to Field a 310-Ship Fleet, Not 355,” *USNI News*, October 28, 2019. See also Rich Abott, “Navy Says Current Funding Only Supports 310 Ships,” *Defense Daily*, October 28, 2019; Paul McLeary, “Navy May Scrap Goal of 355 Ships; 310 Is Likely,” *Breaking Defense*, October 25, 2019.

Amphibious Ship Procurement and Force-Level

Another issue for Congress concerns the Navy's plans for procuring amphibious ships and the Navy's projected numbers of amphibious ships. As noted earlier, 10 U.S.C. 8062(b) requires the Navy to include 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 within the total of not less than 31 amphibious ships being LPD/LSD-type amphibious ships. The requirements regarding amphibious ships were added to 10 U.S.C. 8062(b) by Section 1023 of the FY2023 (NDAA) (H.R. 7776/P.L. 117-263 of December 23, 2022).

As mentioned above, a July 18, 2023, press report stated that the Navy on June 20, 2023, had submitted to the congressional defense committees a congressionally mandated Battle Force Ship Assessment and Requirement (BFSAR) report that calls for a future fleet with 381 manned ships, including 31 larger (i.e., LHA/LHA-type and LPD/LSD-type) amphibious ships.

As shown in **Figure 3**, the FY2024 30-year shipbuilding plan shows the projected number of amphibious ships remaining below 31 ships throughout the 30-year period, with the figure decreasing to 26 ships in FY2035 and decreasing further, to 19 ships (PB2024), 20 ships (Alternative 2), or 23 ships (Alternative 3), in FY2053.

Under the 38-ship amphibious force-level goal that is included in the Navy's current 355-ship force-level objective (see **Table 1**), the Navy had planned to procure a total of 13 LPD-17 Flight II class ships. Under the Navy's proposed FY2024 budget, as under its proposed FY2023 budget, the LPD-17 Flight II ship proposed for procurement (and funded by Congress)—the third LPD-17 Flight II ship—would be the final one to be procured. The Navy's FY2024 budget submission, like its FY2023 budget submission, would thus truncate the LPD-17 Flight II program from a previously envisaged total of 13 ships to 3 ships. Ending LPD-17 Flight II procurement with the ship procured in FY2023 would make for a total of 16 LPD-17 Flight I and Flight II ships (13 LPD-17 Flight I ships procured in earlier years, and 3 LPD-17 Flight II ships).

A June 20, 2023, press report states

In response to a terse letter from a group of lawmakers, Navy Secretary Carlos Del Toro recently said that he has "every intention to meet the legally mandated amphibious ship requirements," but balked at providing the new shipbuilding plan lawmakers requested.

In a three-paragraph-long June 19 letter...,⁴² Del Toro says he is "in constant consultation with the Commandant of the Marine Corps and Chief of Naval Operations" to provide the "right mix" of capabilities to the Navy's fleet.

"The [Navy and Marine Corps] will continue to make investments to put us on course to achieve and maintain a ready and capable amphibious warship fleet that meets the needs of our joint force commanders," says the letter, obtained by Breaking Defense.

⁴² The June 20, 2023, press report at this point includes this live link to the June 19 letter: <https://sites.breakingmedia.com/uploads/sites/3/2023/06/Signed-SECNAV-Response-to-Amphib-ltr-dtd-19-JUN-23.pdf>.

Del Toro offered to brief the lawmakers in more detail but did not mention or include an updated long-term shipbuilding plan in his response, an item the senators explicitly requested in their June 13 letter,⁴³ which gave Del Toro until Monday to comply.⁴⁴

Potential oversight questions for Congress include the following:

- Are the Navy's plans for procuring amphibious ships and the Navy's projected numbers of amphibious ships consistent with the requirement in 10 U.S.C. 8062(b) for the Navy to include not less than 31 amphibious ships? If not, why not?
- What are the potential operational consequences of the projected numbers of amphibious shown in **Figure 3**?
- How much additional funding for procuring amphibious ships and for operating and supporting amphibious ships would be needed to achieve and maintain a force of not less than 31 amphibious ships, including not less than 10 LHA/LHD-type "big deck" amphibious assault ships, as required by 10 U.S.C. 8062(b)?
- Is the Navy's proposal to truncate the LPD-17 Flight II program to three ships, and not procure any more such ships during the five-year period FY2024-FY2028 (see **Table 3**), consistent with the requirement under 10 U.S.C. 8062(b)?
- What impact would the truncation of LPD-17 Flight II procurement to a total of three ships have on the shipyard that builds LPD-17 Flight IIs (HII/Ingalls—the Ingalls shipyard of Pascagoula, MS, which is part of Huntington Ingalls Industries) in terms of workloads, employment levels, and costs for building other Navy warships (including DDG-51 destroyers and LHA-type amphibious assault ships) that are built at that yard? What impact would the truncation of LPD-17 Flight II procurement have on supplier firms associated with construction of LPD-17 Flight II ships?

Industrial Base Capacity

Another issue for Congress concerns industrial base capacity at ship construction shipyards, ship overhaul and repair shipyards, and supplier firms for building ships at annual rates needed to substantially increase the size of the Navy, and for performing overhaul, repair, and modernization work on a larger fleet. Potential capacity limits or bottlenecks that have been identified include but are not necessarily limited to shipyard and supplier capacity for building submarines at desired annual rates, and capacity at government-operated Naval Shipyards (NSYs) for performing overhaul, repair, and modernization work on the Navy's nuclear-powered ships (i.e., its submarines and aircraft carriers).⁴⁵

⁴³ The June 20, 2023, press report at this point includes a live link to a June 13, 2023 press report (Justin Katz, "'Not a Suggestion': Senators Prod Navy's Del Toro for Failure to Respond to Amphib Questions," *Breaking Defense*, June 13, 2023) that in turn includes this live link to the June 13 letter: https://sites.breakingmedia.com/uploads/sites/3/2023/06/20230613_Letter-to-Secretary-Del-Toro-re-31-amphibs_FINAL.pdf. See also Connor O'Brien, "Bipartisan Senators Pressure Navy Secretary for Plan to Boost Amphibious Ships," *Politico Pro*, June 13, 2023.

⁴⁴ Justin Katz, "Navy's Del Toro Balks at Lawmakers' Shipbuilding Plan Demand, Will 'Meet' Amphib Needs," *Breaking Defense*, June 20, 2023.

⁴⁵ Regarding the delays and other difficulties the Navy has experienced in recent years in executing overhaul and repair work on existing Navy ships, see, for example, Congressional Budget Office, *The Capacity of the Navy's Shipyards to Maintain Its Submarines*, March 2021, 21 pp.; Government Accountability Office, *Navy Maintenance[.] Navy Report* (continued...)

A March 21, 2023, press report stated

The Navy is keeping a two-ship-per-year cadence for its destroyer line because that's a realistic goal for industry to work toward, according to the Pentagon's top budget officer.

Despite Congress' push for the Navy to start buying three Arleigh Burke-class Flight III destroyers per year, the Fiscal Year 2024 budget request unveiled last week showed the service buying two destroyers. That's because U.S. shipyards are not yet able to build two destroyers per year, let alone three, Mike McCord said last week.

"I'm not hating on DDGs – my only point was that last year Congress added a third and the reason we didn't budget for three is, again, we don't see the yards being able to produce three a year. We don't see them being able to produce two a year. And that's just data. It's not what we wish to be true. But everybody's struggling with skilled labor. Everybody's struggling with supply chain. So it's not getting better very fast from the data that I've seen – whether with submarines or DDGs. So two a year seems to be a reasonable place," McCord told USNI News at the McAleese Conference.

During the budget rollout last week, McCord said industry is currently building 1.5 destroyers per year, a number Chief of Naval Operations Adm. Mike Gilday has also cited when arguing that the shipyards have limited capacity.

McCord also argued that asking for more destroyers than industry can build takes away leverage from the Navy to negotiate with shipbuilders on price.

"If you keep sort of placing orders for things faster than they can be delivered, it's good for the books, the balance sheets of the companies. But are you really, as the buyer, are you in the best place you'd like to be with any leverage or are you actually short of leverage when, you produce on time or you don't produce on time. It doesn't matter to me – I'm going to keep writing you checks," McCord told USNI News.

The comptroller said both he and Susanna Blume, the director of the Cost Assessment and Program Evaluation (CAPE) Office of the Secretary of Defense, don't think putting more funding toward an extra destroyer is a wise use of resources that will help shipbuilders deliver it to the Navy quicker.

"It's just sort of piling up in the orders book and we're still going to have the same problems of the yards producing faster until we get through the supply chain and the workforce issues," McCord said. "It is not to say that we would not be interest[ed] in a more robust production world where in having three DDGs or moving to three submarines, but it doesn't seem to be ... realistic."

General Dynamics Bath Iron Works, one of the yards that build the destroyers, has spent the last several years digging through a backlog of work at its Maine yard that the COVID-19 pandemic exacerbated. HII's Ingalls Shipbuilding, the other yard that builds the Arleigh Burke destroyers, has performed better. Ingalls is also winding down the Coast Guard's

Did Not Fully Address Causes of Delays or Results-Oriented Elements, GAO-21-66, October 2020, 29 pp.; Government Accountability Office, *Navy Shipyards[:] Actions Needed to Address the Main Factors Causing Maintenance Delays for Aircraft Carriers and Submarines*, GAO-20-588, August 2020, 47 pp.; Government Accountability Office, *Navy Ship Maintenance[:] Evaluating Pilot Program Outcomes Could Inform Decisions to Address Persistent Schedule Challenges*, GAO-20-370, May 2020, 55 pp.; Government Accountability Office, *Navy Ship Maintenance[:] Actions Needed to Address Maintenance Delays for Surface Ships Based Overseas*, GAO-20-86, February 2020, 63 pp.; Government Accountability Office, *Navy Maintenance[:] Persistent and Substantial Ship and Submarine Maintenance Delays Hinder Efforts to Rebuild Readiness*, GAO-20-257T, December 4, 2019 (Testimony Before the Subcommittees on Seapower and Readiness and Management Support, Committee on Armed Services, U.S. Senate, Statement of Diana C. Maurer Director Defense Capabilities and Management), 31 pp. GAO has reported and testified on this issue numerous times in recent years.

Legend-class National Security Cutter production line, which could open up more capacity at its yard in Pascagoula, Miss.

A spokeswoman for Ingalls Shipbuilding told USNI New in a statement that the yard is ready to support building three destroyers per year should the Navy go this route....

A spokesperson for Bath Iron Works told USNI News that it's "working to aggressively recover schedule" at the shipyard....

"We would love to live in a world where the yards could make three a year, or three submarines a year, but we don't live in that world," McCord said last week at the budget rollout.⁴⁶

An August 25, 2022, press report stated

The biggest barrier to adding more ships to the Navy is industrial base capacity, Chief of Naval Operations Adm. Mike Gilday said Thursday [August 25].

The service's top officer said shipbuilders need indicators from the service before they're able to make the investments required to build, for example, three destroyers per year.

"We have an industrial capacity that's limited. In other words, we can only get so many ships off the production line a year. My goal would be to optimize those production lines for destroyers, for frigates, for amphibious ships, for the light amphibious ships, for supply ships," Gilday said at a Heritage Foundation event.

"We need to give a signal to industry that we need to get to three destroyers a year, instead of 1.5, that we need to maintain two submarines a year. And so part of this is on us to give them a clear set of – a clear aim point so they can plan a work force and infrastructure that's going to be able to meet the demand. But again, no industry is going to make those kinds of investments unless we give them a higher degree of confidence."

Asked by USNI News after the event if the reason the Navy isn't ready to send that signal to industry is because of funding, Gilday said, "it depends on the class of ships. Sometimes it's affordability. Sometimes it's industrial capacity."⁴⁷

Potential oversight questions for Congress include the following:

- Is there sufficient shipyard and supplier capacity to increase the size of the Navy to the figures like those shown in **Table 2** or **Figure 1**, and to sustain a fleet of that general size? Where is there currently insufficient capacity?
- For areas where there currently is insufficient capacity, what is the Navy's plan for increasing capacity to required levels?
- Will implementing the Shipyard Infrastructure Optimization Program (SIOP)—the Navy's 20-year plan for investing in the modernization of facilities at the four government-operated NSYs—provide enough capacity at the NSYs to meet the overhaul, repair, and modernization needs for the nuclear-powered ships (including, potentially, an increased number of attack submarines) in a larger Navy?

⁴⁶ Mallory Shelbourne, "OSD Comptroller Says U.S. Shipyards Can't Build 3 Destroyers a Year," *USNI News*, March 21 (updated March 22), 2023.

⁴⁷ Mallory Shelbourne, "CNO Gilday: Industrial Capacity Largest Barrier to Growing the Fleet," *USNI News*, August 25, 2022.

Legislative Activity for FY2024

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 Next-Generation Logistics Ship (NGLS) Program: Background and Issues for Congress*, by Ronald O'Rourke.
- CRS In Focus IF11838, *Navy TAGOS-25 (Previously TAGOS[X]) 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 requests \$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 also proposes retiring 11 ships, including two relatively young Littoral Combat Ships (LCSs).⁴⁸

Table 4 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. A blank cell in a filled-in column showing congressional changes to requested amounts indicates no change from the requested amount.

⁴⁸ 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 4. Summary of Congressional Action on FY2024 Funding Request

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

Line number	Program	Request	Congressional changes to requested amounts					
			Authorization			Appropriation		
			HASC	SASC	Final	HAC	SAC	Final
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		
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	
007	CVN RCOH	0						
008	CVN RCOH (AP)	817.6				-14.7	-329.2	
009	DDG-1000	410.4				-91.7		
010	DDG-51	4,199.2					300.0	
011	DDG-51 (AP)	284.0	155.0				1,357.3	
012	LCS	0						
013	FFG-62	2,173.7	-10.0			-39.8	50.0	
014	LPD-17 Flight II	0		1,863.0				
015	LPD-17 Flight II (AP)	0					500.0	
016	LPD-17 Flight I completion	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			-188.6	-1,733.2	
022	TAO-205 oiler	815.4						
023	TAGOS(X) ocean surveillance ship	0					513.5	
024	TATS towing/salvage/rescue ship	0						
025	LCU 1700 landing craft	62.5						
026	Outfitting	557.4				-17.7	-43.4	
027	Ship to shore connector (SSC)	0				400.0		
028	Service craft	63.8	30.0			21.3	30.0	
029	Auxiliary Personnel Lighter (APL)	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	
TOTAL		32,849.0	-560.3	1,935.0		57.9	401.7	

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.

FY2024 National Defense Authorization Act (H.R. 2670/S. 2226)

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 4**. 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).

Section 133 would provide authority for a block buy contract for up to six Auxiliary Personnel Lighters (APLs).

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 included 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 4**. 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).

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 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)

FY2024 DOD Appropriations Act (H.R. 4365/S. 2587)

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 4**. Compared with the Navy's proposed FY2024 shipbuilding program, the committee recommended the procurement of

- 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 Littoral Combat Ship (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 4**. Compared with the Navy's proposed FY2024 shipbuilding program, the committee recommended

- 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).

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 Department of the Navy 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)

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 ⁱ	0 ⁱ	0 ⁱ	0 ⁱ	0 ⁱ	12 ⁱ	14 ⁱ	20 ⁱ	0 ⁱ	0 ⁱ
Combat logistics (resupply) ships	29	29	~29	30	30	30	24	26	42	34
Dedicated mine warfare ships	0	0	0	0	0	0	0	0	26 ^k	16
Joint High Speed Vessels (JHSVs)	10 ^l	10 ^l	10 ^l	10 ^l	21 ^l	3	0	0	0	0
Other ^m	24	23	~23	16	24 ⁿ	17	10	11	25	25
Total battle force ships	308	306	~310-316	313	328	313	260	325	375	310 or 312

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

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

- Initial composition. Composition was subsequently modified.
- 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.
- 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.
- 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 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-I 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-I 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 September 25, 2023, included a total of 295 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 September 2023 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 September 2023 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 295-ship fleet of September 2023 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

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/departementofdefensewarrantyguide\[1\].doc](https://www.acq.osd.mil/dpap/pdi/uid/docs/departementofdefensewarrantyguide[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 September 25, 2023, included 295 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		
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-FY2023) and programmed (FY2024-FY2028) rates of Navy ship procurement.

Table G-2. Battle Force Ships Procured or Requested, FY1982-FY2028

Procured in FY1982-FY2023 and *programmed for* FY2024-FY2028

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										
13	11	13	11	9	7	13	12	14										

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 nonbattle force ships that do not count toward the 355-ship 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 FY2012 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.

Appendix H. Potential Impacts of CRs on Navy Shipbuilding Programs

This appendix provides background information on the potential impacts of continuing resolutions (CRs) on Navy shipbuilding programs.

Potential Impacts of CRs on DOD Acquisition Programs, Including Navy Shipbuilding Programs⁵⁸

No New Starts, Quantity Increases, or Initiation of Multiyear Procurements

CRs can lead to challenges in the execution of DOD acquisition programs (i.e., research and development programs and procurement programs), including Navy shipbuilding programs, because they typically prohibit the use of funding provided for DOD under the CR for

- implementing new program starts (aka “new starts”), meaning initiating new program efforts that did not exist in the prior year—a prohibition that includes not only the initiation of new acquisition programs, but also the shifting of an existing acquisition program from its research and development phase to its procurement phase;
- increasing a procurement quantity for a program compared with the program’s procurement quantities in the prior year; and
- initiating multiyear procurements using advance procurement (AP) funding for economic order quantity (EOQ) procurement unless specifically appropriated later.⁵⁹

Larger Contracts Broken into Smaller Contracts

Under a CR, DOD financial managers might dole out funding to DOD acquisition program managers, including managers of Navy shipbuilding programs, in an incremental, piecemeal fashion. This can require a program manager to divide an intended single contract into multiple smaller contracts, which can increase the total cost of the effort by reducing economies of scale within each of the smaller contracts and increasing Navy and contractor administrative costs.

R&D Efforts That Support Ongoing Procurement Programs

Ongoing DOD procurement programs, including Navy shipbuilding programs, are frequently supported by ongoing research and development (R&D) work. R&D work on an existing procurement program can, for example, support the development and integration of new systems or components intended to improve the end item’s capability, reliability, or maintainability, or reduce its operation and support (O&S) costs.

⁵⁸ For a general discussion of the potential impacts of CRs on DOD, see CRS Report R45870, *Defense Spending Under an Interim Continuing Resolution: In Brief*, coordinated by Pat Towell.

⁵⁹ For more on multiyear procurements, including the use of AP funding for EOQ purchases, see CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by Ronald O'Rourke.

Under a CR, R&D funding is managed at the account level, giving service officials some flexibility in applying available R&D funding so as to protect high-priority R&D efforts, particularly those that might require more funding in the current fiscal year than they received in the previous fiscal year. Doing that, however, can reduce funding available under the CR for other R&D efforts, including those supporting ongoing procurement programs, such as Navy shipbuilding programs, which can lead to program-execution challenges for those programs.

Additional Potential Impacts of CRs Specific to Navy Shipbuilding Programs

Line-Item Funding Misalignments

Unlike all other DOD acquisition accounts, the Navy's shipbuilding account, known formally as the Shipbuilding and Conversion, Navy (SCN) appropriation account, is funded in the annual DOD appropriations act not just with a total appropriated amount for the entire account, but also with specific appropriated amounts at the line-item level. SCN line items in the DOD appropriations act are not just specific to individual shipbuilding programs—they also distinguish between procurement funding and advance procurement (AP) funding within those programs.

As a consequence, under a CR, SCN funding is managed not at the account level (like funding is under a CR for other DOD acquisition accounts), but at the line-item level. For the SCN account—uniquely among DOD acquisition accounts—this can lead to line-by-line funding misalignments (excesses and shortfalls) for individual shipbuilding programs, compared with the amounts those shipbuilding programs received in the prior year. The shortfalls in particular can lead to program-execution challenges in shipbuilding programs, particularly under an extended or full-year CR. This unique situation of line-by-line funding misalignments is an important distinction between the potential impacts of CRs on Navy shipbuilding programs and the potential impacts of CRs on other DOD acquisition activities.

Cost-to-Complete (CTC) Funding

Cost-to-complete (CTC) funding is funding in the SCN account that the Navy uses to cover cost growth on the construction of Navy ships that were funded in prior fiscal years. The Navy requests CTC funding in a line item in the SCN account called Completion of PY (Prior Year) Shipbuilding Programs. This line item separate from the line items in the SCN account that were used to originally fund the procurement of the ships in question. Funding in this line item is requested in specific amounts for individual ships that are under construction. CTC funding is typically appropriated by a specific Title VIII provision in the annual DOD appropriations act that specifies the amounts of CTC funding for shipbuilding programs at the line-item level.

The Navy states that, for purposes of operating under a CR, CTC work is considered to be a new start and is therefore typically prohibited under a CR,⁶⁰ a judgment that can be viewed as consistent with the above-described treatment of CTC funding in the SCN account and/or the annual DOD appropriations act.

The deeming of CTC work as a new start, and therefore prohibited under a CR, could lead to situations under a CR in which ships under construction remain in shipyards without undergoing work needed to complete their construction—something that could not only delay the completion of those ships, but might also increase their total construction costs, because a ship under

⁶⁰ Source: Navy FY2018 program briefing to CRS and CBO, September 20, 2017.

construction is charged, for each day that it is in its construction shipyard, some of the fixed overhead costs of that shipyard.

Avoiding or Mitigating Potential Impacts of CRs

Anomalies Can Avoid or Mitigate Potential Impacts

The potential impacts described above can be avoided or mitigated if the CR includes special provisions, called anomalies, for exempting individual programs or groups of programs from the general provisions of the CR, or if the CR includes expanded authorities for DOD for reprogramming and transferring funds.

DOD Has Adapted to Likelihood of CRs to Avoid or Mitigate Impacts

The potential impacts described above can also be mitigated if the agency (in this case, the Navy) anticipates that one or more CRs will likely be used to fund DOD for the first few months of the fiscal year, and consequently decides to structure acquisition programs to avoid, during those months, planned contract signings or other actions that would be prohibited by a CR. The military services have observed that in many cases in recent years, CRs have been used to fund DOD for the first few months of the fiscal year. As an apparent adaptation, DOD program managers are now structuring their programs to reduce the potential impacts of DOD being funded during the first few months of the fiscal year by CRs.

A September 2021 GAO report on practices that DOD has adopted for managing within the constraints of CRs states the following:

GAO found that the Department of Defense (DOD) and the military services' obligations and acquisitions are limited during a Continuing Resolution (CR), but they have some practices in place to minimize the effects. Specifically, GAO found that for selected appropriations' accounts for fiscal years 2017 through 2020, the military services tended to obligate, (i.e., make a legal commitment to pay for goods or services), a lower percentage of their total annual obligations in the first quarter of the fiscal year—when DOD is most likely to be operating under a CR—as compared with the other quarters....

Although DOD officials reported acquisitions were constrained by CR provisions that restrict starting new programs and production rate increases, the programs GAO reviewed were able to avoid delays or cost increases during the fiscal years with CRs. The military services have instituted some practices to minimize the effects of CRs, including initiating service contract start dates after the first quarter of the fiscal year and postponing nonessential purchases and training to later in the fiscal year.

DOD officials stated both that the repetition and incremental planning required during a CR is not an effective or efficient way to operate, but that preparing for and operating under CRs have become routine in nature. GAO identified three activities directly related to preparing for and operating under CRs—developing legislative anomaly proposals (i.e., requests for authority beyond the standard CR provisions), creating spending plans for various CR scenarios, and adjusting contracts to reflect CR funding availability.⁶¹

In an October 3, 2021, opinion piece about this GAO report, a GAO official states

Our first key point [in the report] is that there are clear effects of CRs on DOD. We collected and analyzed each military service's quarterly obligation data for fiscal years

⁶¹ Government Accountability Office, *Defense Budget[:] DOD Has Adopted Practices to Manage within the Constraints of Continuing Resolutions*, GAO-21-541, September 2021 (released September 13, 2021), summary page.

(FY) 2017 through 2020 for three appropriations accounts—Operation and Maintenance; Research, Development, Test and Evaluation (RDT&E); and Procurement (other)—to assess the percentage of annual funds each military service obligated during CRs and after the enactment of regular appropriations. We saw an unmistakable difference in spending patterns during those fiscal years with CRs and the one recent fiscal year without (fiscal year 2019)....

... we also determined that DOD has developed some practices to mitigate the effects of CRs. For instance, officials can request so-called anomalies to get permission from Congress to spend funds they would normally be restricted from spending during a CR. They can also initiate the start date for one-year service contracts to the second quarter of the fiscal year to avoid a break in service at the beginning of the next fiscal year.

[Other observers] suggest that because these practices are in place, we conclude that CRs are benign. On the contrary, our report provides a more complex discussion of these mitigation practices.

Take, for example, our discussion of major defense acquisition programs (MDAPs) and the constraints posed by the No New Starts provision typically contained in CRs. We analyzed each of the 254 Selected Acquisition Reports the military services submitted to Congress for fiscal years 2017 through 2019....

Of the 254 reports, we identified seven that explicitly cited CRs as posing risks, such as delays and cost increases. When we met with officials, however, we learned that the CRs did not have their predicted effects on these seven programs. We further listed the ways in which DOD managed to avoid the potential problems and cited officials' continued concerns.

For example, we reported that the Navy avoided a problem it faced with its Ship to Shore Connector, which was under production in FY19, but that did not have any planned production in FY20. This gap in production would have meant that any production in FY21 would constitute a "new start" and, therefore, be prohibited under a CR. In this case, Congress authorized the production of a single Ship to Shore Connector during FY20, preventing a production gap. Nonetheless, as we reported, officials also warned there were zero units planned for production in FY21, creating the same risk for FY22.

The key takeaway from our report, therefore, is not that CRs are inconsequential but, rather, that defense officials have found ways to prepare for and respond to the very real constraints they pose.⁶²

In connection with the use of a CR to fund the first part of FY2017, a September 29, 2016, press report stated the following:

The Navy has planned for and can mitigate the effects of [a CR], as long as Congress passes a proper Fiscal Year 2017 budget by Dec. 9, 2016.

The Navy planned for most of its major acquisition milestones to take place in the second quarter of the fiscal year rather than the first quarter, predicting that the year would likely start off with a continuing resolution, Navy spokeswoman Lt. Kara Yingling told USNI News. Under a continuing resolution, the previous year's funding levels carry over, meaning that new budget items are not funded and programs expecting a significant funding boost would continue to operate at the previous year's lower levels.

"The Navy has many new starts and program increases planned in FY '17. However, a CR through December 9th is manageable because more of the initial contracts are scheduled in

⁶² Elizabeth Field, "Defense Officials Find Ways to Operate within Continuing Resolutions—But That Doesn't Mean CRs Are Smooth Sailing," *The Hill*, October 3, 2021.

Quarter 2 [of the fiscal year] and the Navy can take mitigating action for the first three months of FY '17," Yingling said today....

Though program managers and Navy acquisition officials often note that stable and sufficient funding would help them better keep their programs on track, Yingling said the service would manage the impact of this six-week CR....

"Due to historical CRs, most FY '17 contracts are planned for Q2," Yingling said, and if the second quarter of the fiscal year is also governed by a CR then the Navy would look at potentially awarding smaller contracts to get programs started—a contracting burden that would cost more and potentially slow down programs' progress.⁶³

As another example, in connection with the use of a CR to fund the first part of FY2018, a September 11, 2017, press report stated the following:

Pentagon plans to ramp up production of about two-dozen major weapon systems in fiscal year 2018 would be largely unaffected by the stopgap spending bill President Trump and congressional leaders hope to enact, funding the federal government from Oct. 1 to Dec. 8.

Nearly all of the big-ticket programs that aim to increase procurement rates in FY-18 compared to FY-17—including deals for a new aircraft carrier, more armored vehicles, tank upgrades, precision munitions and aircraft—have set target dates to execute contract awards after that 10-week window, according to a review of Pentagon budget documents.⁶⁴

Similarly, an October 6, 2017, press report about the use of a CR to fund the first part of FY2018 stated the following: "The Navy tends to avoid planning contract actions in the first quarter of the fiscal year, since the last nine years have begun under a continuing resolution."⁶⁵

At a September 19, 2017, hearing before the Senate Armed Services Committee on recent Navy ship collisions, the following exchange occurred (emphasis added):

SENATOR JEANNE SHAHEEN (continuing):

... I wonder if you could talk in detail about the impact of continuing resolutions, budget cycle after budget cycle, and how they affect maintenance and training plans for ships. And are forward deployed ships affected more than ships stateside? Can you—is there any correlation there?

ADMIRAL JOHN M. RICHARDSON, CHIEF OF NAVAL OPERATIONS

Ma'am, as I said, we will prioritize our resources to those forces that are forward deployed and that will deploy forward. And so we will not leave those teams short of resources.

Having said that, **the uncertainty that they can—well actually—it's become actually certain. We're certain that we're not going to get a budget in the first quarter [of the fiscal year]. And so...**

(CROSSTALK)

SHAHEEN:

Which is a sad commentary on the budget situation.

RICHARDSON:

⁶³ Megan Eckstein, "Navy Can Weather 6-Week Continuing Resolution, But Extension Would Delay Columbia Submarine Class, Other Programs," *USNI News*, September 29, 2016.

⁶⁴ Jason Sherman, "DOD Procurement Plans Largely Safe Under Short-Term FY-18 CR," *Inside the Navy*, September 11, 2017.

⁶⁵ Megan Eckstein, "Top Navy Procurement Programs Facing Slow Start In FY 2018 Due to Continuing Resolution," *USNI News*, October 6, 2017.

... behaviors have adapted. And so we don't put anything in the important in the first quarter of the [fiscal] year, and we have to compete three out of four quarters of the game.

And, in addition to just that fact, the—what happens is you have to double your contracting, right? You have to write a tiny little contract for the length of the continuing resolution, and then you have to write another one for the rest of the year. **As you know, nothing new can start, and so we try not to schedule anything new in that first quarter.**

The maintenance and training—those are the hardest things. And so, as those—as the uncertainty, you know, injects itself, it is always—the things on the bubble [i.e., at risk of being affected] are maintenance periods, particularly surface ship maintenance periods.

It is, you know, “How many steaming hours am I going to get? How many flying hours am I going to get? \$150 million per month shortfall—how do I manage that?” These are the effects of the continuing resolutions.⁶⁶

A September 28, 2017, press report states the following:

The Navy has gotten creative in dealing with budget uncertainties and continuing resolutions, developing a new ship maintenance contract structure to keep 11 ship availabilities on track at the beginning of Fiscal Year 2018 that would otherwise face major delays due to the impending CR, the head of surface ship maintenance told USNI News.

Rear Adm. Jim Downey, commander of Navy Regional Maintenance Centers and deputy commander for surface warfare at Naval Sea Systems Command (NAVSEA) told USNI News today that up to a third of the ship maintenance workload can be put at risk when the fiscal year starts with a CR. This year, the Pentagon has already said 11 ship availabilities are at risk....

To avoid these delays, Downey said the Navy is now awarding contracts that are structured differently, to leverage the fact that maintenance work is typically funded with one-year money—use-it-or-lose-it money which must be spent in the year it is appropriated by lawmakers—whereas modernization efforts are typically paid for with three-year money. In essence, the planning and early work for a ship availability can get started as a ship modernization effort, with planning and early activities paid for with three-year money already in the Navy's accounts, and one-year maintenance work can be added in later, once the availability is already underway and Congress eventually gives the Navy its full-year appropriations.

“We’ve worked very hard on how we structure our funding to get the planning to keep all those ships in play, and to keep them in play to their schedule, expecting that the funding is going to come just in time,” Downey said.

“So we do the planning for them. ... And then we go ahead and structure that contract to deal with the continuing resolution. So the base work now may be more modernization-related because I have that money, and I’m going to lay the maintenance work in as an option. So I’m going to award you the contract; I may not be 100-percent funded but I am funded for this part. I’m going to award the contract to you—we’re currently referring to it as a split-CLIN approach—so that you’ve got the work and you know that the rest of the work is coming, you’re going to be able to bid against it, we’re going to exercise those options if we get the budget approved.”

Downey told USNI News that he can’t change how Congress appropriates money—the Department of Defense has begun every fiscal year since FY 2010 under a continuing resolution, during which time the Navy cannot fund new projects and cannot ramp up spending above the previous year’s levels – but he can best set up the Navy to succeed in

⁶⁶ Source: Transcript of hearing.

this kind of new normal. Though the Navy has already largely stopped planning acquisition contract actions during the first quarter of the year, ship maintenance, modernization and repair work must take place throughout the year to maintain even workloads at the yards and to address emergent issues, and therefore required a creative solution to get around the CRs.

“The first issue is, if you don’t have all the money, especially with single-year appropriations in maintenance, how do you do that? So we’re getting as legally creative as we can. So then you get a repair yard that says, okay, so I’m betting on this other work. Then you go to, historically, when have we not had a budget ultimately? It’s going to come through at some point,” he said.⁶⁷

Although structuring acquisition programs to avoid, during the first few months of a fiscal year, planned contract signings or other actions that would be prohibited by CRs can mitigate the potential impacts of CRs on the execution of DOD acquisition programs, it might also lead to a risk, from DOD’s perspective, of a creating a so-called “moral hazard”—that is, of taking an action that might be well-intentioned, but that, as a consequence of adapting to an undesired behavior by another party (in this case, Congress’s use of CRs to fund DOD at the start of fiscal years), might encourage more of that behavior from the other party in the future.

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⁶⁷ Megan Eckstein, “Navy Using ‘Legally Creative’ Contract Structure to Keep Ship Availabilities On track Despite Continuing Resolutions,” *USNI News*, September 28, 2017.