

U.S. Navy

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Navies exist to assure access to markets and influence events on land for political ends and to prevail in maritime combat when war occurs. To these ends, the U.S. Navy, Marine Corps, and Coast Guard (known collectively as the sea services) have enabled America to project power across the oceans, controlling activities on the seas whenever and wherever needed.

According to the Department of the Navy’s annual budget briefing for fiscal year (FY) 2024, the service’s three “enduring priorities” as articulated by the Secretary of the Navy are:

- “Strengthening Maritime Dominance in Order to Defend the Nation,”
- “Taking Care of People through Building a Culture of Warfighting Excellence,” and
- “Succeeding through Teamwork by Enhancing Strategic Partnerships.”¹

President Joseph Biden’s proposed \$202.5 billion Navy budget for FY 2024 represents a \$9.7 billion increase over the FY 2023 enacted budget—an increase of 5 percent.² While this increase is needed, it is not enough to deliver on the Secretary’s goals given persistent inflationary pressures and the rapidly modernizing and expanding Chinese threat.

The Navy remains under immense strain to maintain readiness for combat while also conducting the daily peacetime operations that are necessary to compete with the activities of China and Russia. In the year since publication of the *2023 Index of U.S. Military Strength*, there have been several significant developments that are important to the Navy. For example:

- In January 2023, the Navy shut down its dry docks at the west coast Puget Sound public shipyard and Bremerton naval base to assess vulnerability to earthquake damage.³ This affected the submarine *Connecticut*, which was awaiting repairs following a collision with an uncharted seamount on October 2, 2021, in the South China Sea, sustaining significant damage.⁴
- On January 10, 2023, the Navy discontinued tracking and reporting on COVID deaths and vaccinations. The final numbers as of February 10, 2023, are 17 uniformed member deaths due to COVID and 1,878 sailors separated for refusing the vaccine.⁵
- On March 13, 2023, after an 18-month review, President Biden was joined in San Diego by prime ministers from the United Kingdom (U.K.) and Australia to announce the way ahead for the Australia–U.K.–U.S. (AUKUS) partnership to develop an Australian nuclear submarine program.⁶ This plan includes a rotational presence of U.S. nuclear submarines to be based out of Australia in this decade, ostensibly to train Australian sailors and maintainers in naval nuclear routines as well as to improve forward naval presence.
- On April 4, 2023, the Secretary of the Navy announced that the Fourth Fleet will establish an unmanned task force modeled on the successful Fifth Fleet Task Force 59.⁷

Strategic Framework. In December 2020, to address today’s maritime competition more

effectively, the sea services released a naval strategy titled *Advantage at Sea*.⁸ It has not yet been fully executed, but there has been some progress regarding forward presence operations that challenge Chinese maritime coercion.⁹ To this end, the Navy apparently continues to adjust its deployment patterns to meet new demands caused by the war in Ukraine and increasing tensions in Asia: two carrier strike groups in the Western Pacific (with the exception of four months when only one was present) and a single carrier strike group in the Mediterranean since June 2022. This marks a slight reduction in carrier presence in the Western Pacific from December 2021.¹⁰

As the U.S. military's primary maritime arm, the Navy is charged with providing the enduring forward global presence that this strategy requires while retaining war-winning forces. The Navy therefore continues to focus its investments on several functional areas: power projection, control of the seas, maritime security, strategic deterrence, and domain access. This approach is informed by several key documents:

- The October 2022 *National Security Strategic Guidance*;¹¹
- The December 2020 *Advantage at Sea* naval strategy;
- The 2022 *National Defense Strategy* (NDS) (only an unclassified fact sheet has been released to the public);¹² and
- The Global Force Management Allocation Plan (GFMAP).¹³

U.S. official strategic guidance requires the Navy to act beyond the demands of conventional warfighting. China and Russia use their fleets to establish a physical presence in regions that are important to their economic and security interests in order to influence the policies of other countries. To counter their influence, the U.S. Navy similarly sails ships in these waters to reassure allies of U.S. commitments and signal to competitors that they do not have a free hand to impose their will. This means that the Navy must balance two key missions: ensuring that it has a fleet that is ready for war while also using that fleet for peacetime “presence”

operations. Both missions require crews and ships that are materially ready for action and a fleet that is large enough to maintain presence and marshal enough combat power to win in battle.

On July 26, 2022, the Chief of Naval Operations (CNO) released a new Navigation Plan 2022 (NAVPLAN 2022) to provide guidance for the Navy's contribution to the execution of the National Defense Strategy. In this latest edition, the CNO continues his emphasis on forward presence in the United States' daily competition with rivals like China and prioritizes investments in key capabilities like defense against anti-ship missiles and other forms of attack, logistical support capabilities that remain viable in combat, and the ability to share information even when the enemy is targeting the Navy's ability to do so. NAVPLAN 2022 also emphasizes weapons with increased range, new deception capabilities, and improved abilities to make time-critical decisions.¹⁴

All of this reflects a continuation of demands stemming from the Distributed Maritime Operations concept that has been deemed critical to defeating Chinese anti-access/area denial (A2/AD) capabilities. However, NAVPLAN 2022 lacks a clear timeline either for delivering these capabilities or for ensuring that the fleet is able to employ them in what the CNO acknowledges is a dangerous decade. NAVPLAN 2022 also has added to the several fleet-sizing plans offered by the Navy in recent years, calling for a fleet of 350 manned and 150 unmanned warships along with 3,000 naval aircraft—but without clearly explaining how it will achieve results in a way that the other plans could not.

Lacking a clear operational focus and resourcing strategy, NAVPLAN 2022 has not galvanized political support and has failed to deliver marked improvement either in fleet capabilities or in capacities to deter an increasingly aggressive China. In fact, the most recent long-range shipbuilding plan provides Congress only with a way ahead for a smaller naval force by the end of the decade.¹⁵ Such a disconnect between strategy, plans, and resourcing persists with the latest Battle Force Ship Assessment and Requirement, which indicates that the Navy is short 80 warships (rather than 50) to execute the National Defense Strategy.¹⁶

This *Index* focuses on the following elements as the primary criteria by which to measure U.S. naval strength:

- Sufficient **capacity** to defeat enemies in major combat operations and provide a credible peacetime forward presence to maintain freedom of shipping lanes and deter aggression,
- Sufficient technical **capability** to ensure that the Navy is able to defeat potential adversaries, and
- Sufficient **readiness** to ensure that the fleet can “fight tonight” given proper material maintenance, personnel training, and physical well-being.

Capacity

Force Structure. The Navy is unique relative to the other services in that its capacity requirements must meet two separate objectives:

1. During peacetime, the Navy must maintain a global presence in distant regions both to deter potential aggressors and to assure allies and security partners.
2. The Navy must be able to win wars. To this end, the Navy measures capacity by the size of its battle force, which is composed of ships it considers directly connected to combat missions.¹⁷

This *Index* continues the benchmark set in the *2019 Index*: 400 ships to ensure the capability to fight two major regional contingencies (MRCs) simultaneously or nearly simultaneously, as well as a 20 percent strategic reserve, and historical levels of 100 ships that are forward deployed in peacetime.¹⁸ This 400-ship fleet is centered on providing:

- 13 Carrier Strike Groups (CSGs);
- 13 carrier air wings with a minimum of 624 strike fighter aircraft;¹⁹ and
- 15 Expeditionary Strike Groups (ESGs).²⁰

Unmanned platforms are not included because they have not matured as a practical asset. They hold great potential and will likely be a significant capability, but until they are developed and fielded in larger numbers, their impact on the Navy’s warfighting potential remains speculative. The

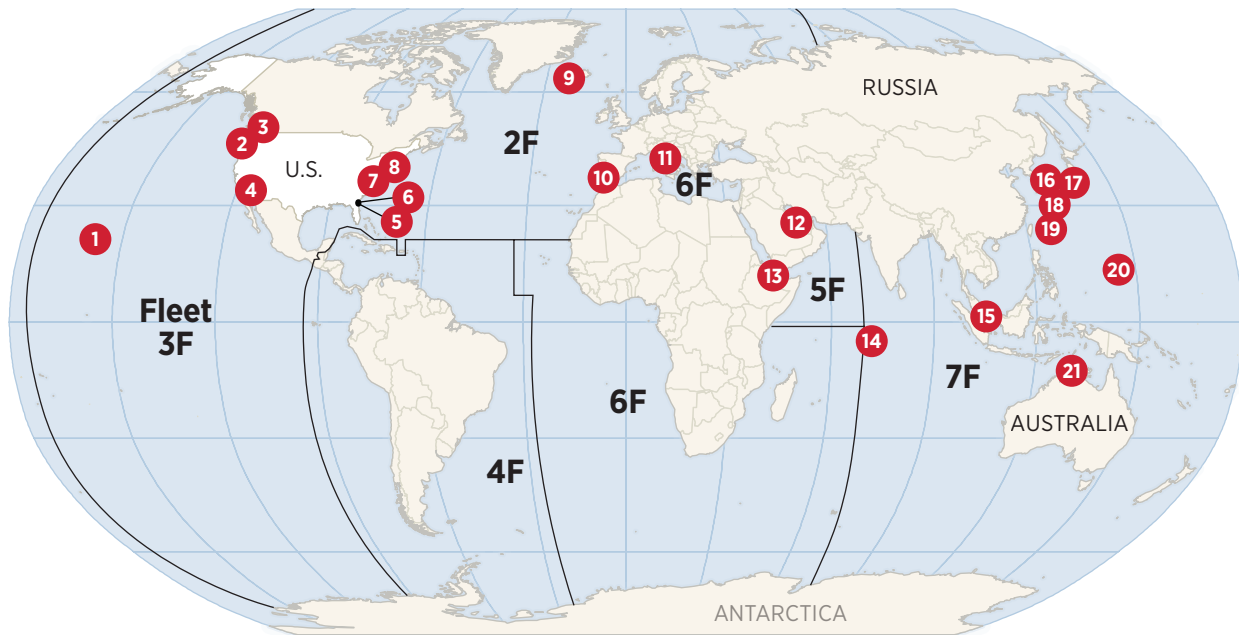
same holds true across the fleet when it comes to new classes of ships. The Navy is investing in research, modeling, war gaming, and intellectual exercises to improve its understanding of the potential utility of new ship and fleet designs, but until new ships are added to the fleet, it is hard to know how they will affect the Navy’s ability to perform its missions. Consequently, this *Index* measures what is known and can be known in naval affairs, assessing the current Navy’s size, modernity, and readiness to perform its most important missions today.

Relative to the above metric, the Navy’s fleet of 297 warships as of August 31, 2023—one ship *less* than a year ago—is inadequate and places greater strain on the ability of ships and crews to meet existing operational requirements. To alleviate the operational stress on an undersized fleet, the Navy has attempted since 2016 to build a larger fleet. However, for myriad reasons, it has been unable to achieve sustained growth and in fact has underdelivered by approximately 10 ships each year since 2016.²¹ In the past, the Navy has had some success in meeting operational requirements with fewer ships by posturing ships forward as it has done in Rota, Spain; on Guam; and potentially as part of AUKUS in Australia.

At a February 2022 naval conference, the Chief of Naval Operations stated, “I’ve concluded—consistent with the analysis—that we need a naval force of over 500 ships.”²² He went on to specify that this fleet would include 12 carriers, 19 to 20 large amphibious warships, more than 30 smaller amphibious ships, 60 destroyers, 50 frigates, 70 attack submarines, and a dozen ballistic missile submarines, all backed by 100 support ships and 150 unmanned vessels. Based on the CNO’s military advice and Heritage Foundation analysis, today’s fleet remains too small to meet today’s threats with maximum effectiveness.

Posture/Presence. Although the Navy remains committed to sustaining forward presence, it has struggled to meet the requests of regional Combatant Commanders. The result has been longer and more frequent deployments to meet a historical steady-state forward presence of 100 warships.²³ In 1985, at the height of the Cold War, the percentage of the 571-ship fleet deployed was less than 15 percent, and throughout the 1990s, deployments seldom exceeded the six-month norm: Only 4 percent to 7 percent of the fleet exceeded six-month deployments on an annual basis.²⁴

Key U.S. Naval Installations



- 1** Joint Base Pearl Harbor-Hickham, HI
U.S. Pacific Fleet headquarters
- 2** Naval Base Kitsap
- 3** Naval Station Everett, WA
- 4** Naval Base San Diego and Naval Base Coronado, CA
U.S. Third Fleet headquarters
- 5** Naval Station Mayport, FL
U.S. Fourth Fleet headquarters
- 6** Naval Submarine Base King’s Bay, GA
- 7** Naval Base Norfolk and Joint Expeditionary Base Little Creek, VA
U.S. Fleet Forces Command and U.S. Second Fleet headquarters
- 8** Naval Submarine Base New London, CT
- 9** Keflavik, Iceland—Expeditionary Maritime Operations Center
- 10** Naval Station Rota, Spain
- 11** Naval Support Activity Gaeta, Italy
U.S. Sixth Fleet headquarters
- 12** Naval Support Activity, Bahrain
U.S. Fifth Fleet headquarters
- 13** Lemonnier, Djibouti—Camp Lemonnier
- 14** Diego Garcia—Navy Support Facility Diego Garcia
- 15** Singapore—Commander Logistics Group Western Pacific
- 16** Buson, South Korea—Fleet Activities Chinhae Navy Base
- 17** U.S. Fleet Activity Yokosuka, Japan
U.S. Seventh Fleet headquarters
- 18** U.S. Fleet Activity Sasebo, Japan
- 19** Okinawa, Japan—Naval Base White Beach
- 20** Naval Base Guam—Navy Expeditionary Force Command Pacific headquarters
- 21** Darwin, Australia—Marine Rotational Force Darwin

NOTE: Fleet boundaries are approximate.

SOURCE: Heritage Foundation research.

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Using the Navy’s aircraft carrier fleet—the most taxed platform—as a sample set, for 20 years, approximately 25 percent of the aircraft carrier fleet has been deployed. Following the 2017 deadly collisions involving USS *McCain* and USS *Fitzgerald*, the overall fleet deployment percentage dropped temporarily to less than 20 percent, but it surged again to almost 30 percent in 2020.²⁵ High operational tempo (OPTEMPO) remains an issue as the Navy works to secure U.S. interests against increasing Chinese distant naval deployments and provocations, North Korea’s ballistic missile submarine, Iranian attacks on and interdiction of commercial shipping in the Persian Gulf, and an active Russian Navy.

The numbers as of August 31, 2023, are typical for a total battle force of 297 deployable ships with 74 warships at sea: 41 deployed and underway and 33 underway on local operations for an OPTEMPO of 24.9 percent, well above Cold War levels.²⁶ Given Combatant Commanders’ requirements for naval presence, there is impetus to have as many ships forward deployed as possible by:

- **Homeporting.** The ships, crew, and their families are stationed at the port or based abroad (for example, a CSG in Yokosuka, Japan).
- **Forward Stationing.** Only the ships are based abroad, and crews are rotated out to the ship.²⁷ This deployment model is currently used for Littoral Combat Ships (LCS) and *Ohio*-class guided missile submarines (SSGNs) manned with rotating blue and gold crews, effectively doubling the normal forward deployment time (for example, LCS in Singapore).

These options allow one forward-based ship to provide a greater level of presence than four ships based in the continental United States (CONUS) can provide by offsetting the time needed to transit ships to and familiarize their crews with distant theaters.²⁸ This is captured in the Navy’s GFM planning assumptions: a forward-deployed presence rate of 19 percent for a CONUS-based ship compared to a 67 percent presence rate for an overseas-homeported ship.²⁹ To date, the Navy’s use of homeporting and forward stationing has not mitigated the effect of the reduction in overall fleet size on forward presence.

Shipbuilding Capacity. To meet stated fleet-size goals, the Navy must build faster and maintain more ships, exceeding its current capacity. However, significant shortfalls in shipyards, both government and commercial, make it hard to accomplish either task, and underfunded defense budgets make it even more difficult. Given the limited ability to build ships, the Navy will struggle to meet the congressionally mandated 355-ship goal,³⁰ to say nothing of the 400-ship goal advocated in this *Index*.

Since FY 2020 the Navy’s procurement of warships has averaged 12 per year, but only after Congress has added funding above the President’s proposed budget to support an average of three additional warships each year. Moreover, subsequent procurement has not kept pace with the threat from China and does not appear to meet congressional mandates. For example, Congress has mandated that the Navy should achieve a fleet of 12 aircraft carriers,³¹ but the number is shrinking to nine (possibly to be augmented by a light carrier that has yet to be defined).³²

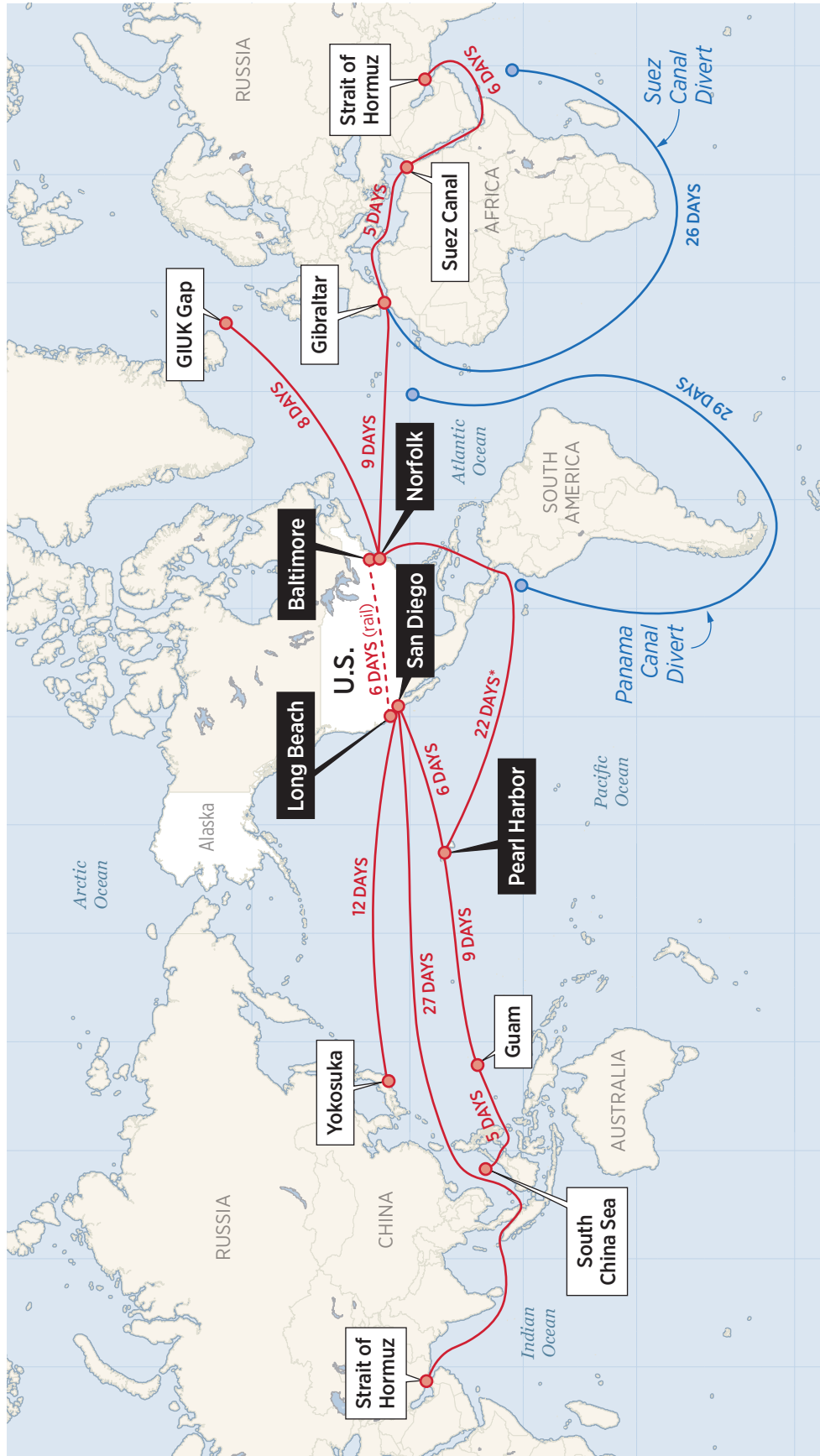
However, it was the Navy’s failure to propose a long-range build plan that met congressional mandates for 31 amphibious warships that boiled over in 2023.³³ World events demonstrated the danger of having inadequate amphibious forces in April 2023 when Americans were stranded amid flaring factional war in Sudan. Marine Corps Commandant General David Berger made clear before the House Armed Services Committee that the lack of “a sea based option” contributed directly to complicating the evacuation of citizens out of harm’s way. Sea-based options are “how we reinforce embassies. That’s how we evacuate them. That’s how we deter.”³⁴

Despite such consequences, the current long-range shipbuilding plan does not provide a plan to reverse downward trends in the fleet. Instead, in accordance with the President’s planned procurement over the next five years, the battle force inventory will drop to 280 manned ships by FY 2027.³⁵

Meanwhile, diminished demand for ships has led shipbuilders to divest workforce and delay capital investments. From 2005 to 2020, the Navy’s procurement of new warships increased the size of the fleet from 291 to 296 warships; at the same time, China’s navy grew from 216 to 360 warships.³⁶ If the Navy is to build a larger fleet, more shipbuilders will have to be hired and trained—a lengthy process that precedes any expansion of the fleet. Recent

Steaming Times to Areas of Vital U.S. National Interest

Steam times are approximate based on an average speed of 15 knots.



* Assumes no delay in passage through the Panama Canal.
SOURCE: Heritage Foundation research.

labor statistics comparing 2017 to 2021 show modest progress with total shipbuilding labor involved in production, like welders and pipefitters, adding 3,134 workers.³⁷ On the other hand, according to the most recent labor statistics, wages in the nation's shipbuilding sector have not kept pace with inflation, growing at 0.4 percent, and the sector has shed 2.6 percent of its already small cadre of professional naval architects and engineers.³⁸

Of particular concern is the need to increase the production of nuclear-powered warships, most notably nuclear-powered submarines that would be vital in any conflict with China. Limited nuclear shipbuilding capacity³⁹ may constrain the Navy's plans to increase the build rate from two attack submarines per year to three while concurrently building one ballistic missile submarine.⁴⁰ To support a larger nuclear-powered fleet, the relevant public shipyards increased their workforce by 16 percent from 2013 to 2020,⁴¹ but recent developments indicate that required workforce growth has not continued. The *Virginia*-class attack submarine program is 25 percent below staffing needs with delays of up to two years in delivery of the latest Block V variant, which will deploy large numbers of cruise missiles and potentially hypersonic strike weapons.⁴² As demand for nuclear-powered warships increases, to include added demand to support AUKUS, to pace the threat from China and Russia into the foreseeable future, the public shipyards must be able to sustain the recruitment of skilled labor in the numbers needed.

It remains true, according to the Chief of Naval Operations, that current funding will not build or maintain the larger fleet that both the Navy and this *Index* say is needed and that Congress has mandated. Nothing has changed to alter CNO Admiral Michael Gilday's 2021 assessment that current budgets can only "sustain a Navy of about 300 to 305 ships."⁴³ In addition, the Government Accountability Office (GAO) has noted that a brittle defense industrial base continues to drive up costs and create delays.⁴⁴

Manpower. In 2018, the Navy assessed that its manpower would need to grow by approximately 35,000 to achieve an end strength of 360,395 sailors to support a 355-ship Navy.⁴⁵ For comparison, the last time the Navy had a similar number of ships was in 1997, when it had 359 ships and a total of 398,847 personnel.⁴⁶ As of May 19, 2023, the Navy consisted of 335,187 officers and sailors,⁴⁷ down 9,640 from

the 344,824 reported as of June 2022,⁴⁸ leading to a growing deficit of 25,208 below what is needed to meet its 2034 fleet goal.

Regrettably, trends for the Navy's personnel budget and for its recruiting and retention efforts are pointing in the wrong direction. Despite the need for more sailors and officers, total end strength has fallen from 344,441 in FY 2022 to an estimated 341,736 in FY 2023 and is trending toward 342,700 in FY 2028.⁴⁹ If approved, the most recent budget request would bend this downward curve by raising FY 2024 manning to 347,000,⁵⁰ but this is not necessarily a cure for the Navy's recruiting woes. Authorized manning numbers should reflect the fleet needed rather than what can be recruited today, and it remains to be seen whether retention rates can be sustained to meet long-range manning needs. According to data provided by the Navy's Personnel Command, while officer retention has remained relatively flat in recent years, enlisted retention has declined consistently between FY 2018 and FY 2022.

Failing to meet retention goals while at the same time falling short of recruitment goals will place greater demand on a smaller active-duty end strength, and the consequences will be seen in the operational capabilities of the Navy's fleet. The GAO has reported persistent crew manning shortfalls. A GAO report published in May 2021 showed some ships with crew shortfalls as high as 15 percent, which compounded crew fatigue as smaller crews had to make up the workload. This was a contributing factor in fatal collisions in 2017.⁵¹

Finally, the effort to attract people to join the Navy is made more difficult by wages that are not keeping up with inflated costs of living. In the battle for people, pay raises in recent years have consistently lagged behind inflation, the latest proposed 5.2 percent raise being the first in several years to be slightly ahead of inflation, which stood at 4.9 percent between April 2022 and April 2023.⁵²

Capability

A complete measure of naval capabilities requires an assessment of U.S. platforms against enemy weapons in plausible scenarios. The Navy routinely conducts war games, exercises, and simulations to assess this, but insight into its assessments is limited by their classified nature. This *Index* therefore assesses capability based on

TABLE 10

Navy Fleet Design

Platform Class	Navy Plan, March 2023	BY 2027			BY 2045
		Recom- mendation	Navy Plan, Dec. 2020	Navy Plan, March 2023	Range per Future Naval Force Study, 2020
Unmanned (LUSV, MUSV, XLUUV)	0*	36	21**	0**	143 to 242
Aircraft Carriers (CVN, CVNE, CVS)	11	12	10	10	8 to 17
Large Surface Combatant	85	110	97	85	73 to 88
Small Surface Combatant	33	37	34	23	60 to 67
Logistics and Support Vessels	67	90	82	76	96 to 117
Submarines (SSBN, SSGN, SSN)	68	77	67	63	84 to 90
Amphibious Warships	29	41	32	28	61 to 67
Total Without Unmanned	293	367	322	285	382 to 446
Total	293	403	343	285	525 to 688

* As of June 2023, the U.S. Navy had only prototypes in operation for XLUUV, LUSV, and MUSV.

** 21 unmanned vessels were planned for procurement by fiscal year 2026; the long-range plan included no procurement data for unmanned platforms in 2022.

Sources:

- **Recommendation:** Appendix Table 1, “Naval Shipbuilding Proposal,” in Brent D. Sadler, “Rebuilding America’s Military: The United States Navy,” Heritage Foundation Special Report No. 242, February 18, 2021, p. 83, <http://report.heritage.org/sr242>.
- **Navy plan, December 2020, and Future Naval Force Study:** U.S. Navy, Office of the Chief of Naval Operations, Deputy Chief of Naval Operations (Warfighting Requirements and Capabilities–OPNAV N9), *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels*, December 9, 2020, https://media.defense.gov/2020/Dec/10/2002549918/-1/-1/1/SHIPBUILDING%20PLAN%20DEC%2020_NAVY_OSD_OMB_FINAL.PDF (accessed September 9, 2023); David B. Larter and Aaron Mehta, “The Pentagon Is Eyeing a 500-Ship Navy, Documents Reveal,” *Defense News*, September 24, 2020, <https://www.defensenews.com/naval/2020/09/24/the-pentagon-is-eyeing-a-500-ship-navy-documents-reveal/> (accessed September 9, 2023); and Ronald O’Rourke, “Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress,” Congressional Research Service *Report for Members and Committees of Congress* No. RL32665, September 17, 2020, pp. 10 and 11, https://www.everycrsreport.com/files/2020-09-17_RL32665_c609d44928ddf6f859c2d347ac90c2ab90a813ed.pdf (accessed September 9, 2023).
- **Navy plan, March 2023:** U.S. Navy, Office of the Chief of Naval Operations, Deputy Chief of Naval Operations for Warfighting Requirements and Capabilities–OPNAV N9, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2024*, March 2023, https://www.govexec.com/media/navy_2024_shipbuilding_plan.pdf (accessed September 9, 2023).

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remaining hull life, mission effectiveness, payloads, and the feasibility of maintaining the platform’s technological edge.

Most of the Navy’s fleet consists of older platforms: Of the Navy’s 20 classes of ships, only eight are in production. However, because Congress added almost \$15 billion to the FY 2023 budget, the proposed \$255.8 billion Department of the Navy budget for FY 2024 represents a real dollar increase of \$11.0 billion, which is a relative increase of 4.5 percent from the previous year, and procurement is set

to increase by two points to 6 percent of the Navy’s budget.⁵³ The following are highlights by platform.

Ballistic Missile Submarines (SSBN). The *Columbia*-class submarine will relieve the aging *Ohio*-class SSBN fleet. Because of the implications of this change for the nation’s strategic nuclear deterrence, the *Columbia*-class SSBN remains the Navy’s top acquisition priority. To ensure the continuity of this leg of the U.S. nuclear triad, the first *Columbia*-class SSBN must be delivered on time for its first deterrent patrol in 2031.⁵⁴ In November

2020, the Navy signed a \$9.47 billion contract with General Dynamics Electric Boat for the first-in-class boat and advanced procurement for long-lead-time components of the second hull.⁵⁵ The lead ship's keel-laying ceremony occurred on June 4, 2022.⁵⁶

However, concerns persist in Congress that the Department of Defense (DOD) may not be fully utilizing special authorities granted to the Navy to ensure that this critical program is adequately resourced. Specifically, in 2014, Congress established the National Sea-Based Deterrence Fund (NSBDF), which has saved more than \$1.4 billion using flexible funding, but it “has yet to utilize the core function of the NSBDF—namely, to provide increased flexibility to repurpose funds into it to buy down the fiscal impact of the program on our other shipbuilding priorities.”⁵⁷

Nuclear Attack Submarines (SSN). SSNs are multi-mission platforms whose stealth enables clandestine intelligence collection; surveillance; anti-submarine warfare (ASW); anti-surface warfare (ASuW); insertion and extraction of special operations forces; land attack strikes; and offensive mine warfare. The newest SSN class, the Block V *Virginia* with the Virginia Payload Module (VPM) enhancement, is important to the Navy's overall strike capacity, enabling the employment of an additional 28 Tomahawk cruise missiles over earlier SSN variants.⁵⁸ Construction of Block V submarines began in September 2019 with the *Oklahoma* (SSN 802) to be delivered in May 2027 and three more boats to be delivered before the end of the decade.⁵⁹ As noted previously, a limited shipyard workforce is causing this program to be delayed by as many as two years.

The FY 2021 National Defense Authorization Act included additional funds for advanced procurement that preserves a future option to buy as many as 10 *Virginia*-class submarines through the end of the decade. The FY 2024 budget supports this with a sustained build rate of two *Virginia*-class submarines a year through FY 2028. As indicated previously, increasing *Virginia*-class production for AUKUS has raised concerns regarding strain on the industrial base, and the FY 2023 budget put \$1.6 billion toward expansion of the submarine industrial base “to support the Navy plan of serial production of 1 COLUMBIA plus 2 VIRGINIAS starting in FY25/26.”⁶⁰ Marks to the FY 2024 proposed defense

budget point to continued congressional support for increased naval shipbuilding capacity.⁶¹

The effectiveness of such efforts, however, must be measured not by intent, but by results: delivery of warships on time. At the same time, supply-chain quality control is a key factor in submarine construction, and if it is not done well, the consequences can be catastrophic. That is why the premature replacement of critical submarine parts in 2021—parts that are intended to last the life of the boat—remains a concern.⁶² Added vigilance will be required as the Navy finds new suppliers to meet future increased submarine production as well as the potential need to provide support to AUKUS.

Aircraft Carriers (CVN). The Navy has 11 nuclear-powered aircraft carriers: 10 *Nimitz*-class and one *Ford*-class. The Navy has been making progress in overcoming nagging issues with several advanced systems, notably advanced weapons elevators, and the *Ford*'s first operational deployment in the fall of 2022 to the North Atlantic.⁶³ Further bolstering confidence in this new class, the *Ford* deployed to the Mediterranean in May 2023 to sustain a persistent carrier presence there following Russia's February 2022 invasion of Ukraine.⁶⁴ The second ship in the class, *USS John F. Kennedy* (CVN 79), was christened on December 7, 2019, but its scheduled delivery to the Indo-Pacific theater has slipped from 2022 to 2025 to support late modifications for fifth-generation fighters like the F-35.⁶⁵ The *Kennedy* is to be followed by the *Enterprise* (CVN 80), which is in early construction with delivery planned for 2028.

The U.S. lead in this category of naval power may be waning as China completes construction of its first super carrier. As the U.S. Navy struggles to build, maintain, and crew a fleet of 11 aircraft carriers, China is rapidly catching up both in numbers and in platform capability. Its newest carrier, the Type-003, like the *Ford*-class, will utilize electromagnetic catapults that give its air wing greater range and sortie rates, thus greatly narrowing the capability gap.⁶⁶ The Type-003 is China's second indigenously built carrier, marking a significant engineering milestone. There had been renewed emphasis on having the ship delivered before the October 2022 Chinese Communist Party (CCP) Congress,⁶⁷ and after a sprint by the shipyard, the new 80,000-ton Type-003 aircraft carrier was launched in June 2022.⁶⁸ China's growing naval aviation and aircraft

carrier capabilities place added stress on U.S. naval aviation and air defenses.

Large Surface Combatants. The Navy's large surface combatants consist of the *Ticonderoga*-class cruiser, the *Zumwalt*-class destroyer, and the *Arleigh Burke*-class destroyer. The President's FY 2024 budget would decommission five of the 13 aged *Ticonderoga*-class cruisers in the Navy's FY 2023 inventory.⁶⁹ Should Congress succeed in retaining two of these cruisers, decommissioning of the remaining three would still represent a significant decrement of the Navy's sea-launched firepower with the loss of a total of 366 vertical launch tubes. Attempts to repurpose or extend the life of the aging *Ticonderoga*-class cruisers have yielded mixed results, as deferred upgrades and past incomplete maintenance are driving up operating costs.⁷⁰

In FY 2022, the Navy procured two *Arleigh Burke*-class DDG 51 destroyers, bringing the total on active duty in the fleet to 70, and 14 more have been ordered. Since the Navy declined to pursue a new cruiser in 2008, it has relied on a final iteration of the *Arleigh Burke* class, Flight III, to provide air and missile defense for aircraft carrier strike groups.⁷¹ This will remain a stopgap measure until a more capable new destroyer, DDG(X), joins the fleet, probably in the next decade. The Navy's other modern destroyer, the *Zumwalt* class, was never intended as a cruiser replacement and looks to fill a limited long-range strike role.

The *Zumwalt* class was envisioned as bringing advanced capabilities to the fleet, but the program has suffered technological problems and cost overruns, and the Navy has not indicated that it intends to acquire more than the three that have already been purchased and are being built out: the USS *Zumwalt* (DDG-1000), which was delivered on April 24, 2020; USS *Michael Monsoor* (DDG-1001), which was commissioned on January 26, 2019; and USS *Lyndon B. Johnson* (DDG-1002), which is completing checks before delivery to the Navy in 2024.⁷² The *Zumwalt* is currently based in San Diego, but its initial operational capability (IOC) has been delayed by a year, overlapping with plans to install the Navy's new hypersonic weapons system, conventional prompt strike (CPS), beginning in October 2023 with the remaining two ships to receive the system in due course.⁷³ Reports in September 2022 indicated that the *Zumwalt* had conducted its first

deployment, albeit truncated, to Seventh Fleet's Western Pacific area of operations.⁷⁴

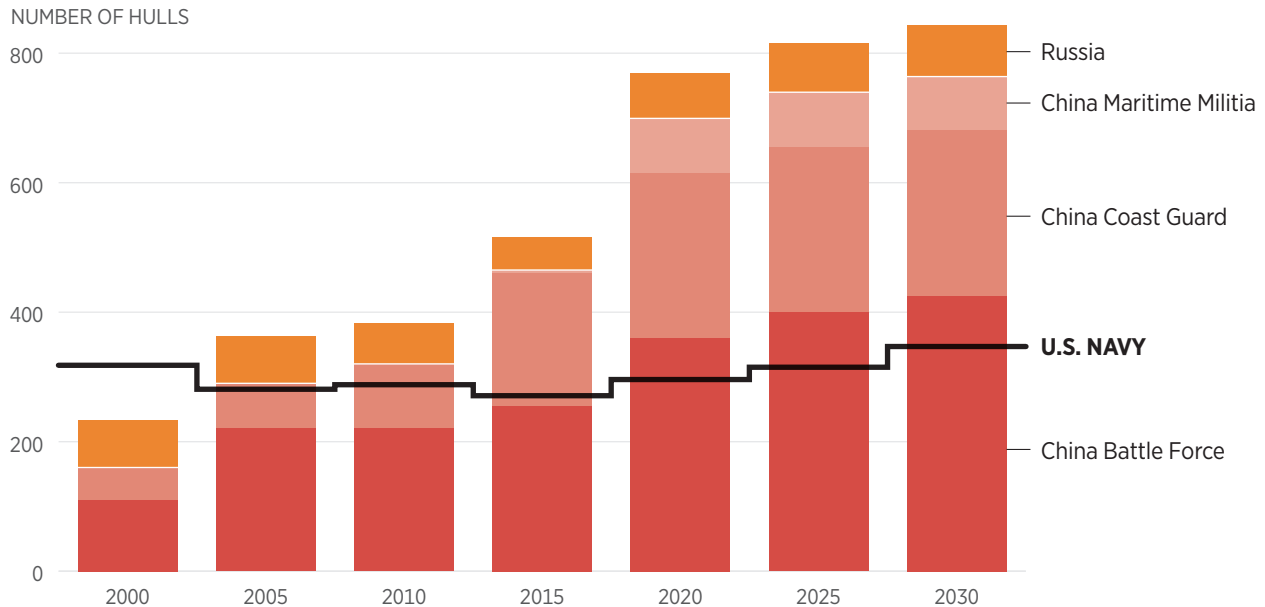
To reach 355 ships by 2034, the Navy plans several class-wide service life extensions, notably the extension of the DDG-51-class's service life from 35 to 40 years and modernization of older hulls. The FY 2020 budget included \$4 billion for modernization of 19 destroyers from FY 2021 through FY 2024.⁷⁵ The previously noted planned decommissioning of five cruisers in FY 2023 makes this more critical.

Small Surface Combatants. The Navy's small surface combatants consist principally of the *Avenger*-class mine countermeasures (MCM) ship; the Littoral Combat Ship (LCS); and the *Constellation*-class frigate (FFG), which began production in 2021. In January 2021, the Navy halted production of the mono-hull LCS *Freedom*-variant until issues involving the design of its propulsion system are resolved. After that decision was made, in April 2023, the final *Freedom* variant was launched.⁷⁶ In the meantime, the top speed of affected ships (currently 40-plus knots) is reportedly limited to 34 knots.⁷⁷ Under the Navy's FY 2020 30-year shipbuilding plan, the fleet of 23 LCSs was expected to grow to 34 and be joined by 18 frigates by FY 2034.⁷⁸ Since then, the Navy has reversed course and terminated the LCS anti-submarine mission module program (10 units originally planned) and plans to decommission the remaining nine *Freedom* monohull variants.⁷⁹

On August 20, 2020, the Navy decommissioned three of its aging *Avenger*-class MCM ships, leaving eight in service overseas in Sasebo, Japan, and Manama, Bahrain. These represent the only ship class dedicated to countering the mine threat.⁸⁰ The current long-range shipbuilding plan confirms that the Navy intends to operate these aged MCMs through FY 2027.⁸¹

As these ships reach the end of their service life, the Navy is relying on the development of LCS mine countermeasure mission packages to provide this capability. At an April 2022 webinar, the CNO indicated that these mission modules were on track to reach IOC by the end of 2022.⁸² Since then, the Navy has canceled its ASW mission modules because of insurmountable engineering challenges, and on May 1, 2023, it announced that the MCM modules had achieved initial operational capability.⁸³ In an unanticipated move, the Navy began to

U.S. vs. China and Russia Navies: Fleet Expansion Trends



NOTE: U.S. figures are actual through 2020. Figures for 2025 and 2030 are from the Navy's December 2020 30-year shipbuilding plan. See U.S. Navy, Office of the Chief of Naval Operations, Deputy Chief of Naval Operations (Warfighting Requirements and Capabilities–OPNAV N9), *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels*, December 9, 2020, https://media.defense.gov/2020/Dec/10/2002549918/-1/-1/1/SHIPBUILDING%20PLAN%20DEC%2020_NAVY_OSD_OMB_FINAL.PDF (accessed September 9, 2023).

SOURCES:

- Figure 1, "Growth of China's Maritime Forces Since 2000," in U.S. Department of the Navy, U.S. Marine Corps, and U.S. Coast Guard, *Advantage at Sea: Prevailing with Integrated All-Domain Naval Power*, December 2020, p. 4, <https://media.defense.gov/2020/Dec/16/2002553074/-1/-1/0/TRISERVICESTRATEGY.PDF> (accessed September 9, 2023).
- Table 2, "Numbers of Chinese and U.S. Navy Battle Force Ships, 2000–2030," in Ronald O'Rourke, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress," Congressional Research Service *Report for Members and Committees of Congress* No. RL33153, updated January 27, 2021, p. 32, <https://crsreports.congress.gov/product/pdf/RL/RL33153/248> (accessed September 9, 2023).
- U.S. Navy, Office of Naval Intelligence, *The Russian Navy: A Historic Transition*, December 2015, <https://nuke.fas.org/guide/russia/historic.pdf> (accessed September 9, 2023).
- Michael A. McDevitt, Rear Admiral, U.S. Navy (Ret.), prepared statement in hearing, *Department of Defense's Role in Competing with China*, Committee on Armed Services, U.S. House of Representatives, 116th Cong. 2nd Sess., January 15, 2020, pp. 76–88, <https://www.govinfo.gov/content/pkg/CHRG-116hrg40508/pdf/CHRG-116hrg40508.pdf> (accessed September 9, 2023).

arm LCS with the naval strike missile, giving these ships a long-range anti-ship capability that they had lacked despite notable operations by the class in the South China Sea.⁸⁴ On December 9, 2021, the San Diego-based *Independence*-variant *Oakland* received this new capability.⁸⁵ Installation and procurement of surface warfare modules and associated surface-to-surface missile modules (LCS SSMM) is progressing; the procurement of 18 LCS

SSMM planned for FY 2024 includes offensive and defense systems and associated munitions.⁸⁶

Instead of requesting additional LCS, the Navy has focused on a new frigate. On April 30, 2020, the Navy awarded Fincantieri a \$795 million contract to build the lead ship of the new *Constellation*-class frigate at its Marinette Marine shipyard in Wisconsin based on a proven design currently in service with the French and Italian navies.⁸⁷ While the

design for the U.S. ship has not been finalized, the frigate is intended to be a multi-mission warship with 32 VLS cells, as many as 16 containerized naval strike missiles (NSM), and one helicopter.⁸⁸ As of June 2023, 90 percent of function design and 80 percent of detail design work had been completed despite construction having already begun with some risk of program delay and cost increase.⁸⁹ In May 2021, the Navy contracted for the second ship in the class, the USS *Congress* (FFG-63).⁹⁰ The Navy purchased a third ship in FY 2022 and plans to purchase two more in FY 2024. The Navy has awarded Fincantieri a \$526 million contract for a fourth frigate, but a decision for a second shipyard to begin construction of frigates that was to be made in FY 2023 has been delayed, and this could affect future production rates.⁹¹

Amphibious Ships. Commandant of the Marine Corps General David Berger issued his “Commandant’s Planning Guidance” in July 2019 and “Force Design 2030” in March 2020. Both documents signaled a break with past Marine Corps requests for amphibious lift, specifically moving away from the requirement for 38 amphibious ships to support an amphibious force of two Marine Expeditionary Brigades (MEB).⁹² The Commandant envisioned a larger yet affordable fleet of smaller, low-signature amphibious ships—the Landing Ship Medium (LSM)⁹³—that enable littoral maneuver and associated logistics support in a contested theater.⁹⁴ However, the amphibious fleet remains centered on fewer large ships. This vision remains years away from being realized with Congress holding the line at “not less than 31 operational amphibious warfare ships.”⁹⁵

The Navy’s Future Naval Force Study (FNFS)⁹⁶ and December 2020 30-year shipbuilding plan acknowledged the growing importance of the LSM, which will have to be produced rapidly and in sufficient numbers in order to actualize the naval forces’ distributed concepts of operations (for example, Marine Littoral Regiments and Distributed Maritime Operations). According to the April 2022 long-range shipbuilding plan, the Navy intends to purchase the first LSM in FY 2025. The Marine Corps had intended to have the ship under contract by the summer of 2022, but because of delays, it has begun to use alternative platforms to train and work out operational concepts so that it will be ready when the ship eventually is delivered.⁹⁷

As of September 2023, the Navy had nine amphibious assault ships in the fleet (seven *Wasp*-class LHD and two *America*-class LHA); 12 amphibious transport docks (LPD); and 10 dock landing ships (LSD).⁹⁸ The FY 2021 budget included \$250 million in additional funds to accelerate construction of LHA-9 following the July 2020 catastrophic fire on *Bonhomme Richard* (LHD-6).⁹⁹ The decision to decommission the damaged ship further exposed limitations in shipyard capacity, as repairs would have had a negative effect on other planned shipbuilding and maintenance.¹⁰⁰ In December 2022, construction began on the USS *Fallujah* (LHA-9), which, like the *Bonhomme Richard*, is to be configured for F-35B joint strike fighters and MV-22 Osprey tilt-rotor aircraft, at a cost of \$2.4 billion.¹⁰¹

The Navy’s LSDs, the *Whidbey Island*-class and *Harpers Ferry*-class amphibious vessels, are scheduled to reach the end of their 40-year service lives beginning in 2025. The USS *Harrisburg* (LPD-30) of the *San Antonio*-class Landing Platform Dock amphibious ships began construction in April 2020 and when delivered will be the first of 13 *San Antonio*-class Flight II ships to replace the legacy LSD ships. The 12th first flight *San Antonio*-class ship (LPD 28) was delivered six months later than reported in the *2022 Index*.¹⁰²

The FY 2021 budget included \$500 million “to maximize the benefit of the amphibious ship procurement authorities provided elsewhere in this Act through the procurement of long lead material for LPD-32 and LPD-33.”¹⁰³ The Navy’s FY 2023 budget funded LPD-32 with a \$1.295 billion contract for the ship’s construction.¹⁰⁴ LPD-32 is the most recently purchased of the 13 Flight IIs that were originally envisioned. The Marine Corps has sought procurement of LPD-33 and has kept it at the top of its unfunded requirements list.¹⁰⁵ The three-way dispute among the Secretary of Defense’s staff, the Navy, and the Marine Corps over the future of the large amphibious warship fleet remains contentious and unresolved.¹⁰⁶

Unmanned Systems. The Navy does not include unmanned ships in counting its battle force size. Previous long-range shipbuilding plans envisioned the purchase of 13 Large Unmanned Surface Vessels (LUSV); one Medium Unmanned Surface Vessel (MUSV); and eight Extra Large Undersea Unmanned Vessels (XLUUV) by FY 2026.¹⁰⁷ The Navy continues to test and evaluate seven prototype

unmanned platforms, five of which are to be delivered by FY 2028. Additionally, current plans call for procurement of the LUSV to begin in FY 2025 and increase to three per year beginning in FY 2027.¹⁰⁸ On May 18, 2021, an experimental LUSV, the *Nomad*, transited the Panama Canal on its way to Surface Development Squadron (SURFDESRON) 1 based in California.¹⁰⁹ SURFDESRON 1 operates MUSV *Sea Hunter* prototypes, LUSV, and the *Zumwalt* destroyer to advance the Navy's unmanned surface warship capabilities.¹¹⁰ Since publication of the *2023 Index*, the Navy has made notable progress with its unmanned fleet.

The Navy reached a significant milestone in September 2021 when its small fleet of unmanned surface ships launched and hit a target with an SM-6 interceptor missile.¹¹¹ After years in a laboratory and in controlled at-sea navigational tests, unmanned ships are now deploying in operational settings. That same month, Task Force 59, based in the Persian Gulf and comprised of smaller unmanned drones and vessels, conducted International Maritime Exercise 2022 (IMX22), an exercise in the Red Sea that involved 10 nations and more than 80 unmanned platforms.¹¹² In a sign of growing confidence, the Navy announced that it will establish a similar unmanned vessel task force at Fourth Fleet based in Mayport, Florida.¹¹³

Logistics, Auxiliary, and Expeditionary Ships. Expeditionary support vessels are highly flexible platforms of two types: those used for prepositioning and sustaining forward operations and others used for high-speed lift in uncontested environments. The Navy has five of the former (two Expeditionary Transfer Dock [ESD] and three Expeditionary Sea Base [ESB] vessels) and 12 of the latter (shallow-draft Expeditionary Fast Transport [EPF] vessels). In March and April 2022, ESB *Hershel Williams* (ESB 4) demonstrated the versatility of these ships during maritime security missions with African coast guards and navies. In August 2021, it conducted a counter-piracy exercise with the Brazilian navy. At the same time, China was attempting to secure a base in Equatorial Guinea.¹¹⁴ The Navy christened ESB 6, USNS *John L. Canley*, on June 25, 2022.¹¹⁵ ESB 7, USNS *Robert E. Simanek*, is currently under construction in San Diego, California, with its keel having been laid in October 2021.¹¹⁶

With their shallow draft and versatile cargo capacity, EPFs offer unique capabilities that are well

suited to austere but uncontested waters. Specifically, these ships can transport 600 short tons of military cargo (for example, main battle tanks) 1,200 nautical miles at 35 knots. The Navy christened its 13th EPF, the USNS *Apalachicola*, on November 13, 2021, and construction is progressing.¹¹⁷ In March 2021, the Navy revised its contract with Austal USA for \$235 million to modify EPF 14 and the future EPF 15 to enable them to serve as high-speed hospital ships with the capability of embarking a V-22 tilt-rotor aircraft.¹¹⁸ The keel for EPF 14 configured as a hospital ship was laid on January 26, 2022, and construction of EPF 15 in the same configuration commenced the same month.¹¹⁹ EPF 14, USNS *Cody*, was launched on March 20, 2023.¹²⁰

The Navy's Combat Logistics Force (CLF) includes dry-cargo and ammunition ships (T-AKE); fast combat support ships (T-AOE); and oilers (AO). The CLF provides critical support, including at-sea replenishment, that enables the Navy to sustain the fleet at sea for prolonged periods. The Navy's future oiler *John Lewis* (T-AO 205) was procured in 2016 and launched five years later on January 12, 2021; 20 ships of this class are planned.¹²¹ However, because of a flooding incident at the graving dock, delivery of *John Lewis* was delayed, and this in turn caused cascading delays of 12 to 15 months in construction of the second through sixth ships.¹²² The lead ship of the class, *John Lewis*, was delivered to the Navy in July 2022, and three ships of the class are currently under construction.¹²³

Secretary of Defense Lloyd Austin's March 7, 2022, decision to dismantle Red Hill fuel storage facilities in Hawaii will generate additional pressure to increase the Navy's at-sea oiler fleet to meet operational needs in the Pacific. A plan specifying how the Navy will mitigate the loss of these massive Pacific fuel storage facilities was due by May 31, 2022.¹²⁴ As of June 16, 2023, the details of this plan had not been made public, and it remains uncertain, given delays in the construction of oilers, exactly how the fleet's operational energy needs will be met.¹²⁵

Strike Platforms and Key Munitions. The FY 2024 budget continues the Navy's focus on long-range offensive strikes launched from ships, submarines, and aircraft. Notable capability enhancements include, for example, Conventional Prompt Strike (CPS), a maneuverable hypersonic non-nuclear weapon for long-range strikes that

receives support for initial deployment on the *Zumwalt*-class destroyer in FY 2025, and upgraded Block V Maritime Strike Tomahawk (MST) kits with improved targeting, procurement of which is entering its fourth year.¹²⁶

To counter the threat posed by the Chinese PL-15 long-range air-to-air missile, which has an operational range of 186 miles, the Navy is working with the Air Force to develop the AIM-120 Advanced Medium-Range missile, the operational range of which has not been made public.¹²⁷ In March 2021, the Air Force reported a record long-range kill of a drone target by this developmental missile from one of its F-15C fighters.¹²⁸ If this report is accurate, it indicates development of a critical capability, but little reporting on progress has been noted since the *2023 Index*.

Shore-Based Anti-Ship Capabilities. Following the August 2019 U.S. withdrawal from the Intermediate-Range Nuclear Forces (INF) Treaty, new intermediate-range (500–1,000 miles) conventional ground-launched strike options became politically viable. This is especially important in Asia where such capable missiles deployed to the first island chain would have great relevance in any conflict with China.¹²⁹

The FY 2020 budget included \$76 million to develop ground-launched cruise missiles.¹³⁰ The FY 2021 budget included an additional \$59.6 million to procure 36 ground-based anti-ship missiles.¹³¹ The FY 2023 budget funded low-rate initial production of 115 Naval Strike Missiles and associated development of Marine Corps platoon-level targeting systems.¹³² The FY 2024 budget, building on recent successes, continues upward investment in development and increased production of these weapon systems: \$363.5 million for the Navy–Marine Expeditionary Ship Interdiction System (NMESIS) anti-ship missile; 34 shore-launched tactical Tomahawk missiles; and 90 Naval Strike Missiles.¹³³ A photo of the launch of a U.S. Marine Corps truck-mounted Naval Strike Missile—ostensibly part of NMESIS—was released in April 2021, revealing efforts to introduce this weapon capability across naval forces.¹³⁴ Ukraine’s use of shore-based anti-ship missiles to sink Russia’s Black Sea flag ship, the *Moskva*, in April 2022 has sparked renewed interest in such systems.

Electronic Warfare (EW). The purpose of electronic warfare is to control the electromagnetic

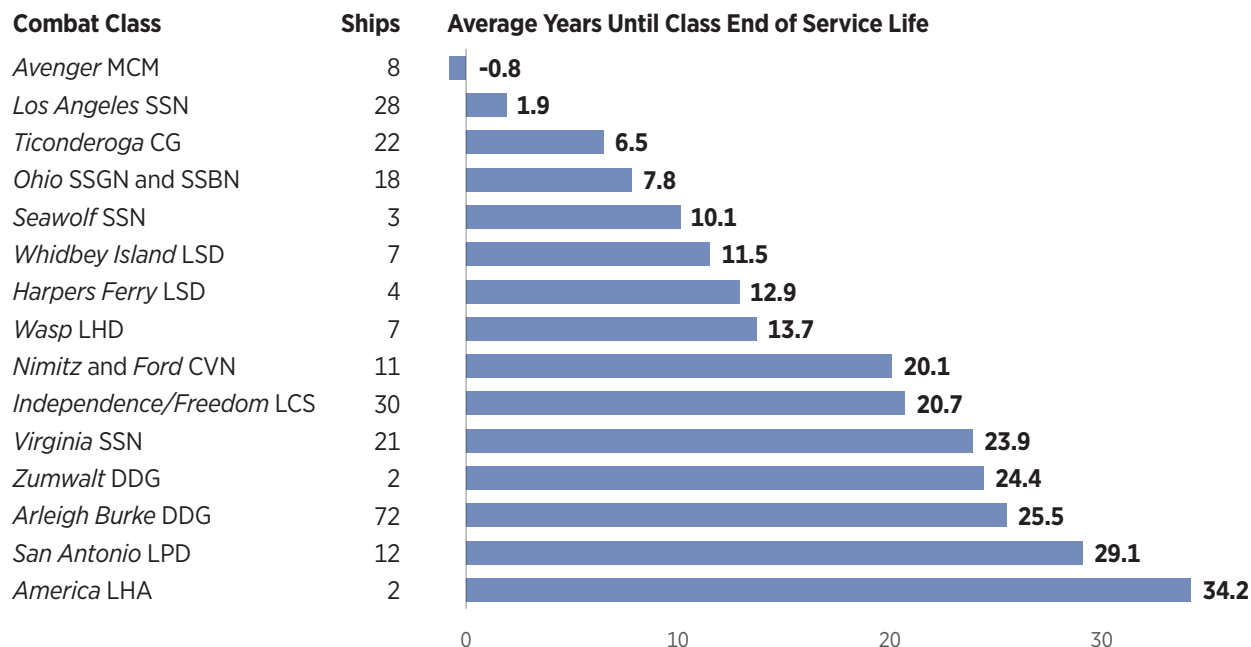
spectrum (EMS) by exploiting, deceiving, or denying its use by an enemy while ensuring its use by friendly forces. It is therefore a critical element of successful modern warfare. The final dedicated EW aircraft, the EA-18G Growler, was delivered in July 2019, meeting the Navy’s requirement to provide this capability to nine carrier air wings (CVW), five expeditionary squadrons, and one reserve squadron.¹³⁵ Anticipating the EA-18G’s retirement in the 2030s, the Navy has been exploring follow-on manned and unmanned systems, but no new developments on a replacement have been reported since publication of the *2023 Index*. To ensure that the EA-18G remains relevant on the battlefield until 2030, an anticipated upgrade or Block II modification with the improved Next Generation Electronic Attack Unit (NGEAU) is being pursued.

The Navy’s earlier proposal to retire all of its expeditionary electronic attack squadrons by FY 2025 came as a surprise.¹³⁶ Unless there is a replacement capability, retirement of these aircraft removes the EW coverage provided by these units from forward airfields, shifting the support burden to nearby naval platforms and the other services. Given this uncertainty, Congress stipulated in the FY 2023 NDAA that the Secretary of the Navy may not retire an EA-18G aircraft until September 30, 2027, and required that no later than 180 days after the NDAA’s enactment, “the Secretary of the Navy and the Secretary of the Air Force shall jointly submit to the congressional defense committees a report that includes a strategy and execution plan for continuously and effectively meeting the airborne electronic attack training and combat requirements of the joint force.”¹³⁷ The status of that report is unknown.

Air Early Warning. The E-2D forms the hub of the Naval Integrated Fire Control Counter Air (NIFC-CA) system and provides critical theater air and missile defense capabilities. The Navy’s FY 2021 budget supported the procurement of four aircraft with an additional 10 to be procured over the following two years.¹³⁸ The FY 2023 budget completed this plan by including procurement of the final five new E-2D aircraft, which are important air control platforms.

High Energy Laser (HEL). HEL systems provide the potential to engage targets or shoot down missiles without being limited by how much ammunition can be carried onboard ship. A significant milestone was achieved when USS *Portland*

Navy Combat Ships Nearing End of Service Life



NOTE: Figures are based on calculations for June 2023.

SOURCE: U.S. Navy, Naval Sea Systems Command, Naval Vessel Register, "Fleet Size," <http://www.nvr.navy.mil/NVRSHIPS/FLEETSIZ.HTML> (accessed September 9, 2023).

 heritage.org

(LPD-27) used its HEL Weapon System Demonstrator to shoot down an unmanned aerial vehicle (UAV) over the Pacific on May 16, 2020.¹³⁹ This was followed by the Navy's decision to begin installation of a HEL system—the High-Energy laser with Integrated Optical Dazzler and Surveillance (HELIOS) (60 kW) laser¹⁴⁰—on destroyers in 2021 beginning with the USS *Preble*.¹⁴¹ HELIOS is a scalable laser system that is integrated into the ship's weapons control and radar systems and can dazzle and confuse threats, disable small boats, or shoot down smaller air threats. The Navy's FY 2024 budget will sustain the installation of HELIOS on the USS *Preble* and develop a 100 kW HEL demonstrator system on the USS *Portland*, representing modest investment and progress.¹⁴²

In April 2022, the Navy demonstrated the ability of its Layered Laser Defense HEL system to shoot down a drone simulating a cruise missile.¹⁴³

Successful tests like this and the ongoing deployment of the HELIOS on the destroyer *Preble* will be followed by installation of a much stronger 100 kW laser on *Portland* (LPD-27) that approaches the power needed for missile defense.¹⁴⁴ However, until field testing against meaningful threat platforms is conducted across a range of weather conditions, the effectiveness of such systems will remain unproven.

Command and Control. Networked communications are essential to successful military operations. The information passed over these networks includes sensitive data on such subjects as targeting and logistics, and this makes cyber security, communications, and the information systems that generate and relay this information critical elements of the DOD information enterprise.

On October 1, 2020, CNO Michael Gilday signed two memos establishing Project Overmatch. The

goal of Project Overmatch was to achieve situational awareness and effective command and control of a geographically dispersed naval force. In his two memos, the CNO directed that investments be made to deliver network architectures, unmanned capabilities, and data analytics to ensure that the Navy can operate and dominate in a contested environment.¹⁴⁵ The CNO also directed the Navy to leverage related Air Force efforts on the Joint All-Domain Command and Control program (JADC2),¹⁴⁶ now a Joint Force effort involving all of the military branches.

Remarkably, despite the significance of the effort, little has been publicly released on Project Overmatch; what is known is that it involves three classified funding lines with initial deployment or program capabilities slated for 2023.¹⁴⁷ In unofficial venues, it has been hinted that the first platform to employ JADC2 capabilities will be an aircraft carrier, but public statements indicate that the objective is to connect all platform data flows from across the U.S. Joint Force (potentially including partner forces), analyze them for classification, and make predictive targeting recommendations. If successful, artificial intelligence paired with resilient communications and “big data” analytics might enable a key element of Distributed Maritime Operations (DMO).

Readiness

In the 1980s, the Navy had nearly 600 ships in the fleet and kept roughly 100 (17 percent) deployed at any one time. As of June 10, 2023, the fleet’s OP-TEMPO was 28 percent. With fewer ships carrying an unchanging operational workload, training schedules become shorter and deployments become longer. The commanding officer’s discretionary time for training and crew familiarization is a precious commodity that is made scarcer by the increasing operational demands on fewer ships.

FY 2019 marked the first time in more than a decade that DOD and the Navy did not have to operate under a continuing resolution for at least part of the fiscal year. Having a full fiscal year to plan and execute maintenance and operations helped the Navy to continue on its path to restoring fleet readiness. CNO Admiral John Richardson explained to the Senate Armed Services Committee in April 2018 that it would take until late 2021 or 2022 to restore fleet readiness to an “acceptable”

level if adequate funding was maintained; without “stable and adequate funding,” it would take longer.¹⁴⁸ Unfortunately, the Navy began FY 2020 under another continuing resolution that delayed planned maintenance for the USS *Bainbridge* (DDG 96) and USS *Gonzalez* (DDG 66), revealing yet again that for the Administration and Congress, the need to correct deficiencies in America’s naval power was not enough to ensure that they delivered a budget on time.¹⁴⁹

Given this recent history and the demands of unplanned and urgently needed ship repairs brought about by such incidents as the grounding of the submarine *Connecticut*, the Navy remains deficient in its ability to return ships to sea.

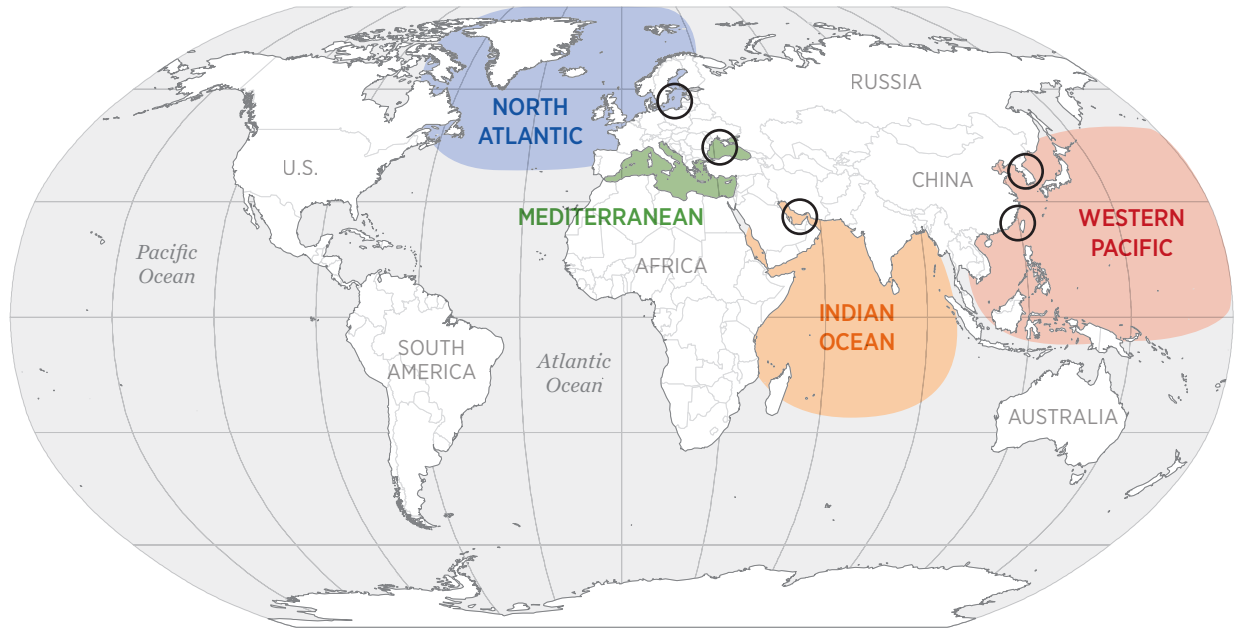
Impact of COVID-19. The eruption of the COVID-19 pandemic in 2020 caused many problems for the U.S. Navy. The USS *Theodore Roosevelt* (CVN 71), for example, was forced to quarantine for 55 days in Guam; the major biannual international Rim of the Pacific Exercise (RIMPAC) was scaled down; 1,629 reservists were called to active duty to backfill high-risk shipyard workers conducting critical maintenance; and the Navy was restricted to using “safe haven” COVID-free ports. In May 2021, the CNO assessed that the Navy managed the pandemic with minimal operational impact but with added time at sea and delays for family reunions pending quarantines.¹⁵⁰

As the pandemic recedes, the Navy’s response to account for and mitigate the effects of COVID-driven restrictions has been a success overall. According to the Navy’s February 10, 2023, final COVID report, total cumulative COVID cases among active-duty uniformed Navy personnel numbered 109,310 with 17 deaths, 3,350 unvaccinated servicemembers remaining on active duty, and a total of 1,878 sailors separated for refusing the vaccine; previous reporting indicated that 214 religious waivers were granted.¹⁵¹ Given vaccination rates and ebbing danger, the Navy appears to be past the COVID epidemic. Ideally, the Navy would implement lessons learned from this experience to prepare for future pandemics and biological attacks, but there is as yet little evidence that the service has conducted such a study, implemented new pandemic guidelines, or sought new capabilities to combat a future pandemic.

Maintenance and Repairs. Naval Sea Systems Command completed its Shipyard Optimization and Recapitalization Plan in September 2018.¹⁵²

U.S. Navy Global Presence

○ Potential sites for major war



WEEKS CSG, ARG/ESG PRESENT IN REGION	NORTH ATLANTIC			MEDITERRANEAN			INDIAN OCEAN			WESTERN PACIFIC		
	CSG	ARG/ ESG	TOTAL	CSG	ARG/ ESG	TOTAL	CSG	ARG/ ESG	TOTAL	CSG	ARG/ ESG	TOTAL
June 2021–June 2022	1	10	11	22	0	22	22	35	57	77	42	119
June 2022–June 2023	10	18	28	47	0	47	0	0	0	86	54	140
CHANGE	+9	+8	+17	+25	0	+25	-22	-35	-57	+9	+12	+21

NOTES: CSG — Carrier Strike Group, ARG — Amphibious Ready Group, ESG — Expeditionary Strike Group.

SOURCE: Heritage Foundation research based on data from U.S. Naval Institute News, “Category Archives: Fleet Tracker,” <https://news.usni.org/category/fleet-tracker> (accessed September 9, 2023).

heritage.org

Four years later, the improvement of public shipyard capacities is still just beginning. It was expected that the initial step—building digital models to inform future upgrades to the Navy’s four public shipyards—would be complete by the end of 2021, but it remained incomplete as of June 2022.

Attempts by Congress to accelerate the effort have not been effective.¹⁵³ At a May 10, 2022, Senate hearing, it became apparent both that the original costs were significantly underestimated and that timelines are slipping. During that hearing, the Government Accountability Office reported that:

- “[F]rom 2017 to 2020, the backlog of restoration and modernization projects at the Navy shipyards has grown by over \$1.6 billion, an increase of 31 percent.”¹⁵⁴
- “In 2018, the Navy estimated that it would need to invest about \$4 billion in its dry docks to obtain the capacity to perform the 67 availabilities it cannot currently support. This estimate included 14 dry dock projects planned over [a] 20-year span. However...the Navy’s first three dry dock projects have grown in cost from an estimated \$970 million in 2018 to over

\$5.1 billion in 2022, an increase of more than 400 percent.”¹⁵⁵

- “In a 2021 report to Congress, the Navy stated it would complete the [Area Development Plans] by fiscal year 2021. However, in a September 2021 update of that report, the Navy stated the ADPs would be complete four years later, in fiscal year 2025.”¹⁵⁶

More recently, the GAO assessed the Navy’s readiness from 2017 through 2021. Because of persistent problems, the Navy’s readiness was assessed as degrading: Ship maintenance backlogs were estimated at \$1.8 billion, conditions at public shipyards remained poor, and enduring issues of crew shortfalls and fatigue delayed maintenance activities.¹⁵⁷ On top of this, new reports indicate that 37 percent of the Navy’s submarine force is unavailable in FY 2023 for missions at sea because of maintenance backlogs; a more normal rate would be 20 percent.¹⁵⁸

Training, Ranges, and Live-Fire Exercises.

Ship and aircraft operations and training are critical to fleet readiness. The Navy has sought to meet fleet readiness requirements by funding 58 underway days for each deployed warship and 24 underway days for each non-deployed warship per fiscal quarter. The Navy’s proposed budget would fall short of these goals by funding 97 percent of ship operations, 90 percent of flight hours, and 87 percent of facilities sustainment.¹⁵⁹ Less clear is how much of this time is spent on crew training and whether the Navy assesses this as effective in meeting needed operational proficiencies.

To improve warfighting proficiency, the Navy is seeking to expand and update instrumentation of the training range at Naval Air Station Fallon, Nevada, to enable practice with the most advanced weapon systems.¹⁶⁰ This training range fits into the larger five-year \$27.3 billion Pacific Deterrence Initiative (PDI) that, led by Indo Pacific Command, is intended partly to transform the way the Navy trains for high-end conflict and improve training with U.S. allies in the Pacific.¹⁶¹ Of particular importance to the Navy are PDI investments to modernize the Pacific Missile Range Facility (PMRF); the Joint Pacific Alaska Range Complex (JPARC); and the Combined/Joint Military Training (CJMT) Commonwealth Northern Mariana Islands in order to

improve training for operations across all domains: air, land, sea, space, and cyber.¹⁶²

The FY 2024 budget earmarks \$9.1 billion of DOD’s topline budget for PDI (\$3 billion more than in FY 2023). Especially important are long lead time infrastructure projects in Guam and Tinian in the northern Marianas. This year’s PDI budget includes \$3.25 billion for the Navy: \$1.15 billion for operations, \$14.6 million for logistics, \$313.3 million for exercises, \$1.58 billion for infrastructure investments, \$42.8 million for added staffing, and \$146.7 million to improve partner nations’ capabilities.¹⁶³ To measure the effectiveness of these investments, the Navy will need to demonstrate increased frequency of exercises that practice high-end warfighting independently, jointly, and with such key allies as Australia, Japan, and South Korea. This should include increased numbers of realistic free-play events and increased by-hull frequency of live-fire drills.

Finally, not forgotten are the 2017 collisions of the USS *John S. McCain* (DDG 56) and USS *Fitzgerald* (DDG 62) in which 17 sailors were lost. Findings of the subsequent investigations, which highlighted the importance of operational risk management and unit readiness, remain relevant.¹⁶⁴ To ensure that these tragic events are not repeated, the Secretary of the Navy’s *Strategic Readiness Review* made several broad institutional recommendations:

- “The creation of combat ready forces must take equal footing with meeting the immediate demands of Combatant Commanders.”
- “The Navy must establish realistic limits regarding the number of ready ships and sailors and, short of combat, not acquiesce to emergent requirements with assets that are not fully ready.”
- “The Navy must realign and streamline its command and control structures to tightly align responsibility, authority, and accountability.”
- “Navy leadership at all levels must foster a culture of learning and create the structures and processes that fully embrace this commitment.”¹⁶⁵

A reminder that the above recommendations remain relevant was the October 2021 grounding of the submarine *Connecticut* in the South China Sea. The subsequent investigation found the event

avoidable while operating in poorly surveyed waters—a reminder of the risk as well as the vigilance required at sea.¹⁶⁶

Scoring the U.S. Navy

Capacity Score: Very Weak

This *Index* assesses that the Navy needs a battle force consisting of 400 manned ships to do what is expected of it today. The Navy’s current battle force fleet of 298 ships and intensified operational tempo combine to reveal a service that is much too small relative to its tasks. Contributing to a lower assessment is the Navy’s persistent inability to arrest and reverse the continued diminution of its fleet as adversary forces grow in number and capability. If it continues on its current trajectory, the Navy will shrink further to 280 ships by 2037. Depending on the Navy’s ability to realize aggressive growth, reverse early decommissioning plans, increase its end strength, and develop creative service life extensions, its capacity score will probably remain “very weak” for the foreseeable future.

Capability Score: Marginal Trending Toward Weak

The overall capability score for the Navy remains “marginal” with downward pressure as the Navy’s technological edge narrows against peer competitors China and Russia. The combination of a fleet that is aging faster than old ships are being replaced and the rapid growth of competitor navies with modern technologies has only intensified the danger for U.S. naval power. Without meaningful progress in fielding systems that are able to defend

against an array of threats, greater integration of unmanned systems into the fleet, and development of a family of new long-range weapons, especially in air-to-air combat, the Navy’s capability score could well decline to “weak” in the *2025 Index*.

Readiness Score: Weak

The Navy’s readiness score remains “weak.” This is due primarily to the Navy’s persistent struggle to recapitalize antiquated, inadequate maintenance infrastructure and workforce to meet current needs. The effectiveness of training and exercises measured against China will be an increasingly critical metric in this score.

Overall U.S. Navy Score: Weak

The Navy’s overall score in the *2023 Index* is “weak,” driven by lower scores in capacity and readiness. To correct this trend, the Navy will have to eliminate several readiness and capacity bottlenecks while seeing to it that America has an operational fleet with the numbers and capabilities postured to counter Russian and Chinese naval advances. There is added urgency given both that China is aggressively posturing itself to obtain maximum advantage over Taiwan and that many of the U.S. Navy’s efforts to improve itself will take several years to achieve the desired results.

U.S. Military Power: Navy

	VERY WEAK	WEAK	MARGINAL	STRONG	VERY STRONG
Capacity	✓				
Capability			✓		
Readiness		✓			
OVERALL		✓			

NAVY SCORES



Procurement and Spending ■ Through FY 2023 ■ Pending

Aircraft Carrier

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p><i>Nimitz-Class Aircraft Carrier (CVN-68)</i></p> <p>Inventory: 10 Fleet age: 32.3 Date: 1975</p> <p>The <i>Nimitz</i>-class is a nuclear-powered multipurpose carrier. The aircraft carrier and its embarked carrier air wing can perform a variety of missions including maritime security operations and power projection. Its planned service life is 50 years with a single midlife refueling. Retirement of the class will begin in FY 2026 with CVN-68 USS <i>Nimitz</i>, followed in FY 2027 by CVN-69 USS <i>Eisenhower</i>, with the class to be replaced by <i>Ford</i>-class carriers.</p>	2	3	<p><i>Ford-Class Aircraft Carrier (CVN-78)</i></p> <p>Timeline: 2017-TBD</p> <p>Currently in production, the <i>Ford</i>-class will replace the <i>Nimitz</i>-class aircraft carriers. The <i>Ford</i>-class design uses the basic <i>Nimitz</i>-class hull form but incorporates several improvements to achieve a 33 percent higher sortie rate, a smaller crew with approximately 600 fewer sailors, two and a half times greater electrical power, and more than \$4 billion in life cycle cost savings over the <i>Nimitz</i>-class. The ship completed Planned Incremental Availability on March 1 after six months of modernization and maintenance. The ship began its first deployment in fall 2022, and its intended life expectancy is 50 years.</p>	2	3
<p><i>Ford-Class Aircraft Carrier (CVN-78)</i></p> <p>Inventory: 1 Fleet age: 5.9 Date: 2017</p> <p>The <i>Ford</i>-class incorporates new technologies that will increase aircraft sortie rates, reduce manning, provide greater electrical power for future weapons systems, and decrease operating costs. Its planned service life is 50 years. CVN-78 deployed in the fall of 2022 after five years of delays. Delivery of CVN-79 is expected in July of 2025, and while CVN-80 and CVN-81 are under construction.</p>	5	5	<p>PROCUREMENT</p> <p>3 1</p> <p>SPENDING (\$ millions)</p> <p>\$4,746 \$2,120</p>		

NOTE: See page 468 for details on fleet ages, dates, timelines, and procurement spending.

NAVY SCORES

1 2 3 4 5
Weakest ← → Strongest

Procurement and Spending ■ Through FY 2023 ■ Pending

Large Surface Combatant

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p><i>Ticonderoga-Class Cruiser (CG-47)</i></p> <p>Inventory: 17 Fleet age: 33.5 Date: 1981</p> <p>The <i>Ticonderoga</i>-class is a multi-mission battle force ship equipped with the Aegis Weapons System. While it can perform strikes, anti-surface warfare, and anti-submarine warfare, its primary focus is air and missile defense. The cruisers have a life expectancy of 40 years. The Navy plans to retire the entire cruiser fleet by FY 2027.</p>	2	3	<p><i>Zumwalt-Class Destroyer (DDG-1000)</i></p> <p>Timeline: 2016–2026</p> <p>The DDG-1000 was designed to be a new-generation destroyer capable of handling more advanced weapon systems for long-range strike with a hull that is designed to reduce radar detectability for its original primary mission of naval surface fire support (NSFS). The DDG-1000 program was intended to produce a total of 32 ships, but this number has been reduced to three. The first DDG-1000 was commissioned in October 2016. Delivery of DDG-1002, the last ship of the class, is expected in 2024.</p> <p>PROCUREMENT 3</p> <p>SPENDING (\$ millions) \$4,092</p>	1	2
<p><i>Zumwalt-Class Destroyer (DDG-1000)</i></p> <p>Inventory: 1 Fleet age: 5.6 Date: 2016</p> <p>The <i>Zumwalt</i>-class is a multi-mission destroyer that incorporates several technological improvements, such as a stealthy hull design and integrated electric-drive propulsion system. Although it has passed sea trials, it continues to experience problems with its combat systems. The third and final ship of the class was commissioned in FY 2020, and DDG 1002 is currently awaiting Combat Systems testing before entering the service.</p>	5	3			
<p><i>Arleigh Burke-Class Destroyer (DDG-51)</i></p> <p>Inventory: 73 Fleet age: 19.5 Date: 1991</p> <p>The <i>Arleigh Burke</i>-class is a multi-mission guided missile destroyer that features the Aegis Weapons System and has air defense as its primary mission. The Navy procured three in FY 2023 and will continue to procure two each fiscal year. The destroyers will begin to decommission starting in FY 2031 with DDG-51.</p>	3	4	<p><i>Arleigh Burke-Class Destroyer (DDG-51)</i></p> <p>Timeline: 1991–2034</p> <p>DDG-51 production was restarted in FY 2013 to make up for the reduction in DDG-1000 acquisitions. Beginning in FY 2017, all DDG-51s procured will be the Flight III design, which includes the more capable Advanced Missile Defense Radar (AMDR). The Navy procured three destroyers in FY 2023 and plans to procure two each fiscal year. The destroyers are believed to have an estimated service life of 40 years.</p> <p>PROCUREMENT 92 12</p> <p>SPENDING (\$ millions) \$102,420 \$102,524</p>	2	4

NOTE: See page 468 for details on fleet ages, dates, timelines, and procurement spending.

NAVY SCORES

1 2 3 4 5
Weakest ← Strongest

Procurement and Spending ■ Through FY 2023
■ Pending

Small Surface Combatant

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>Littoral Combat Ship (LCS)</p> <p>Inventory: 27 Fleet age: 4.3 Date: 2008</p> <p>The Littoral Combat Ship includes two classes: the <i>Independence</i>-class and the <i>Freedom</i>-class. The modular LCS design depends on mission packages (MP) to provide warfighting capabilities in the SUW, ASW, and MCM mission areas. The ship has an expected service life of 25 years. However, the FY 2023 defense authorization bill authorized the early retirement of four LCS vessels.</p>	5	3	<p>Littoral Combat Ship (LCS)</p> <p>Timeline: 1991-2024</p> <p>The LCS is intended to fulfill the mine countermeasure, antisubmarine warfare, and surface warfare roles for the Navy. It is designed to operate in near-shore environments but is also capable of open-ocean operation. It works better with smaller ships than the DDG-51. The FY 2023 National Defense Authorization Act approved the early retirement of four <i>Freedom</i>-class ships. The <i>Independence</i>-class LCS would remain as the sole small surface combatant after the retirement of the MCM ships and until the new FFG-62 frigates are delivered. The decision to scrap the <i>Freedom</i>-class LCS does not affect the ships currently under construction.</p> <p>PROCUREMENT SPENDING (\$ millions)</p> <p>33 \$16,182</p>	2	3
<p>Avenger-Class Mine Counter Measure (MCM-1)</p> <p>Inventory: 8 Fleet age: 30.8 Date: 1983</p> <p><i>Avenger</i>-class ships are designed as mine sweepers/hunter-killers capable of finding, classifying, and destroying moored and bottom mines. The class has an expected 30-year service life. The remaining MCMs are expected to be decommissioned throughout the 2020s. While there is no direct replacement single-mission MCM ship in production, the Navy plans to fill its mine countermeasure role with the LCS and its MCM MP.</p>	1	2	<p>Constellation-Class Frigate</p> <p>Timeline: 1991-2034</p> <p>A new program called the FFG-62 will augment the LCS program to fill out the remaining 20-ship small surface combatant requirement for a total of 52 small surface combatants. The ships will be 496 feet in length with a top speed of 29 miles per hour and a range of 6,000 nautical miles. Its purpose is to escort carrier battle groups and high-value convoys. It will accommodate 32 VLS cells to handle high-powered missiles and machine guns. The first ship should be delivered by 2026 and be operational by 2030. The current contract would provide 10 hulls by 2030 with a total of 20 FFG-62 frigates in the fleet. Procurement has been one frigate per fiscal year with the Navy requesting to procure one more in FY 2023.</p> <p>PROCUREMENT SPENDING (\$ millions)</p> <p>4 16 \$4,560 \$16,855</p>	N/A	N/A

NOTE: See page 468 for details on fleet ages, dates, timelines, and procurement spending.

NAVY SCORES



Procurement and Spending ■ Through FY 2023
■ Pending

SSGN Cruise Missile Submarine

PLATFORM	Age Score	Capability Score	MODERNIZATION PROGRAM	Size Score	Health Score
<p>Ohio-Class (SSGN-726)</p> <p>Inventory: 4 Fleet age: 40.4 Date: 1981</p> <p>The SSGNs provide the Navy with a large stealthy strike and special operations mission capabilities. From 2002–2007, the four oldest <i>Ohio</i>-class ballistic missile submarines were converted to guided missile submarines. Each SSGN can carry up to 154 Tomahawk land-attack cruise missiles and up to 66 special operations forces for clandestine insertion and retrieval. All four SSGNs will retire between FY 2026 and FY2028. The Navy tentatively plans to replace the SSGNs with a new Large Payload Submarine beginning in FY 2036, but loss of the SSGN undersea strike capability will be mitigated by the <i>Virginia</i>-class Payload Module (VPM). The <i>Ohio</i>-class had a planned service life of 42 years, but this may be extended.</p>	1	4	None		

NOTE: See page 468 for details on fleet ages, dates, timelines, and procurement spending.

NAVY SCORES



Procurement and Spending ■ Through FY 2023 ■ Pending

Attack Submarines

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>Seawolf-Class (SSN-21) Inventory: 3 Fleet age: 22.9 Date: 1997</p> <p>The <i>Seawolf</i>-class is exceptionally quiet, fast, well-armed, and equipped with advanced sensors. Though lacking a vertical launch system, the <i>Seawolf</i>-class has eight torpedo tubes and can hold up to 50 weapons in its torpedo room. The Navy planned to build 29 submarines, but the program was cut to three. The <i>Seawolf</i>-class has a 33-year expected service life. They have been succeeded by the <i>Virginia</i>-class attack submarine.</p>	2	4	<p>Virginia-Class (SSN-774) Timeline: 2004–2036</p> <p>The <i>Virginia</i>-class is in production and will replace the <i>Los Angeles</i>-class and <i>Seawolf</i>-class fast attack submarines as they are decommissioned. The Virginia Payload Module (VPM) will be incorporated into eight of the 11 planned Block V submarines beginning in FY 2019. VPM includes four large-diameter, vertical launch tubes that can carry up to 28 additional Tomahawk missiles or other payloads. The <i>Virginia</i>-class's planned service is 33 years, and 38 have been procured so far at a rate of two per year. A Government Accountability Office audit found that Block V boats are taking, on average, two years longer to complete.</p>	2	3
<p>Los Angeles-Class (SSN-688) Inventory: 25 Fleet age: 31 Date: 1976</p> <p>The <i>Los Angeles</i>-class comprises the largest portion of the Navy's attack submarine fleet. They are multi-mission submarines that can perform covert intelligence collection, surveillance, ASW, ASuW and land attack strike. The <i>Los Angeles</i>-class has a 33-year expected service life. Between 2022 and 2028, 14 <i>Los Angeles</i>-class submarines will be retired and replaced by the <i>Virginia</i>-class.</p>	1	3	<p>PROCUREMENT</p> <p>38 13</p> <p>SPENDING (\$ millions)</p> <p>\$69,938 \$41,331</p>		
<p>Virginia-Class (SSN-774) Inventory: 21 Fleet age: 9.1 Date: 2004</p> <p>The <i>Virginia</i>-class is the U.S. Navy's next-generation attack submarine and includes several improvements over previous attack submarine classes that provide increased acoustic stealth, improved SOF support, greater strike payload capacity, and reduced operating costs. With a planned service life of 33 years, the <i>Virginia</i>-class is in production and will replace the <i>Los Angeles</i>-class and <i>Seawolf</i>-class attack submarines as they are decommissioned. Thirty-eight have been procured so far at a rate of two per year.</p>	4	4			

NOTE: See page 468 for details on fleet ages, dates, timelines, and procurement spending.

NAVY SCORES

1 2 3 4 5
Weakest ← Strongest

Procurement and Spending ■ Through FY 2023 ■ Pending

SSBN Ballistic Missile Submarine

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>Ohio-Class (SSBN)</p> <p>Inventory: 14 Fleet age: 32.5 Date: 1981</p> <p>The <i>Ohio</i>-class SSBN is the most survivable leg of the U.S. military's strategic nuclear triad. Its sole mission is strategic nuclear deterrence, for which it carries long-range submarine-launched ballistic missiles, and its expected service life is 42 years. Retirement of the <i>Ohio</i>-class fleet will begin in 2027 at an estimated rate of one submarine per year until 2039. The <i>Ohio</i>-class fleet will be replaced by 12 <i>Columbia</i>-class SSBNs.</p>	1	4	<p>Columbia-Class (SSBN-826)</p> <p>Timeline: 2021-TBD</p> <p>The 12-boat <i>Columbia</i>-class will replace the existing <i>Ohio</i>-Class nuclear ballistic submarine force, which provides a credible and survivable sea-based strategic deterrent. The Navy's FY 2024 budget submission estimates the 12 boats' total procurement cost at \$112.7 billion. The lead boat, SSBN-826, is expected to be delivered in FY 2027, and its first patrol is scheduled for FY 2031. Due to complications from the pandemic and technical challenges, the program risks being delayed. Despite such issues, construction continues. The <i>Columbia</i>-class will have a 42-year life expectancy.</p>		
			<p>PROCUREMENT</p>	<p>SPENDING (\$ millions)</p>	

Amphibious Warfare Ship

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>Wasp-Class Amphibious Assault Ship (LHD-1)</p> <p>Inventory: 7 Fleet age: 26.3 Date: 1989</p> <p>The <i>Wasp</i>-class can support amphibious landing operations with Marine Corps landing craft via its well deck. It can also support Marine Air Combat Element operations with helicopters, tilt-rotor aircraft, and Vertical/Short Take-Off and Landing (V/STOL). This ship has a planned 40-year service life.</p>	2	3	<p>America-Class (LHA-6)</p> <p>Timeline: 2014-2033</p> <p>LHA Flight 0 (vessels LHA-6 and 7) was designed without a well deck to provide more space for Marine Corps aviation maintenance and storage as well as increased JP-5 fuel capacity. LHA Flight 1 (LHA-8 and beyond) will reincorporate a well deck for increased mission flexibility. The <i>America</i>-class is in production, and three LHA 6s have already been procured. Construction of LHA-9 is underway.</p>	3	3
<p>America-Class Amphibious Assault Ship (LHA-6)</p> <p>Inventory: 2 Fleet age: 5.8 Date: 2014</p> <p>This new class of large-deck amphibious assault ships is meant to replace the retiring <i>Wasp</i>-class LHD. LHAs are the largest of all amphibious warfare ships, resembling a small aircraft carrier. The <i>America</i>-class is designed to accommodate the Marine Corps' F-35Bs. Construction of USS <i>Fallujah</i> (LHA 9) is underway.</p>	5	4	<p>PROCUREMENT</p>	<p>SPENDING (\$ millions)</p>	

NOTE: See page 468 for details on fleet ages, dates, timelines, and procurement spending.

NAVY SCORES

1 2 3 4 5
Weakest ← Strongest

Procurement and Spending ■ Through FY 2023 ■ Pending

Amphibious Warfare Ship (Cont.)

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>San Antonio-Class Amphibious Transport Dock (LPD-17)</p> <p>Inventory: 12 Fleet age: 10.9 Date: 2006</p> <p>The LPDs have well decks that allow the USMC to conduct amphibious operations with its landing craft. The LPD can also carry four CH-46s or two MV-22s. Eleven of the planned 13 Flight I LPD-17-class ships are operational with the remaining two under construction. The class has a 40-year planned service life. As of FY 2023, three of the LPD Flight II-class have been procured.</p>	4	3	<p>San Antonio-Class Amphibious Transport Dock (LPD-17)</p> <p>Timeline: 2006-2024</p> <p>The 13 LPD-17s are replacements for the San Antonio-class LPDs. Both Flight I and Flight II LPDs are multi-mission ships designed to embark, transport, and land elements of a Marine landing force by helicopters, tilt-rotor aircraft, landing craft, and amphibious vehicles.</p> <p>PROCUREMENT SPENDING (\$ millions)</p> <p>13 \$13,836</p>	4	4
<p>Whidbey Island-Class Dock Landing Ship (LSD-41)</p> <p>Inventory: 6 Fleet age: 33.4 Date: 1985</p> <p>LSD-41 <i>Whidbey Island</i>-class ships were designed specifically to transport and launch four Marine Corps Landing Craft Air Cushion vehicles. They have an expected service life of 40 years. All eight ships in the class will retire between FY 2026 and FY 2033. LSD-41-class will be replaced by the LPD-17 Flight II program, which began procurement in FY 2018. The Navy plans to retire six of the <i>Whidbey Island</i>-class ships before 2026.</p>	2		<p>LPD-17 Flight II</p> <p>Timeline: 2025-2029</p> <p>Previously known as LX(R), the LPD-17 Flight II program will procure 13 ships to replace the Navy's LSD-type ships. The Navy originally planned to procure the first Flight II ship in FY 2020, but accelerated procurement funding enabled procurement of the first LPD-17 Flight II in FY 2018. The Navy delayed the second ship planned for FY 2020 until FY 2021. In its FY 2024 budget submission, the Navy proposed truncating the program by making LPD-32 the final ship.</p> <p>PROCUREMENT SPENDING (\$ millions)</p> <p>3 \$4,599</p>	3	4
<p>Harpers Ferry-Class Dock Landing Ships (LSD-49)</p> <p>Inventory: 4 Fleet age: 27.1 Date: 1995</p> <p>The <i>Harpers Ferry</i>-class, which reduced LCAC capacity to two while increasing cargo capacity, have an expected service life of 40 years, and all ships will be retired by FY 2038. The LSD-49 will be replaced by the LPD-17 Flight II, which began procurement in FY 2018. The Navy plans to retire four of the <i>Harpers Ferry</i>-class ships before 2026.</p>	2				

NOTE: See page 468 for details on fleet ages, dates, timelines, and procurement spending.

NAVY SCORES

1 2 3 4 5
Weakest ← → Strongest

Procurement and Spending ■ Through FY 2023 ■ Pending

Airborne Early Warning

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>E-2C Hawkeye</p> <p>Inventory: 20 Fleet age: 40 Date: 1973</p> <p>The E-2C Hawkeye is a battle management and airborne early warning aircraft that uses computerized radar and electronic surveillance sensors for threat analysis and early warning. The E-2C fleet received a series of upgrades to mechanical and computer systems around the year 2000. While still operational, the E-2C is nearing the end of its service life and is being replaced by the E-2D Advanced Hawkeye.</p>	1	3	<p>E-2D Advanced Hawkeye</p> <p>Timeline: 2014-2023</p> <p>The E-2D Advanced Hawkeye replaces the legacy E-2C and is in production. The Navy received approval for a five-year multi-year procurement of 24 aircraft beginning in FY 2019 to complete the program of record. An additional five aircraft were requested for procurement in FY 2023.</p>	4	4
<p>E-2D Advanced Hawkeye</p> <p>Inventory: 54 Fleet age: 4.5 Date: 2014</p> <p>The E-2D program is the next-generation, carrier-based early-warning, command and control aircraft that provides improved battle space detection, supports theater air missile defense, and offers improved operational availability. The E-2D AHE is a replacement for the E-2C platform. As of FY 2023, 119 E-2D AHE had been procured, and an additional six aircraft are requested for future procurement.</p>	5	4	<p>PROCUREMENT</p> <p>119 6</p> <p>SPENDING (\$ millions)</p> <p>\$15,775 \$1,961</p>		

Electronic Attack Aircraft

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>EA-18G Growler</p> <p>Inventory: 158 Fleet age: 10 Date: 2009</p> <p>The EA-18G Growler is the U.S. Navy's electronic attack aircraft, providing tactical jamming and suppression of enemy air defenses. The final EA-18G aircraft was delivered in FY 2018, bringing the total to 160 and fulfilling the Navy's requirement. It replaced the legacy EA-6B Prowlers. The Navy proposed to retire 25 EA-18Gs across five land-based expeditionary electronic attack squadrons in its FY 2023 budget request, but the FY 2023 National Defense Authorization Act (NDAA) prevented retirement of the aircraft.</p>	5	4	None		

NOTE: See page 468 for details on fleet ages, dates, timelines, and procurement spending.

NAVY SCORES

1 2 3 4 5
Weakest ← Strongest

Procurement and Spending ■ Through FY 2023 ■ Pending

Fighter/Attack Aircraft

PLATFORM	Age Score	Capability Score	REPLACEMENT PROGRAM	Size Score	Health Score
<p>F/A-18E/F Super Hornet</p> <p>Inventory: 613 Fleet age: 19 Date: 2001</p> <p>The F/A-18 E/F Super Hornet has longer range, greater weapons payload, and more survivability than the F/A-18A-D Legacy Hornet. The Navy plans to achieve a 50/50 mix of two F-35C squadrons and two F/A-18E/F Block III squadrons per carrier air wing by the mid-2030s. The ongoing service life extension program will extend the life of all Super Hornets to 9,000 flight hours. As of FY 2022, 690 F/A-18 E/F Super Hornets had been procured.</p>	3	3	<p>F-35C Joint Strike Fighter</p> <p>Timeline: 2019-2034</p> <p>The F-35C is the Navy's variant of the Joint Strike Fighter. The Joint Strike Fighter faced many issues during its developmental stages, including engine problems, software development delays, cost overruns incurring a Nunn-McCurdy breach, and structural problems. The Navy declared initial operational capability (IOC) of the F-35C in February 2019. The planned procurement of 273 F-35Cs will replace over 500 Super Hornets. As of FY 2023, 174 of the aircraft had been procured with an additional 19 requested for procurement in FY 2024.</p>	2	3
<p>F-35C Joint Strike Fighter</p> <p>Inventory: 52 Fleet age: 2 Date: 2019</p> <p>The C-variant is the Navy's fifth-generation aircraft, bringing radar-evading technology to the carrier deck for the first time. The F-35C performs a variety of missions including air-to-air combat, air-to-ground strikes, and ISR missions. As of FY 2023, 177 F-35C airframes had been procured, and procurement of an additional 192 is expected to begin in FY 2024.</p>	5	4	<p>PROCUREMENT</p> <p>177 192</p> <p>SPENDING (\$ millions)</p> <p>\$27,122 \$26,407</p>		

NOTES: See Methodology for descriptions of scores. Fleet age is the average of platform since commissioning. The date for ships is the year of commissioning. Inventory for aircraft is estimated based on the number of squadrons. The date for aircraft is the year of initial operational capability. The timeline for ships is from the year of first commissioning to the year of last delivery. The timeline for aircraft is from the first year of delivery to the last year of delivery. Spending does not include advanced procurement or research, development, test, and evaluation (RDT&E). The total program dollar value reflects the full F-35 joint program including engine procurement. The Navy is also procuring 67 F-35Cs for the Marine Corps. Age of fleet is calculated from date of commissioning to January 2016.

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