

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

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Specialist in Naval Affairs

March 17, 2016

Congressional Research Service

7-....

www.crs.gov

RL32665

Summary

The planned size of the Navy, the rate of Navy ship procurement, and the prospective affordability of the Navy's shipbuilding plans have been matters of concern for the congressional defense committees for the past several years. The apparent end of the post-Cold War era and the transition to a new international security situation featuring renewed great power competition has intensified concerns among some observers regarding the current and future size and capabilities of the Navy.

The Navy's proposed FY2017 budget requests funding for the procurement of seven new battle force ships (i.e., ships that count against the Navy's goal for achieving and maintaining a fleet of 308 ships). The seven ships include two Virginia-class attack submarines, two DDG-51 class Aegis destroyers, two Littoral Combat Ships (LCSs), and one LHA-type amphibious assault ship.

The Navy's proposed FY2017-FY2021 five-year shipbuilding plan includes a total of 38 new ships, compared to 48 new ships in the Navy's FY2016-FY2020 five-year shipbuilding plan. Most of the 10-ship reduction in the FY2017-FY2021 plan compared to the FY2016-FY2020 plan is due to a reduction in the annual procurement rate for the Littoral Combat Ship (LCS)/Frigate program that was directed by the Secretary of Defense in December 2015.

The Navy's current force-structure goal, presented to Congress in 2015, is to achieve and maintain a future fleet of 308 ships of various kinds. Navy officials in early 2016 have testified that in light of recent changes in the international security environment, the Navy has launched a new analysis of its future force structure needs. Such analyses are called Force Structure Assessments (FSAs). The Navy states that it hopes to complete the new FSA by summer 2016. Some observers believe this new FSA will result in an increase in the Navy's force-level goal to a figure higher than 308 ships, in part because it will call for an increased Navy forward-deployed presence in the Mediterranean, a region that was deemphasized as a Navy forward-deployed operating area during the post-Cold War era.

The Navy's FY2017-FY2046 30-year shipbuilding plan, like many previous 30-year shipbuilding plans, does not include enough ships to fully support all elements of the Navy's 308-ship goal over the entire 30-year period. In particular, the Navy projects that the fleet would experience a shortfall in large surface combatants (i.e., cruisers and destroyers) from FY2034 through FY2037, and from FY2041 through at least FY2046; a shortfall in small surface combatants (i.e., LCSs and frigates) for the entire 30-year period; a shortfall in attack submarines from FY2025 through FY2036; and a shortfall in amphibious ships from FY2017 through FY2021, in FY2040, and from FY2042 through at least FY2046. The 30-year duration of the shortfall in small surface combatants appears principally due to the December 2015 direction from the Secretary of Defense to reduce the LCS/Frigate program from 52 ships to 40 ships.

The Navy's report on its FY2016 30-year shipbuilding plan estimates that the plan would cost an average of about \$16.5 billion per year in constant FY2015 dollars to implement, including an average of about \$16.9 billion per year during the first 10 years of the plan, an average of about \$17.2 billion per year during the middle 10 years of the plan, and an average of about \$15.2 billion per year during the final 10 years of the plan.

An October 2015 Congressional Budget Office (CBO) report on the Navy's FY2015 30-year shipbuilding plan estimates that the plan would require 11.5% more funding to implement than the Navy estimates, including 7.7% more than the Navy estimates during the first 10 years of the plan, 11.6% more than the Navy estimates during the middle 10 years of the plan, and 17.1% more than the Navy estimates during the final 10 years of the plan. Over the years, CBO's estimates of the cost to implement the Navy's 30-year shipbuilding plan have generally been

higher than the Navy's estimates. Some of the difference between CBO's estimates and the Navy's estimates, particularly in the latter years of the plan, is due to a difference between CBO and the Navy in how to treat inflation in Navy shipbuilding. The program that contributes the most to the difference between the CBO and Navy estimates of the cost of the 30-year plan is a future destroyer that appears in the latter years of the 30-year plan.

Potential issues for Congress in reviewing the Navy's proposed FY2017 shipbuilding budget, its proposed FY2017-FY2021 five-year shipbuilding plan, and its 30-year (FY2017-FY2046) shipbuilding plan include the following:

- whether to approve, reject, or modify the Navy's FY2017 shipbuilding funding requests;
- the potential impact on the size and capability of the Navy of limiting Department of Defense (DOD) spending through FY2021 to the levels set forth in the Budget Control Act (BCA) of 2011, as amended;
- the affordability of the 30-year shipbuilding plan; and
- the appropriate future size and structure of the Navy in light of budgetary and strategic considerations.

Funding levels and legislative activity on certain individual Navy shipbuilding programs are tracked in detail in other CRS reports.

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Introduction

This report presents background information and issues for Congress concerning the Navy's ship force-structure goals and shipbuilding plans. The planned size of the Navy, the rate of Navy ship procurement, and the prospective affordability of the Navy's shipbuilding plans have been matters of concern for the congressional defense committees for the past several years. The apparent end of the post-Cold War era and the transition to a new international security situation featuring renewed great power competition has intensified concerns among some observers regarding the current and future size and capabilities of the Navy.

The Navy's proposed FY2017 budget requests funding for the procurement of seven new battle force ships—two Virginia-class attack submarines, two DDG-51 class Aegis destroyers, two Littoral Combat Ships (LCSs), and one LHA-type amphibious assault ship. The Navy's proposed FY2017-FY2021 five-year shipbuilding plan includes a total of 38 new ships.

Decisions that Congress makes on Navy shipbuilding programs can substantially affect Navy capabilities and funding requirements, and the U.S. shipbuilding industrial base.

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

- CRS Report RS20643, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, by (name redacted) . (This report also covers the issue of the Navy's proposal in its FY2017 budget submission to deactivate one of the Navy's 10 carrier air wings.)
- CRS Report R41129, *Navy Ohio Replacement (SSBN[X]) Ballistic Missile Submarine Program: Background and Issues for Congress*, by (name redacted) .
- CRS Report RL32418, *Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress*, by (name redacted) .
- CRS Report RL32109, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, by (name redacted) .
- CRS Report RL33741, *Navy Littoral Combat Ship (LCS)/Frigate Program: Background and Issues for Congress*, by (name redacted) .
- CRS Report R43543, *Navy LX(R) Amphibious Ship Program: Background and Issues for Congress*, by (name redacted) . (This report also covers the issue of procurement of a 12th LPD-17 class amphibious ship.)
- CRS Report R43546, *Navy John Lewis (TAO-205) Class Oiler Shipbuilding Program: Background and Issues for Congress*, by (name redacted) .

Background

Strategic and Budgetary Context

This section presents some brief comments on elements of the strategic and budgetary context in which U.S. Navy force structure and shipbuilding plans may be considered.

Shift in International Security Environment

World events have led some observers, starting in late 2013, to conclude that the international security environment has undergone a shift from the familiar post-Cold War era of the past 20-25 years, also sometimes known as the unipolar moment (with the United States as the unipolar power), to a new and different strategic situation that features, among other things, renewed great power competition and challenges to elements of the U.S.-led international order that has operated since World War II. This situation is discussed further in another CRS report.¹

Declining U.S. Technological and Qualitative Edge

Department of Defense (DOD) officials have expressed concern that the technological and qualitative edge that U.S. military forces have had relative to the military forces of other countries is being narrowed by improving military capabilities in other countries. China's improving naval capabilities contribute to that concern.² To arrest and reverse the decline in the U.S. technological and qualitative edge, DOD in November 2014 announced a new Defense Innovation Initiative.³ In a related effort, DOD has also announced that it is seeking a new general U.S. approach—a so-called “third offset strategy”—for maintaining U.S. superiority over opposing military forces that are both numerically large and armed with precision-guided weapons.⁴

Challenge to U.S. Sea Control and U.S. Position in Western Pacific

Observers of Chinese and U.S. military forces view China's improving naval capabilities as posing a potential challenge in the Western Pacific to the U.S. Navy's ability to achieve and maintain control of blue-water ocean areas in wartime—the first such challenge the U.S. Navy

¹ CRS Report R43838, *A Shift in the International Security Environment: Potential Implications for Defense—Issues for Congress*, by (name redacted) .

² For more on China's naval modernization effort, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by (name redacted) .

³ See, for example, Cheryl Pellerin, “Hagel Announces New Defense Innovation, Reform Efforts,” *DOD News*, November 15, 2014; Jake Richmond, “Work Explains Strategy Behind Innovation Initiative,” *DOD News*, November 24, 2014; and memorandum dated November 15, 2015, from Secretary of Defense Chuck Hagel to the Deputy Secretary of Defense and other DOD recipients on The Defense Innovation Initiative, accessed online on July 21, 2015, at <http://www.defense.gov/pubs/OSD013411-14.pdf>.

⁴ See, for example, Jake Richmond, “Work Explains Strategy Behind Innovation Initiative,” *DOD News*, November 24, 2014; Claudette Roulo, “Offset Strategy Puts Advantage in Hands of U.S., Allies,” *DOD News*, January 28, 2015; Cheryl Pellerin, “Work Details the Future of War at Army Defense College,” *DOD News*, April 8, 2015.

See also Deputy Secretary of Defense Speech, National Defense University Convocation, As Prepared for Delivery by Deputy Secretary of Defense Bob Work, National Defense University, August 05, 2014, accessed July 21, 2015, at <http://www.defense.gov/speeches/speech.aspx?speechid=1873>; Deputy Secretary of Defense Speech, The Third U.S. Offset Strategy and its Implications for Partners and Allies, As Delivered by Deputy Secretary of Defense Bob Work, Willard Hotel, January 28, 2015, accessed July 21, 2015, at <http://www.defense.gov/speeches/speech.aspx?speechid=1909>; Deputy Secretary of Defense Speech, Army War College Strategy Conference, As Delivered by Deputy Secretary of Defense Bob Work, U.S. Army War College, April 08, 2015, accessed July 21, 2015, at <http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1930>.

The effort is referred to as the search for a third offset strategy because it would succeed a 1950s-1960s U.S. strategy of relying on nuclear weapons to offset the Soviet Union's numerical superiority in conventional military forces (the first offset strategy) and a subsequent U.S. offset strategy, first developed and fielded in the 1970s and 1980s, that centered on information technology and precision-guided weapons (the second offset strategy). (For more on the second offset strategy, see DOD News Release No: 567-96, October 3, 1996, “Remarks as Given by Secretary of Defense William J. Perry To the National Academy of Engineering, Wednesday, October 2, 1996,” accessed July 21, 2015, at <http://www.defense.gov/releases/release.aspx?releaseid=1057>.)

has faced since the end of the Cold War.⁵ More broadly, these observers view China's naval capabilities as a key element of an emerging broader Chinese military challenge to the longstanding status of the United States as the leading military power in the Western Pacific.

U.S. Grand Strategy

Discussion of the above-mentioned shift in the international security environment has led to a renewed emphasis in discussions of U.S. security and foreign policy on grand strategy and geopolitics. From a U.S. perspective, grand strategy can be understood as strategy considered at a global or interregional level, as opposed to strategies for specific countries, regions, or issues. Geopolitics refers to the influence on international relations and strategy of basic world geographic features such as the size and location of continents, oceans, and individual countries.

From a U.S. perspective on grand strategy and geopolitics, it can be noted that most of the world's people, resources, and economic activity are located not in the Western Hemisphere, but in the other hemisphere, particularly Eurasia. In response to this basic feature of world geography, U.S. policymakers for the past several decades have chosen to pursue, as a key element of U.S. national strategy, a goal of preventing the emergence of a regional hegemon in one part of Eurasia or another, on the grounds that such a hegemon could represent a concentration of power strong enough to threaten core U.S. interests by, for example, denying the United States access to some of the other hemisphere's resources and economic activity. Although U.S. policymakers have not often stated this key national strategic goal explicitly in public, U.S. military (and diplomatic) operations in recent decades—both wartime operations and day-to-day operations—can be viewed as having been carried out in no small part in support of this key goal.

The U.S. goal of preventing the emergence of a regional hegemon in one part of Eurasia or another is a major reason why the U.S. military is structured with force elements that enable it to cross broad expanses of ocean and air space and then conduct sustained, large-scale military operations upon arrival. Force elements associated with this goal include, among other things, an Air Force with significant numbers of long-range bombers, long-range surveillance aircraft, long-range airlift aircraft, and aerial refueling tankers, and a Navy with significant numbers aircraft carriers, nuclear-powered attack submarines, large surface combatants, large amphibious ships, and underway replenishment ships. For additional discussion, see **Appendix C**.

U.S. Strategic Rebalancing to Asia-Pacific Region

For decades, the Western Pacific has been a major operational area (i.e., operational “hub”) for forward-deployed U.S. Navy forces. In coming years, the importance of the Western Pacific as an operational hub for forward-deployed U.S. Navy forces may grow further: A 2012 DOD strategic guidance document⁶ and DOD's report on the 2014 Quadrennial Defense Review (QDR)⁷ state that U.S. military strategy will place an increased emphasis on the Asia-Pacific region (meaning,

⁵ The term “blue-water ocean areas” is used here to mean waters that are away from shore, as opposed to near-shore (i.e., littoral) waters. Iran is viewed as posing a challenge to the U.S. Navy's ability to quickly achieve and maintain sea control in littoral waters in and near the Strait of Hormuz. For additional discussion, see CRS Report R42335, *Iran's Threat to the Strait of Hormuz*, coordinated by (name redacted) .

⁶ Department of Defense, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, January 2012, 8 pp. For additional discussion, see CRS Report R42146, *Assessing the January 2012 Defense Strategic Guidance (DSG): In Brief*, by (name redacted) and (name redacted)

⁷ Department of Defense, *Quadrennial Defense Review 2014*, 64 pp. For additional discussion, see CRS Report R43403, *The 2014 Quadrennial Defense Review (QDR) and Defense Strategy: Issues for Congress*, by (name redacted)

for the U.S. Navy, the Western Pacific in particular). Although Administration officials state that this U.S. strategic rebalancing toward the Asia-Pacific region, as it is called, is not directed at any single country, many observers believe it is in no small part intended as a response to China's military (including naval) modernization effort and its assertive behavior regarding its maritime territorial claims. As one reflection of the U.S. strategic rebalancing to the Asia-Pacific region, Navy plans call for increasing over time the number of U.S. Navy ships that are deployed to the region on a day-to-day basis.

Continued Operations in Persian Gulf/Indian Ocean

In announcing the U.S. strategic rebalancing to the Asia-Pacific region, DOD officials noted that the United States would continue to maintain a forward-deployed military presence in the Middle East (meaning, for the U.S. Navy, primarily the Persian Gulf/Indian Ocean region). U.S. military operations to counter the Islamic State organization and other terrorist organizations in the Middle East are reinforcing demands for forward-deploying U.S. military forces, including U.S. naval forces, to that region.

Potential Increased Demand for U.S. Naval Forces Around Europe

During the Cold War, the Mediterranean was one of three major operational hubs for forward-deployed U.S. Navy forces (along with the Western Pacific and the Persian Gulf/Indian Ocean region). Following the end of the Cold War, the Mediterranean was deemphasized as an operating hub for forward-deployed U.S. Navy forces. This situation might be changing once again: Russia's seizure and annexation of Crimea in March 2014, Russia's actions in Eastern Ukraine, operations by Russian military forces around the periphery of Europe and in the Arctic, and developments in North Africa and Syria are once again focusing U.S. policymaker attention on U.S. military operations in Europe and its surrounding waters, and in the Arctic (meaning, for the U.S. Navy, potentially increased operations in the Mediterranean and perhaps the Norwegian Sea and the Arctic).

Longer Ship Deployments

U.S. Navy officials have testified that fully meeting requests from U.S. regional combatant commanders (COCOMs) for forward-deployed U.S. naval forces would require a Navy much larger than today's fleet. For example, Navy officials testified in March 2014 that a Navy of 450 ships would be required to fully meet COCOM requests for forward-deployed Navy forces.⁸ COCOM requests for forward-deployed U.S. Navy forces are adjudicated by DOD through a process called the Global Force Management Allocation Plan. The process essentially makes choices about how to best to apportion a finite number forward-deployed U.S. Navy ships among competing COCOM requests for those ships. Even with this process, the Navy has lengthened the deployments of some ships in an attempt to meet policymaker demands for forward-deployed U.S. Navy ships. Although Navy officials are aiming to limit ship deployments to seven months, Navy ships in recent years have frequently been deployed for periods of eight months or more.

⁸ Spoken testimony of Admiral Jonathan Greenert at a March 12, 2014, hearing before the House Armed Services Committee on the Department of the Navy's proposed FY2015 budget, as shown in transcript of hearing.

Limits on Defense Spending in Budget Control Act of 2011 as Amended

Limits on the “base” portion of the U.S. defense budget established by Budget Control Act of 2011, or BCA (S. 365/P.L. 112-25 of August 2, 2011), as amended, combined with some of the considerations above, have led to discussions among observers about how to balance competing demands for finite U.S. defense funds, and about whether programs for responding to China’s military modernization effort can be adequately funded while also adequately funding other defense-spending priorities, such as initiatives for responding to Russia’s actions in Ukraine and elsewhere in Europe and U.S. operations for countering the Islamic State organization in the Middle East. U.S. Navy officials have stated that if defense spending remains constrained to levels set forth in the BCA as amended, the Navy in coming years will not be able to fully execute all the missions assigned to it under the 2012 DOD strategic guidance document.⁹

Navy’s Ship Force Structure Goal

March 2015 Goal for Fleet of 308 Ships

On March 17, 2015, in response to language in H.Rept. 113-446 (the House Armed Services Committee’s report on H.R. 4435, the FY2015 National Defense Authorization Act),¹⁰ the Navy submitted to Congress a report presenting a goal for achieving and maintaining a fleet of 308 ships, consisting of certain types and quantities of ships.¹¹ The goal for a 308-ship fleet is the result of 2014 update to a force structure assessment (FSA) that the Navy completed in 2012. The Navy states that 308-ship fleet is designed to meet the projected needs of the Navy in the 2020s.

Table 1 compares the 308-ship goal to earlier Navy ship force structure plans. Compared to the Navy’s previous 306-ship goal, the differences consist of a requirement for one additional amphibious ship (specifically, a 12th LPD-17 class amphibious ship) and a requirement for one additional Mobile Landing Platform/Afloat Forward Staging Base (MLP/AFSB) ship (a ship included in **Table 1** in the “Other” category).

New Force Structure Assessment (FSA) Now Being Done

Navy officials in early 2016 have testified that in light of recent changes in the international security environment, the Navy has launched a new FSA that it hopes to complete by summer 2016. Some observers believe this new FSA will result in an increase in the Navy’s force-level goal to a figure higher than 308 ships, in part because it might call for an increased Navy forward-deployed presence in the Mediterranean, a region that was deemphasized as a Navy forward-deployed operating area during the post-Cold War era.¹²

⁹ See, for example, Statement of Admiral Jonathan Greenert, U.S. navy, Chief of Naval Operations, Before the Senate Armed Services Committee on the Impact of Sequestration on National Defense, January 28, 2015, particularly page 4 and Table 1, entitled “Mission Impacts to a Sequestered Navy.”

¹⁰ See pages 205-206 of H.Rept. 113-446 of May 13, 2014.

¹¹ Department of the Navy, *Report to Congress [on] Navy Force Structure Assessment*, February 2015, 5 pp. The cover letters for the report are dated March 17, 2015.

¹² See, for example, Kris Osborn, “Navy Likely to Seek Fleet-Size Increase,” *Scout*, March 7, 2016; Megan Eckstein, “Navy Revising Force Structure Assessment In Light Of Increased Attack Sub, Other Ship Needs,” *USNI News*, February 29, 2016.

Table I. Current 308 Ship Force Structure Goal Compared to Earlier Goals

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

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

Note: QDR is Quadrennial Defense Review. The “~” symbol means approximately and signals that the number in question may be refined as a result of the Naval Force Structure Assessment currently in progress.

- Initial composition. Composition was subsequently modified.
- The Navy plans to replace the 14 current Ohio-class SSBNs with a new class of 12 next-generation SSBNs. For further discussion, see CRS Report R41129, *Navy Ohio Replacement (SSBN[X]) Ballistic Missile Submarine Program: Background and Issues for Congress*, by (name redacted).
- Although the Navy plans to continue operating its four SSGNs until they reach retirement age in the late 2020s, the Navy does not plan to replace these ships when they retire. This situation can be expressed in a table like this one with either a 4 or a zero.
- The report on the 2001 QDR did not mention a specific figure for SSGNs. The Administration’s proposed FY2001 DOD budget requested funding to support the conversion of two available Trident SSBNs into SSGNs, and the retirement of two other Trident SSBNs. Congress, in marking up this request, supported a plan to convert all four available SSBNs into SSGNs.
- With congressional approval, the goal has been temporarily be reduced to 10 carriers for the period between the retirement of the carrier *Enterprise* (CVN-65) in December 2012 and entry into service of the carrier *Gerald R. Ford* (CVN-78), currently scheduled for September 2015.
- For a time, the Navy characterized the goal as 11 carriers in the nearer term, and eventually 12 carriers.
- The 94-ship goal was announced by the Navy in an April 2011 report to Congress on naval force structure and missile defense.
- The Navy acknowledged that meeting a requirement for being able to lift the assault echelons of 2.0 Marine Expeditionary Brigades (MEBs) would require a minimum of 33 amphibious ships rather than the 31 ships

shown in the February 2006 plan. For further discussion, see CRS Report RL34476, *Navy LPD-17 Amphibious Ship Procurement: Background, Issues, and Options for Congress*, by (name redacted) .

- i. Today's Maritime Prepositioning Force (MPF) ships are intended primarily to support Marine Corps operations ashore, rather than Navy combat operations, and thus are not counted as Navy battle force ships. The planned MPF (Future) ships, however, would have contributed to Navy combat capabilities (for example, by supporting Navy aircraft operations). For this reason, the ships in the planned MPF(F) squadron were counted by the Navy as battle force ships. The planned MPF(F) squadron was subsequently restructured into a different set of initiatives for enhancing the existing MPF squadrons; the Navy no longer plans to acquire an MPF(F) squadron.
- j. The Navy no longer plans to acquire an MPF(F) squadron. The Navy, however, has procured or plans to procure some of the ships that were previously planned for the squadron—specifically, TAKE-I class cargo ships, and Mobile Landing Platform (MLP)/Afloat Forward Staging Base (AFSB) ships. These ships are included in the total shown for “Other” ships.
- k. The figure of 26 dedicated mine warfare ships included 10 ships maintained in a reduced mobilization status called Mobilization Category B. Ships in this status are not readily deployable and thus do not count as battle force ships. The 375-ship proposal thus implied transferring these 10 ships to a higher readiness status.
- l. Totals shown include 5 ships transferred from the Army to the Navy and operated by the Navy primarily for the performance of Army missions.
- m. This category includes, among other things, command ships and support ships.
- n. The increase in this category from 17 ships under the February 2006 313-ship plan to 24 ships under the apparent 328-ship goal included the addition of one TAGOS ocean surveillance ship and the transfer into this category of six ships—three modified TAKE-I class cargo ships, and three Mobile Landing Platform (MLP) ships—that were previously intended for the planned (but now canceled) MPF(F) squadron.

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

FY2017-FY2021 Five-Year Shipbuilding Plan

Table 2 shows the Navy's FY2017-FY2021 five-year shipbuilding plan.

Table 2. Navy FY2017-FY2021 Five-Year Shipbuilding Plan

(Battle force ships—i.e., ships that count against 308-ship goal)

Ship type	FY17	FY18	FY19	FY20	FY21	Total
Ohio replacement (SSBNX) ballistic missile submarine					1	1
Ford (CVN-78) class aircraft carrier		1				1
Virginia (SSN-774) class attack submarine	2	2	2	2	1	9
Arleigh Burke (DDG-51) class destroyer	2	2	2	2	2	10
Littoral Combat Ship (LCS)/Frigate	2	1	1	1	2	7
LHA(R) amphibious assault ship	1					1
LX(R) amphibious ship				1		1
Fleet towing, salvage, and rescue ship (TATS)		1	1	1	1	4
TAO-205 (previously TAO[X]) oiler		1	1	1	1	4
TOTAL	7	8	7	8	8	38

Source: Table prepared by CRS based on FY2017 Navy budget submission.

Observations that can be made about the Navy's proposed FY2017 five-year (FY2017-FY2021) shipbuilding plan include the following:

- **Total of 38 ships.** The plan includes a total of 38 ships, compared to a total of 48 ships in the FY2016-FY2020 five-year shipbuilding plan. Most of the 10-ship reduction in the FY2017-FY2021 plan compared to the FY2016-FY2020 plan is

due to a reduction in the annual procurement rate for the Littoral Combat Ship (LCS)/Frigate program that was directed by the Secretary of Defense in December 2015. The FY2016-FY2020 plan included a total of 14 LCSs/Frigates, while the new FY2017-FY2021 plan includes a total of 7.

- **Average of 7.6 ships per year.** The plan includes an average of 7.6 battle force ships per year. The steady-state replacement rate for a fleet of 308 ships with an average service life of 35 years is 8.8 ships per year. In light of how the average shipbuilding rate since FY1993 has been substantially below 8.8 ships per year (see **Appendix D**), shipbuilding supporters for some time have wanted to increase the shipbuilding rate to a steady rate of 10 or more battle force ships per year.
- **7 ships in FY2017.** The plan requests funding for 7 new ships in FY2017, compared to the 10 new ships that were projected for FY2017 under the FY2016 budget submission. The three-ship reduction from the projection under the FY2016 budget submission includes a one-ship reduction in the number of LCSs requested for FY2017 and decisions by Congress, in marking up the Navy's FY2016 budget, to accelerate from FY2017 to FY2016 the procurement of a Mobile Landing Platform (MLP)/Afloat Forward Staging Base (AFSB) ship (now called an Expeditionary Mobile Base, or ESB, ship), and to also accelerate from FY2017 to FY2016 the procurement the procurement of a fleet towing, salvage, and rescue (TATS) ship.
- **First Ohio replacement submarine in FY2021.** The plan shows the projected procurement of the first Ohio replacement (SSBNX) ballistic missile submarine in FY2021, with advance procurement (AP) funding for this boat beginning in FY2017 and continuing through FY2020. As discussed later in this report, many observers have been concerned about the potential impact of the Ohio replacement program on the Navy's ability to fund the procurement of the other kinds of ships that it wants to procure.
- **CVN-80 in FY2018.** The CVN-78 class aircraft carrier shown in FY2018 is CVN-80, the third ship in the class. The initial increment of advance procurement (AP) funding for this ship was provided in FY2016. The Navy is requesting an additional increment of advance procurement funding for FY2017. The balance of the ship's procurement cost is to be funded using incremental funding across the six-year period FY2018-FY2023. The fourth ship in the class, CVN-81, is scheduled for procurement in FY2023, with advance procurement (AP) funding scheduled to begin in FY2021.
- **10 Virginia-class attack submarines.** The 10 Virginia-class attack submarines to be procured in FY2014-FY2018 are being procured under a multiyear procurement (MYP) contract.¹³ Beginning with the second Virginia-class boat to be procured in FY2019, Virginia-class boats are to be built with an additional ship section called the Virginia Payload Module (VPM) that will substantially increase the boats' weapon capacity.
- **10 DDG-51 destroyers.** The 10 DDG-51 destroyers to be procured in FY2013-FY2017 are being procured under a multiyear procurement (MYP) contract.

¹³ For more on MYP contracting, see CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by (name redacted) and (name redacted) .

Beginning with the second of the two DDG-51s procured in FY2016, DDG-51s are to be built to the new Flight III version of the DDG-51 design, which is to carry a new and more capable radar called the Air and Missile Defense Radar (AMDR).

- **7 LCSs/Frigates.** As mentioned earlier, reflecting a December 2015 direction by the Secretary of Defense, the annual procurement rate of LCSs/Frigates has been reduced. As a consequence, the FY2017-FY2021 five-year shipbuilding plan includes a total of 7 LCSs/Frigates, compared to 14 LCSs/Frigates in the FY2016-FY2020 five-year shipbuilding plan.
- **LHA-8 amphibious assault ship in FY2017.** The Navy wants to procure an amphibious assault ship called LHA-8 in FY2017, using split funding (i.e., two-year incremental funding) in FY2017 and FY2018.
- **First LX(R) amphibious ship in FY2020.** The Navy wants to procure the first of a new class of amphibious ships, called the LX(R) class, in FY2020. Congress, as part of its action on the Navy's FY2016 budget, provided additional funding to accelerate the production schedule for this ship. The Navy has testified that, as a result of this funding, even though the ship is still shown in the FY2020 column, the Navy will now be able to accelerate the construction schedule of the ship to something more consistent with a ship procured in FY2019.
- **TATS towing, salvage, and rescue ship.** As mentioned above, Congress, as part of its action on the Navy's FY2016 budget, accelerated the procurement of the first TATS ship from FY2017 to FY2016.
- **TAO-205 (previously TAO[X]) class oiler.** The first ship in the TAO-205 class oiler (previously TAO[X]) program was funded in FY2016.

FY2017-FY2046 30-Year Shipbuilding Plan

Table 3 shows an unofficial version of the Navy's FY2017-FY2046 30-year shipbuilding plan dated February 5, 2016, which was four days before the Navy's FY2017 budget was submitted. CRS obtained this version of the plan from the defense trade press, which had obtained it earlier, and is showing it here pending the delivery to CRS of the official FY2017-FY2046 30-year plan from the Navy. The figures in this table are thus subject to revision.

In devising a 30-year shipbuilding plan to move the Navy toward its ship force-structure goal, key assumptions and planning factors include but are not limited to ship service lives, estimated ship procurement costs, projected shipbuilding funding levels, and industrial-base considerations.

Table 3. Navy FY2017-FY2046 30-Year Shipbuilding Plan

(Unofficial version dated February 5, 2016, received from defense trade press; figures shown subject to revision)

FY	CVN	LSC	SSC	SSN	SSBN	AWS	CLF	Supt	Total
17		2	2	2		1			7
18	1	2	1	2			1	1	8
19		2	1	2			1	1	7
20		2	1	2		1	1	1	8
21		2	2	1	1		1	1	8
22		2	2	2		1	1	2	10
23	1	2	2	2		1	1	2	11
24		2	2	1	1	2	1	2	11
25		2	1	2		1	1	2	9
26		2		1	1	1	1	1	7
27		2		1	1	1	1	1	7
28	1	2		1	1	2	1		8
29		2	1	1	1	1	1	1	8
30		2		1	1	1	1	2	8
31		2	1	1	1	1	1	2	9
32		2	1	1	1	1	1	2	9
33	1	2	1	1	1		1	2	9
34		2	2	1	1			1	7
35		2	2	1	1				6
36		2	2	2		1			7
37		2	3	2					7
38	1	3	4	2					10
39		3	4	2					9
40		3	4	1		2			10
41		2	4	2					8
42		3	4	1		1			9
43	1	2	2	2			1		8
44		3	3	1		2			9
45		2	3	2		1	2		10
46		3	3	1		1	2		10
Total	6	66	58	44	12	23	21	24	254

Source: Table prepared by CRS based on an unofficial version of the Navy's FY2017-FY2046 30-year shipbuilding plan dated February 5, 2016, which was four days before the Navy's FY2017 budget was submitted. CRS obtained this version of the plan from the defense trade press, which had obtained it earlier, and is showing it here pending the delivery to CRS of the official FY2017-FY2046 30-year plan from the Navy. The figures in this table are thus subject to revision.

Key: FY = Fiscal Year; CVN = aircraft carriers; LSC = surface combatants (i.e., cruisers and destroyers); SSC = small surface combatants (i.e., Littoral Combat Ships [LCSs]); SSN = attack submarines; SSBN = cruise missile submarines; SSBN = ballistic missile submarines; AWS = amphibious warfare ships; CLF = combat logistics force (i.e., resupply) ships; Supt = support ships.

Navy's Projected Force Levels Under 30-Year Shipbuilding Plan

Table 4 shows a projection of ship force levels for FY2017-FY2046 that would result from implementing the FY2017-FY2046 30-year shipbuilding plan shown in **Table 3**. As with **Table 3**, this projection is an unofficial version dated February 5, 2016, which was four days before the Navy's FY2017 budget was submitted. CRS obtained this version of the projection from the

defense trade press, which had obtained it earlier, and is showing it here pending the delivery to CRS of the official FY2017-FY2046 30-year plan from the Navy. The figures in this table are thus subject to revision.

Table 4. Projected Force Levels Resulting from FY2017-FY2046 30-Year Shipbuilding Plan

(Unofficial version dated February 5, 2016, received from defense trade press; figures shown subject to revision)

	CVN	LSC	SSC	SSN	SSGN	SSBN	AWS	CLF	Supt	Total
308 ship plan	11	88	52	48	0	12	34	29	34	308
FY17	11	90	25	52	4	14	32	29	30	287
FY18	11	91	29	53	4	14	32	29	32	295
FY19	11	94	32	52	4	14	33	29	31	300
FY20	11	95	33	52	4	14	33	29	35	306
FY21	11	97	34	51	4	14	33	30	34	308
FY22	12	98	35	48	4	14	34	30	35	310
FY23	12	99	31	49	4	14	34	30	36	309
FY24	12	100	31	48	4	14	35	30	37	311
FY25	11	100	32	47	4	14	36	30	39	313
FY26	11	99	35	45	2	14	36	30	37	309
FY27	11	99	37	44	1	13	36	30	38	309
FY28	11	100	39	42		13	37	30	38	310
FY29	11	98	40	41		12	37	30	38	307
FY30	11	95	40	42		11	37	30	38	304
FY31	11	91	40	43		11	37	30	36	299
FY32	11	89	40	43		10	37	30	37	297
FY33	11	88	40	44		10	38	30	37	298
FY34	11	86	40	45		10	37	30	37	296
FY35	11	86	40	46		10	35	30	38	296
FY36	11	86	41	47		10	35	29	38	297
FY37	11	87	41	48		10	35	29	37	298
FY38	11	88	42	47		10	34	29	35	296
FY39	11	89	44	47		10	34	29	33	297
FY40	10	88	45	47		10	33	29	32	294
FY41	10	87	43	47		11	34	29	32	293
FY42	10	84	43	49		12	33	29	32	292
FY43	10	83	43	49		12	32	29	32	290
FY44	10	82	43	50		12	32	29	32	290
FY45	10	82	45	50		12	33	29	32	293
FY46	10	80	45	51		12	33	29	32	292

Source: Table prepared by CRS based on an unofficial version of the Navy's FY2017-FY2046 30-year shipbuilding plan dated February 5, 2016, which was four days before the Navy's FY2017 budget was submitted. CRS obtained this version of the plan from the defense trade press, which had obtained it earlier, and is showing it here pending the delivery to CRS of the official FY2017-FY2046 30-year plan from the Navy. The figures in this table are thus subject to revision.

Note: Figures for support ships include five JHSVs transferred from the Army to the Navy and operated by the Navy primarily for the performance of Army missions.

Key: **FY** = Fiscal Year; **CVN** = aircraft carriers; **LSC** = surface combatants (i.e., cruisers and destroyers); **SSC** = small surface combatants (i.e., frigates, Littoral Combat Ships [LCSs], and mine warfare ships); **SSN** = attack submarines; **SSGN** = cruise missile submarines; **SSBN** = ballistic missile submarines; **AWS** = amphibious warfare ships; **CLF** = combat logistics force (i.e., resupply) ships; **Supt** = support ships.

Observations that can be made about the Navy's FY2016 30-year (FY2016-FY2045) shipbuilding plan and resulting projected force levels included the following:

- **Total of 254 ships; average of about 8.5 per year.** The plan includes a total of 264 ships to be procured—10 fewer than the 264 included in last year's FY2016-FY2045 shipbuilding plan. Much of the net 10-ship reduction compared to the FY2016-FY2045 30-year plan can be accounted for by the Secretary of Defense's direction to reduce the LCS/Frigate program from 52 ships to 40 ships. The total of 254 ships equates to an average of about 8.5 ships per year, which is equal to the average procurement rate (sometimes called the steady-state replacement rate) of 8.8 ships per year that would be needed over the long run to achieve and maintain a fleet of 308 ships, assuming an average life of 35 years for Navy ships.
- **Projected shortfalls in attack submarines, large surface combatants, small surface combatants, and amphibious ships.** The FY2017-FY2046 30-year shipbuilding plan, like many previous Navy 30-year shipbuilding plans, does not include enough ships to fully support all elements of the Navy's 308-ship goal over the entire 30-year period. In particular, the Navy projects that the fleet would experience:
 - a shortfall in large surface combatants (i.e., cruisers and destroyers) from FY2034 through FY2037, and from FY2041 through at least FY2046;
 - a shortfall in small surface combatants (i.e., LCSs and frigates) for the entire 30-year period;
 - a shortfall in attack submarines from FY2025 through FY2036; and
 - a shortfall in amphibious ships from FY2017 through FY2021, in FY2040, and from FY2042 through at least FY2046.

The 30-year duration of the shortfall in small surface combatants appears principally due to the December 2015 direction from the Secretary of Defense to reduce the LCS/Frigate program from 52 ships to 40 ships.¹⁴

- **Ballistic missile submarine force to be reduced temporarily to 10 or 11 boats.** As a result of a decision in the FY2013 budget to defer the scheduled procurement of the first Ohio replacement (SSBN[X]) ballistic missile submarine by two years, from FY2019 to FY2021, the ballistic missile submarine force is projected to drop to a total of 10 or 11 boats—one or two boats below the 12-boat SSBN force-level goal—during the period FY2029-FY2041. The Navy says this reduction is acceptable for meeting current strategic nuclear deterrence mission requirements, because none of the 10 or 11 boats during these years will be encumbered by long-term maintenance.¹⁵

¹⁴ See also Sydney J. Freedberg Jr., "LCS Cut Ripples Through Navy's New 30-Year Shipbuilding Plan," *Breaking Defense*, March 14, 2016.

¹⁵ For further discussion of this issue, see CRS Report R41129, *Navy Ohio Replacement (SSBN[X]) Ballistic Missile* (continued...)

Comparison of First 10 Years of 30-Year Plans

Table 5 and **Table 6** below show the first 10 years of planned annual ship procurement quantities and projected Navy force sizes in 30-year shipbuilding plans dating back to the first such plan, which was submitted in 2000 in conjunction with the FY2001 budget. By reading vertically down each column, one can see how the ship procurement quantity or Navy force size projected for a given fiscal year changed as that year drew closer to becoming the current budget year.

(...continued)

Submarine Program: Background and Issues for Congress, by (name redacted) .

Table 5. Ship Procurement Quantities in First 10 Years of 30-Year Shipbuilding Plans

Years shown are fiscal years

FY of 30-year plan (year submitted)	0 1	0 2	0 3	0 4	0 5	06	0 7	0 8	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
FY01 plan (2000)	8	8	8	8	7	5	6	6	6	7																
FY02 plan (2001)		6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a															
FY03 plan (2002)			5	5	7	7	11	n/a	n/a	n/a	n/a															
FY04 plan (2003)				7	8	7	7	9	14	15	13	14	15													
FY05 plan (2004)					9	6	8	9	17	14	15	14	16	15												
FY06 plan (2005)						4	7	7	9	10	12	n/a	n/a	n/a	n/a											
FY07 plan (2006)							7	7	11	12	14	13	12	11	11	10										
FY08 plan (2007)								7	11	12	13	12	12	10	12	11	6									
FY09 plan (2008)									7	8	8	12	12	13	13	12	12	13								
FY10 plan (2009)										8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a							
FY11 plan (2010)											9	8	12	9	12	9	12	9	13	9						
FY12 plan (2011)												10	13	11	12	9	12	10	12	8	9					
FY13 plan (2012)													10	7	8	9	7	11	8	12	9	12				
FY14 plan (2013)														8	8	7	9	9	10	10	10	11	14			
FY15 plan (2014)															7	8	11	10	8	11	8	11	11	13		
FY16 plan (2015)																9	10	10	9	10	9	11	13	12	10	
FY17 plan (2016)																	7	8	7	8	8	10	11	11	9	7

Source: Navy 30-year shipbuilding plans supplemented by annual Navy budget submissions (including 5-year shipbuilding plans) for fiscal years shown. *n/a* means not available—see notes below. The data line for the FY2017 (2016) plan reflects an unofficial version of the Navy’s FY2017-FY2046 30-year shipbuilding plan dated February 5, 2016, which was four days before the Navy’s FY2017 budget was submitted. CRS obtained this version of the plan from the defense trade press, which had obtained it earlier, and is showing it here pending the delivery to CRS of the official FY2017-FY2046 30-year plan from the Navy. The figures in the FY2017 (2016) data line are thus subject to revision.

Notes: The FY2001 30-year plan submitted in 2000 was submitted under a one-time-only legislative provision, Section 1013 of the FY2000 National Defense Authorization Act (S. 1059/P.L. 106-65 of October 5, 1999). No provision required DOD to submit a 30-year shipbuilding plan in 2001 or 2002, when Congress considered DOD's proposed FY2002 and FY2003 DOD budgets. (In addition, no FYDP was submitted in 2001, the first year of the George W. Bush Administration.) Section 1022 of the FY2003 Bob Stump National Defense Authorization Act (H.R. 4546/P.L. 107-314 of December 2, 2002) created a requirement to submit a 30-year shipbuilding plan each year, in conjunction with each year's defense budget. This provision was codified at 10 U.S.C. 231. The first 30-year plan submitted under this provision was the one submitted in 2003, in conjunction with the proposed FY2004 DOD budget. For the next several years, 30-year shipbuilding plans were submitted each year, in conjunction with each year's proposed DOD budget. An exception occurred in 2009, the first year of the Obama Administration, when DOD submitted a proposed budget for FY2010 with no accompanying FYDP or 30-year Navy shipbuilding plan. Section 1023 of the FY2011 Ike Skelton National Defense Authorization Act (H.R. 6523/P.L. 111-383 of January 7, 2011) amended 10 U.S.C. 231 to require DOD to submit a 30-year shipbuilding plan once every four years, in the same year that DOD submits a Quadrennial Defense Review (QDR). Consistent with Section 1023, DOD did not submit a new 30-year shipbuilding plan at the time that it submitted the proposed FY2012 DOD budget. At the request of the House Armed Services Committee, the Navy submitted the FY2012 30-year (FY2012-FY2041) shipbuilding plan in late-May 2011. Section 1011 of the FY2012 National Defense Authorization Act (H.R. 1540/P.L. 112-81 of December 31, 2011) amended 10 U.S.C. 231 to reinstate the requirement to submit a 30-year shipbuilding plan each year, in conjunction with each year's defense budget.

Table 6. Projected Navy Force Sizes in First 10 Years of 30-Year Shipbuilding Plans

Years shown are fiscal years

FY of 30-year plan (year submitted)	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
FY01 plan (2000)	316	315	313	313	313	311	311	304	305	305																
FY02 plan (2001)		316	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a															
FY03 plan (2002)			314	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a														
FY04 plan (2003)				292	292	291	296	301	305	308	313	317	321													
FY05 plan (2004)					290	290	298	303	308	307	314	320	328	326												
FY06 plan (2005)						289	293	297	301	301	306	n/a	n/a	305	n/a											
FY07 plan (2006)							285	294	299	301	306	315	317	315	314	317										
FY08 plan (2007)								286	289	293	302	310	311	307	311	314	322									
FY09 plan (2008)									286	287	289	290	293	287	288	291	301	309								
FY10 plan (2009)										287	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a							
FY11 plan (2010)											284	287	287	285	285	292	298	305	311	315						
FY12 plan (2011)												290	287	286	286	297	301	311	316	322	324					
FY13 plan (2012)													285	279	276	284	285	292	300	295	296	298				
FY14 plan (2013)														282	270	280	283	291	300	295	296	297	297			
FY15 plan (2014)															274	280	286	295	301	304	304	306	311	313		
FY16 plan (2015)																282	284	294	300	304	306	309	310	315	317	
FY17 plan (2016)																	287	295	300	306	308	310	309	311	313	309

Source: Navy 30-year shipbuilding plans supplemented by annual Navy budget submissions (including 5-year shipbuilding plans) for fiscal years shown. **n/a** means not available—see notes below. The data line for the FY2017 (2016) plan reflects an unofficial version of the Navy’s FY2017-FY2046 30-year shipbuilding plan dated February 5, 2016, which was four days before the Navy’s FY2017 budget was submitted. CRS obtained this version of the plan from the defense trade press, which had obtained it earlier, and is showing it here pending the delivery to CRS of the official FY2017-FY2046 30-year plan from the Navy. The figures in the FY2017 (2016) data line are thus subject to revision.

Notes: The FY2001 30-year plan submitted in 2000 was submitted under a one-time-only legislative provision, Section 1013 of the FY2000 National Defense Authorization Act (S. 1059/P.L. 106-65 of October 5, 1999). No provision required DOD to submit a 30-year shipbuilding plan in 2001 or 2002, when Congress considered DOD's proposed FY2002 and FY2003 DOD budgets. Section 1022 of the FY2003 Bob Stump National Defense Authorization Act (H.R. 4546/P.L. 107-314 of December 2, 2002) created a requirement to submit a 30-year shipbuilding plan each year, in conjunction with each year's defense budget. This provision was codified at 10 U.S.C. 231. The first 30-year plan submitted under this provision was the one submitted in 2003, in conjunction with the proposed FY2004 DOD budget. For the next several years, 30-year shipbuilding plans were submitted each year, in conjunction with each year's proposed DOD budget. An exception occurred in 2009, the first year of the Obama Administration, when DOD submitted a proposed budget for FY2010 with no accompanying FYDP or 30-year Navy shipbuilding plan. The FY2006 plan included data for only selected years beyond FY2011. Section 1023 of the FY2011 Ike Skelton National Defense Authorization Act (H.R. 6523/P.L. 111-383 of January 7, 2011) amended 10 U.S.C. 231 to require DOD to submit a 30-year shipbuilding plan once every four years, in the same year that DOD submits a Quadrennial Defense Review (QDR). Consistent with Section 1023, DOD did not submit a new 30-year shipbuilding plan at the time that it submitted the proposed FY2012 DOD budget. At the request of the House Armed Services Committee, the Navy submitted the FY2012 30-year (FY2012-FY2041) shipbuilding plan in late-May 2011. Section 1011 of the FY2012 National Defense Authorization Act (H.R. 1540/P.L. 112-81 of December 31, 2011) amended 10 U.S.C. 231 to reinstate the requirement to submit a 30-year shipbuilding plan each year, in conjunction with each year's defense budget.

Issues for Congress for FY2017

FY2017 Shipbuilding Funding Requests

One issue for Congress is whether to approve, reject, or modify the Navy's FY2017 funding requests for its various shipbuilding programs. In assessing this question, Congress may consider various factors, including whether the Navy has accurately priced the work to be funded in FY2017. Among many specific issues for Congress to assess are the following, some of which are discussed in more detail in CRS reports that cover individual shipbuilding programs:

- whether to provide advance procurement (AP) funding in FY2017 for the purchase of materials for the aircraft carrier CVN-81, so as to enable a combined purchase of materials for the aircraft carriers CVN-80 and CVN-81 (the Navy's proposed FY2017 budget does not request any AP funding for the procurement of materials for CVN-81);
- whether to provide any advance procurement (AP) funding in FY2017 to help support the procurement of an additional Virginia-class submarine in FY2021, which could help mitigate the projected attack submarine shortfall (no such FY2017 funding is requested);
- whether to provide some or all of the \$433 million in unrequested procurement funding that is needed to complete the funding for an additional DDG-51 destroyer that was partially funded with \$1 billion in FY2016 (this is the number 2 item on the Navy's FY2017 Unfunded Requirements List, or URL);
- whether to provide any additional research and development funding and/or additional advance procurement (AP) funding for the program in FY2017 to help accelerate the procurement of the first LX(R) amphibious ship from FY2020 to an earlier year, so as to reduce the gap in time between the end of LPD-17 amphibious ship production and the start of LX(R) production;
- whether to accelerate the procurement of the second TAO-205 class oiler from FY2018 to FY2017, with all, or at least most, of the ship's roughly \$600 million procurement cost provided in FY2017;
- whether to provide additional advance procurement funding for the TAO-205 program in FY2017 to finance economic order quantity (EOQ) purchases (i.e., up-front batch purchases) of components for the first six TAO-205s, so as to reduce the cost of the six ships;
- whether to provide the \$75 million in unrequested funding that would be needed to accelerate the procurement of the second TATS towing, salvage, and rescue ship from FY2018 to FY2017 (this is the number 31 item on the Navy's FY2017 Unfunded Requirements List);
- whether to provide the roughly \$225 million in unrequested funding that would be needed to procure an additional Joint High Speed Vessel (JHSV—now called Expeditionary Fast Transport [EPF])—the Navy has a requirement for 10 of these ships, but in earlier years had a requirement for 16 or more; Congress funded an 11th JHSV in FY2015 and a 12th JHSV in FY2016;
- whether to provide \$165 million to procure three additional Ship-to-Shore Connectors (SSCs) (i.e., next-generation air cushioned landing craft) (this is the number 20 item on the Navy's FY2017 URL); and

- whether to provide \$22 million to procure one LCU 1700 class landing craft (this is the number 21 item on the navy's FY2017 URL)

Cruiser Modernization

Another issue for Congress is whether to approve, reject, or modify a proposal in the Navy's FY2017 budget concerning the modernization of 11 of the Navy's 22 existing Aegis cruisers. Congress in recent years has pushed back against Navy proposals for operating and modernizing these ships. When the Navy in an earlier budget submission proposed retiring seven of the ships years before the end of their service lives, Congress rejected the proposal. When the Navy in a subsequent budget submission proposed taking 11 of the 22 ships temporarily out of service for modernization, and then returning them to service years later as one-for-one replacements for the other 11 ships in the class, Congress modified the Navy's proposed schedule. In its proposed FY2017 budget, the Navy is once again asking to modernize the 11 ships along the Navy's preferred schedule, rather than the modified schedule directed by Congress.¹⁶

Proposed Deactivation of Carrier Air Wing

Another issue for Congress is whether to approve, reject, or modify the Navy's proposal in its FY2017 budget submission to deactivate one of the Navy's 10 carrier air wings. This issue is discussed in detail in CRS Report RS20643, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, by (name redacted) .

New Force Structure Assessment (FSA)

Another potential issue for Congress is how to respond to the results of the new Force Structure Assessment (FSA) that the Navy is currently conducting. As mentioned earlier, Navy officials in early 2016 have testified that in light of recent changes in the international security environment, the Navy has launched a new FSA that it hopes to complete by summer 2016. Some observers believe this new FSA will result in an increase in the Navy's force-level goal to a figure higher than 308 ships, in part because it might call for an increased Navy forward-deployed presence in the Mediterranean, a region that was deemphasized as a Navy forward-deployed operating area during the post-Cold War era.¹⁷ (See also the section below entitled "Appropriate Future Size and Structure of Navy in Light of Strategic and Budgetary Changes.")

Potential Impact on Size and Capability of Navy of Limiting DOD Spending to BCA Caps Through FY2021

Another issue for Congress concerns the potential impact on the size and capability of the Navy of limiting DOD spending through FY2021 to levels at or near the caps established in the Budget Control Act of 2011 (BCA) as amended. Navy officials state that limiting DOD's budget to such

¹⁶ For further discussion, see Michael Fabey, "Air Defense Concerns Drive U.S. navy's Cruiser Plan," *Aerospace Daily & Defense Report*, February 15, 2016: 3; Megan Eckstein, "WEST: Navy Wants Congressional Mandate Preventing Decommissioning Modernized Cruisers," *USNI News*, February 17, 2016; Connor O'Brien, "Overturning Navy Cruiser Plan Would Cost \$3 Billion, Admiral Warns," *Politico*, March 17, 2016.

¹⁷ See, for example, Kris Osborn, "Navy Likely to Seek Fleet-Size Increase," *Scout*, March 7, 2016; Megan Eckstein, "Navy Revising Force Structure Assessment In Light Of Increased Attack Sub, Other Ship Needs," *USNI News*, February 29, 2016.

levels would lead to a smaller and less capable Navy that would not be capable of fully executing all the missions assigned to it under the defense strategic guidance document of 2012.

January 2015 Navy Testimony

In testimony on this issue to the Senate Armed Services Committee on January 28, 2015, then-Chief of Naval Operations Admiral Jonathan Greenert stated:

A return to sequestration in FY 2016 would necessitate a revisit and revision of the DSG [Defense Strategic Guidance document of January 2012]. Required cuts will force us to further delay critical warfighting capabilities, reduce readiness of forces needed for contingency response, forego or stretch procurement of ships and submarines, and further downsize weapons capability. We will be unable to mitigate the shortfalls like we did in FY2013 [in response to the sequester of March 1, 2013] because [unobligated] prior-year investment balances [which were included in the funds subject to the sequester] were depleted under [the] FY 2013 sequester [of March 1, 2013].

The revised discretionary caps imposed by sequestration would be a reduction of about \$10 billion in our FY 2016 budget alone, as compared to PB-2015. From FY 2016-2020, the reduction would amount to approximately \$36 billion. If forced to budget at this level, it would reduce every appropriation, inducing deep cuts to Navy Operation and Maintenance (O&M), investment, and modernization accounts. The Research, Development, Test and Evaluation (RDT&E) accounts would likely experience a significant decline across the FYDP, severely curtailing the Navy's ability to develop new technologies and asymmetric capabilities.

As I testified to this committee in November 2013, any scenario to address the fiscal constraints of the revised discretionary caps must include sufficient readiness, capability and manpower to complement the force structure capacity of ships and aircraft. This balance would need to be maintained to ensure each unit will be effective, even if the overall fleet is not able to execute the DSG. There are many ways to balance between force structure, readiness, capability, and manpower, but none that Navy has calculated that enable us to confidently execute the current defense strategy within dictated budget constraints.

As detailed in the Department of Defense's April 2014 report, "Estimated Impacts of Sequestration-Level Funding," one potential fiscal and programmatic scenario would result in a Navy of 2020 that would be unable to execute two of the ten DSG missions due to the compounding effects of sequestration on top of pre-existing FY 2013, 2014, and 2015 resource constraints. Specifically, the cuts would render us unable to sufficiently Project Power Despite Anti-Access/Area Denial Challenges and unable to Deter and Defeat Aggression. In addition, we would be forced to accept higher risk in five other DSG missions: Counter Terrorism and Irregular Warfare; Defend the Homeland and Provide Support to Civil Authorities; Provide a Stabilizing Presence; Conduct Stability and Counterinsurgency Operations; and Conduct Humanitarian, Disaster Relief, and Other Operations. (Table 2 provides more detail on mission risks.) In short, a return to sequestration in FY 2016 will require a revision of our defense strategy.

Critical assumptions I have used to base my assessments and calculate risk:

- ☐ Navy must maintain a credible, modern, and survivable sea-based strategic deterrent
- ☐ Navy must man its units
- ☐ Units that deploy must be ready
- ☐ People must be given adequate training and support services
- ☐ Readiness for deployed forces is a higher priority than contingency response forces

- Capability must be protected, even at the expense of some capacity
- Modernized and asymmetric capabilities (advanced weapons, cyber, electronic warfare) are essential to projecting power against evolving, sophisticated adversaries
- The maritime industrial base is fragile—damage can be long-lasting, hard to reverse

The primary benchmarks I use to gauge Navy capability and capacity are DoD Global Force Management Allocation Plan presence requirements, Combatant Commander Operation and Contingency Plans, and Defense Planning Guidance Scenarios. Navy's ability to execute DSG missions is assessed based on capabilities and capacity resident in the force in 2020.

The following section describes specific sequestration impacts to presence and readiness, force structure investments, and personnel under this fiscal and programmatic scenario:

Presence and Readiness

A return to sequestration would reduce our ability to deploy forces on the timeline required by Global Combatant Commands in the event of a contingency. Of the Navy's current battle force, we maintain roughly 100 ships forward deployed, or 1/3 of our entire Navy. Included among the 100 ships are two CSG and two ARG forward at all times. CSGs and ARGs deliver a significant portion of our striking power, and we are committed to keeping, on average, three additional CSGs and three additional ARGs in a contingency response status, ready to deploy within 30 days to meet operation plans (OPLANs). However, if sequestered, we will prioritize the readiness of forces forward deployed at the expense of those in a contingency response status. We cannot do both. We will only be able to provide a response force of one CSG and one ARG. Our current OPLANs require a significantly more ready force than this reduced surge capacity could provide, because they are predicated on our ability to respond rapidly. Less contingency response capacity can mean higher casualties as wars are prolonged by the slow arrival of naval forces into a combat zone. Without the ability to respond rapidly enough, our forces could arrive too late to affect the outcome of a fight.

Our PB-2015 base budget funded ship and aviation depot maintenance to about 80 percent of the requirement in FY 2016-2019. This is insufficient in maintaining the Fleet and has forced us to rely upon Overseas Contingency Operations (OCO) funding to address the shortfall. Sequestration would further aggravate existing Navy backlogs. The impacts of these growing backlogs may not be immediately apparent, but will result in greater funding needs in the future to make up for the shortfalls each year and potentially more material casualty reports (CASREPs), impacting operations. For aviation depot maintenance, the growing backlog will result in more aircraft awaiting maintenance and fewer operational aircraft on the flight line, which would create untenable scenarios in which squadrons would only get their full complement of aircraft just prior to deployment. The situation will lead to less proficient aircrews, decreased combat effectiveness of naval air forces, and increased potential for flight and ground mishaps.

Critical to mission success, our shore infrastructure provides the platforms from which our Sailors train and prepare. However, due the shortfalls over the last three years, we have been compelled to reduce funding in shore readiness since FY 2013 to preserve the operational readiness of our fleet. As a result, many of our shore facilities are degrading. At sequestration levels, this risk will be exacerbated and the condition of our shore infrastructure, including piers, runways, and mission-critical facilities, will further erode. This situation may lead to structural damage to our ships while pierside, aircraft damage from foreign object ingestion on deteriorated runways, and degraded communications within command centers. We run a greater risk of mishaps, serious injury, or health hazards to personnel.

Force Structure Investments

We must ensure that the Navy has the required capabilities to be effective, even if we cannot afford them in sufficient capacity to meet the DSG. The military requirements laid out in the DSG are benchmarked to the year 2020, but I am responsible for building and maintaining capabilities now for the Navy of the future. While sequestration causes significant near-term impacts, it would also create serious problems that would manifest themselves after 2020 and would be difficult to recover from.

In the near term, the magnitude of the sequester cuts would compel us to consider reducing major maritime and air acquisition programs; delaying asymmetric capabilities such as advanced jammers, sensors, and weapons; further reducing weapons procurement of missiles, torpedoes, and bombs; and further deferring shore infrastructure maintenance and upgrades. Because of its irreversibility, force structure cuts represent options of last resort for the Navy. We would look elsewhere to absorb sequestration shortfalls to the greatest extent possible.

Disruptions in naval ship design and construction plans are significant because of the long-lead time, specialized skills, and extent of integration needed to build military ships. Because ship construction can span up to nine years, program procurement cancelled in FY 2016 will not be felt by the Combatant Commanders until several years later when the size of the battle force begins to shrink as those ships are not delivered to the fleet at the planned time. Likewise, cancelled procurement in FY 2016 will likely cause some suppliers and vendors of our shipbuilding industrial base to close their businesses. This skilled, experienced and innovative workforce cannot be easily replaced and it could take years to recover from layoffs and shutdowns; and even longer if critical infrastructure is lost. Stability and predictability are critical to the health and sustainment of this vital sector of our Nation's industrial capacity.

Personnel

In FY 2013 and 2014, the President exempted all military personnel accounts from sequestration out of national interest to safeguard the resources necessary to compensate the men and women serving to defend our Nation and to maintain the force levels required for national security. It was recognized that this action triggered a higher reduction in non-military personnel accounts.

If the President again exempts military personnel accounts from sequestration in FY 2016, then personnel compensation would continue to be protected. Overall, the Navy would protect personnel programs to the extent possible in order to retain the best people. As I testified in March 2014, quality of life is a critical component of the quality of service that we provide to our Sailors. Our Sailors are our most important asset and we must invest appropriately to keep a high caliber all-volunteer force. We will continue to fund Sailor support, family readiness, and education programs. While there may be some reductions to these programs if sequestered in FY 2016, I anticipate the reductions to be relatively small. However, as before, this would necessitate higher reductions to the other Navy accounts.

Conclusion

Navy is still recovering from the FY 2013 sequestration in terms of maintenance, training, and deployment lengths. Only 1/3 of Navy contingency response forces are ready to deploy within the required 30 days. With stable and consistent budgets, recovery is possible in 2018. However, if sequestered, we will not recover within this FYDP.

For the last three years, the Navy has been operating under reduced top-lines and significant shortfalls: \$9 billion in FY 2013, \$5 billion in FY 2014 and \$11 billion in FY 2015, for a total shortfall of about \$25 billion less than the President's budget request. Reverting to revised sequester-level BCA caps would constitute an additional \$5-10 billion decrement each year to Navy's budget. With each year of sequestration, the loss of force structure, readiness, and future investments would cause our options to become

increasingly constrained and drastic. The Navy already shrank 23 ships and 63,000 personnel between 2002 and 2012. It has few options left to find more efficiencies.

While Navy will do its part to help the Nation get its fiscal house in order, it is imperative we do so in a coherent and thoughtful manner to ensure appropriate readiness, warfighting capability, and forward presence—the attributes we depend upon for our Navy. Unless naval forces are properly sized, modernized at the right pace, ready to deploy with adequate training and equipment, and capable to respond in the numbers and at the speed required by Combatant Commanders, they will not be able to carry out the Nation’s defense strategy as written. We will be compelled to go to fewer places, and do fewer things. Most importantly, when facing major contingencies, our ability to fight and win will neither be quick nor decisive.

Unless this Nation envisions a significantly diminished global security role for its military, we must address the growing mismatch in ends, ways, and means. The world is becoming more complex, uncertain, and turbulent. Our adversaries’ capabilities are diversifying and expanding. Naval forces are more important than ever in building global security, projecting power, deterring foes, and rapidly responding to crises that affect our national security. A return to sequestration would seriously weaken the United States Navy’s ability to contribute to U.S. and global security.¹⁸

Greenert’s testimony concluded with the following table:

¹⁸ Statement of Admiral Jonathan Greenert, U.S. Navy, Chief of Naval Operations, Before the Senate Armed Services Committee on the Impact of Sequestration on National Defense, January 28, 2015, pp. 4-9.

Figure I. Navy Table on Mission Impacts of Limiting Navy's Budget to BC Levels

Mission Impacts to a Sequestered Navy		
Quadrennial Defense Review Objectives	Defense Strategic Guidance Missions	Navy Ability to Execute
Project Power and Win Decisively	Project power against a technologically capable adversary	Major challenges to achieve warfighting objectives in denied areas: <ul style="list-style-type: none"> • Inadequate power projection capacity • Too few strike fighter, command/control, electronic warfare assets • Limited advanced radar and missile capacity • Insufficient munitions
	Execute large-scale ops in one region, deter another adversary's aggression elsewhere	Limited ready capacity to execute two simultaneous large scale ops: <ul style="list-style-type: none"> • 2/3 of required contingency response force (2 of 3 Carrier Strike Groups and 2 of 3 Amphibious Readiness Groups) not ready to deploy within 30 days
	Conduct limited counterinsurgency and other stability operations	Increased risk due to: <ul style="list-style-type: none"> • Reduced funding to Navy Expeditionary Combat Command • Reduced ISR capacity (especially tactical rotary wing drones)
	Operate effectively in space and cyber space	This mission is fully executable in a sequestered environment <ul style="list-style-type: none"> • Navy continues to prioritize cyber capabilities
Protect the Homeland	Conduct globally-distributed counter terrorism and irregular warfare operations	Increased risk due to: <ul style="list-style-type: none"> • Fewer sea base options and less ISR capacity (drones) • Reduced funding to Navy Expeditionary Combat Command
	Conduct humanitarian assistance and disaster relief	Increased risk due to: <ul style="list-style-type: none"> • Reduction in operations, maintenance, and flying hour accounts
	Defend the Homeland and provide support to civil authorities	Increased risk due to: <ul style="list-style-type: none"> • Reduction in operations, maintenance, and flying hour accounts
	Maintain a safe, secure, effective nuclear deterrent	This mission is fully executable in a sequestered environment <ul style="list-style-type: none"> • Navy's top budget priority in any fiscal scenario
	Prevent the proliferation and use of nuclear, biological, and chemical weapons	This mission is fully executable in a sequestered environment
Build Security Globally	Provide a stabilizing presence to influence events, reassure allies, and respond to crises	Increased risk due to: <ul style="list-style-type: none"> • Less ships forward • Decline of steady state presence & contingency response forces

Table 2: Mission Impacts to a Sequestered Navy

Source: Statement of Admiral Jonathan Greenert, U.S. Navy, Chief of Naval Operations, Before the Senate Armed Services Committee on the Impact of Sequestration on National Defense, January 28, 2015.

March 2015 Navy Report

The Navy's March 2015 report to Congress on its FY2016 30-year shipbuilding plan states:

Long Term Navy Impact of Budget Control Act (BCA) Resource Level

The BCA is essentially a ten-percent reduction to DOD's TOA. With the CVN [aircraft carrier] and OR [Ohio replacement] SSBN programs protected from this cut, as described above, there would be a compounding effect on the remainder of the Navy's programs. The shortage of funding could potentially reverse the Navy's progress towards recapitalizing a 308 ship battle force and could damage an already fragile shipbuilding industry. There are many ways to balance between force structure, readiness, capability, and manpower, but none that Navy has calculated that enable us to confidently execute the current defense strategy within BCA level funding.

If the BCA is not rescinded, it may impact Navy's ability to procure those ships we intend to procure between now and FY2020. Although Navy would look elsewhere to absorb sequestration shortfalls because of the irreversibility of force structure cuts, a result might be that a number of the ships reflected in the current FYDP may be delayed to the future. The unintended consequence of these potential delays would be the increased costs of restoring these ships on top of an already stretched shipbuilding account that is trying to deal with the post FY2021 OR SSBN costs.

As previously articulated, barring changes to the Fleet's operational requirements, the annual impact of sequestration level funding may require Navy to balance resources to

fund readiness accounts to keep what we have operating, manned, and trained. The net result of these actions could potentially create a smaller Navy that is limited in its ability to project power around the world and simply unable to execute the nation's defense strategy. A decline would not be immediate due to the ongoing shipbuilding projects already procured but would impact the future fleet size. Disruptions in naval ship design and construction plans are significant because of the long-lead time, specialized skills, and integration needed to build military ships. The extent of these impacts would be directly related to the length of time we are under a BCA and the TOA reductions that are apportioned to the Navy.¹⁹

Affordability of 30-Year Shipbuilding Plan

Another potential oversight issue for Congress concerns the prospective affordability of the Navy's 30-year shipbuilding plan. In assessing the prospective affordability of the 30-year plan, key factors that Congress may consider include estimated ship procurement costs and future shipbuilding funding levels. Each of these is discussed below.

Estimated Ship Procurement Costs

If one or more Navy ship designs turn out to be more expensive to build than the Navy estimates, then the projected funding levels shown in the 30-year shipbuilding plan will not be sufficient to procure all the ships shown in the plan. Ship designs that can be viewed as posing a risk of being more expensive to build than the Navy estimates include Gerald R. Ford (CVN-78) class aircraft carriers, Ohio-replacement (SSBNX) class ballistic missile submarines, the Flight III version of the DDG-51 destroyer, the TAO-205 class oiler, and the LX(R) amphibious ship.

As shown in **Table 7**, the Navy estimates that the FY2016 30-year shipbuilding plan would cost an average of about \$16.5 billion per year in constant FY2015 dollars to implement, including an average of about \$16.9 billion per year during the first 10 years of the plan, an average of about \$17.2 billion per year during the middle 10 years of the plan, and an average of about \$15.2 billion per year during the final 10 years of the plan.

As also shown in **Table 7**, an October 2015 Congressional Budget Office (CBO) report on the Navy's FY2015 30-year shipbuilding plan estimates that the plan will require 11.5% more funding to implement than the Navy estimates, including 7.7% more than the Navy estimates during the first 10 years of the plan, 11.6% more than the Navy estimates during the middle 10 years of the plan, and 17.1% more than the Navy estimates during the final 10 years of the plan.²⁰ Over the years, CBO's estimates of the cost to implement the Navy's 30-year shipbuilding plan have generally been higher than the Navy's estimates.

Some of the difference between CBO's estimates and the Navy's estimates is due to a difference between CBO and the Navy in how to treat inflation in Navy shipbuilding. This difference compounds over time, making it increasingly important as a factor in the difference between CBO's estimates and the Navy's estimates the further one goes into the 30-year period. In other words, other things held equal, this factor tends to push the CBO and Navy estimates further and further apart as one proceeds from the earlier years of the plan to the later years of the plan.

¹⁹ U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2016*, March 2015, pp. 7-8.

²⁰ Congressional Budget Office, *An Analysis of the Navy's Fiscal Year 2016 Shipbuilding Plan*, Table 4 on p. 13.

Table 7. Navy and CBO Estimates of Cost of 30-Year Shipbuilding Plan

Funding for new-construction ships, in billions of constant FY2015 dollars

	First 10 years of the plan	Middle 10 years of the plan	Final 10 years of the plan	Entire 30 years of the plan
Navy estimate	16.9	17.2	15.2	16.5
CBO estimate	18.2	19.2	17.8	18.4
% difference between Navy and CBO estimates	7.7%	11.6%	17.1%	11.5%

Source: Congressional Budget Office, *An Analysis of the Navy's Fiscal Year 2016 Shipbuilding Plan*, Table 4 on p. 13.

The shipbuilding program that contributes the most to the difference between the CBO and Navy estimates of the cost of the 30-year plan is a future destroyer, called the DDG-51 Flight IV, that appears in the final 16 years of the 30-year plan. As shown in the CBO report, this one program accounts for 29% of the total difference between CBO and the Navy on the estimated cost to implement the 30-year shipbuilding plan. The next-largest contributor to the overall difference is the Ohio replacement program, which accounts for 22%, followed by the Flight III version of the DDG-51 destroyer, which accounts for 12%.²¹ Together, the Flight III and Flight IV versions of the DDG-51 destroyer account for 41% of the total difference between CBO and the Navy.

The relatively large contribution of the DDG-51 Flight IV destroyer to the overall difference between CBO and the Navy on the cost of the 30-year shipbuilding plan appears to be due primarily to three factors:

- There are many of these Flight IV destroyers in the 30-year plan—a total of 37, or 14% of the 264 total ships in the plan.
- There appears to be a basic difference between CBO and the Navy over the likely size (and thus cost) of this ship. The Navy appears to assume that the ship will use the current DDG-51 hull design, whereas CBO believes the growth potential of the current DDG-51 hull design will be exhausted by then, and that the Flight IV version of the ship will require a larger hull design (either a lengthened version of the DDG-51 hull design, or an entirely new hull design).
- These destroyers occur in the final 16 years of the 30-year plan, where the effects of the difference between CBO and the Navy on how to treat inflation in Navy shipbuilding are the most pronounced.

Future Shipbuilding Funding Levels

In large part due to the statutory requirement for the Navy to annually submit a report on its 30-year shipbuilding plan, it has been known for years that fully implementing the 30-year shipbuilding plan would require shipbuilding budgets in coming years that are considerably greater than those of recent years, and that funding requirements for the Ohio-replacement (OR) ballistic missile submarine (SSBN) program will put particular pressure on the shipbuilding budget during the middle years of the 30-year plan. The Navy's report on the FY2016 30-year plan states:

²¹ Congressional Budget Office, *An Analysis of the Navy's Fiscal Year 2016 Shipbuilding Plan*, October 2015, Table B-1 on page 35.

Within the Navy's traditional Total Obligation Authority (TOA), and assuming that historic shipbuilding resources continue to be available, the OR SSBN would consume about half of the shipbuilding funding available in a given year – and would do so for a period of over a decade. The significant drain on available shipbuilding resources would manifest in reduced procurement quantities in the remaining capital ship programs. Therefore, additional resources for shipbuilding will likely be required during this period.

Since the CVN funding requirements are driven by the statutory requirement to maintain eleven CVNs, and accounting for one OR SSBN per year (starting in FY2026), there would only be about half of the resources normally available to procure the Navy's remaining capital ships. At these projected funding levels, Navy would be limited to on average, as few as two other capital ships (SSN, DDG, CG, LPD, LHA, etc.) per year throughout this decade. In assessing the Navy's ability to reach the higher annual shipbuilding funding levels described above, one perspective is to note that doing so would require the shipbuilding budget to be increased by 30% to 50% from levels in recent years. In a context of constraints on defense spending and competing demands for defense dollars, this perspective can make the goal of increasing the shipbuilding budget to these levels appear daunting....

The cost of the OR SSBN is significant relative to the resources available to DON in any given year. At the same time, the DON will have to address the block retirement of ships procured in large numbers during the 1980s, which are reaching the end of their service lives. The convergence of these events prevents DON from being able to shift resources within the shipbuilding account to accommodate the cost of the OR SSBN.

If DON funds the OR SSBN from within its own resources, OR SSBN construction will divert funding from construction of other ships in the battle force such as attack submarines, destroyers, aircraft carriers and amphibious warfare ships. The resulting battle force will not meet the requirements of the Force Structure Assessment (FSA), National Security Strategy, or the Quadrennial Defense Review (QDR). Additionally, there will be significant impact to the shipbuilding industrial base.²²

The amount of additional shipbuilding funding that would be needed in coming years to fully implement the Navy's 30-year shipbuilding plan—an average of about \$4.5 billion per year²³—can be characterized in at least two ways. One is to note that this would equate to a roughly one-third increase in the shipbuilding budget above historical levels. Another is to note that this same amount of additional funding would equate to less than 1% of DOD's annual budget.

Appropriate Future Size and Structure of Navy in Light of Strategic and Budgetary Changes

Overview

Another issue for Congress concerns the appropriate future size and structure of the Navy. Changes in strategic and budgetary circumstances in recent years have led to a broad debate over the future size and structure of the military, including the Navy. The Navy's current goal for a fleet of 308 ships reflects a number of judgments and planning factors (some of which the Navy receives from the Office of the Secretary of Defense), including but not limited to the following:

²² U.S. Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2016*, March 2015, pp. 7, 13-14.

²³ Congressional Budget Office, *An Analysis of the Navy's Fiscal Year 2016 Shipbuilding Plan*, October 2015, p. 3.

- U.S. interests and the U.S. role in the world, and the U.S. military strategy for supporting those interests and that role;
- current and projected Navy missions in support of U.S. military strategy, including both wartime operations and day-to-day forward-deployed operations;
- technologies available to the Navy, and the individual and networked capabilities of current and future Navy ships and aircraft;
- current and projected capabilities of potential adversaries, including their anti-access/area-denial (A2/AD) capabilities;
- regional combatant commander (COCOM) requests for forward-deployed Navy forces;
- basing arrangements for Navy ships, including numbers and locations of ships homeported in foreign countries;
- maintenance and deployment cycles for Navy ships; and
- fiscal constraints.

With regard to the fourth point above—regional combatant commander (COCOM) requests for forward-deployed Navy forces—as mentioned earlier, Navy officials testified in March 2014 that a Navy of 450 ships would be required to fully meet COCOM requests for forward-deployed Navy forces.²⁴ The difference between a fleet of 450 ships and the current goal for a fleet of 308 ships can be viewed as one measure of operational risk associated with the goal of a fleet of 308 ships. A goal for a fleet of 450 ships might be viewed as a fiscally unconstrained goal.

As also mentioned earlier, world events have led some observers, starting in late 2013, to conclude that the international security environment has undergone a shift from the familiar post-Cold War era of the past 20-25 years, also sometimes known as the unipolar moment (with the United States as the unipolar power), to a new and different strategic situation that features, among other things, renewed great power competition and challenges to elements of the U.S.-led international order that has operated since World War II. A shift from the post-Cold War era to a new strategic era could lead to a new reassessment of defense funding levels, strategy, missions, plans, and programs.²⁵

For additional discussion of the relationship between U.S. strategy and the size and structure of U.S. naval forces that can form part of the context for assessing the 30-year shipbuilding plan, see **Appendix C**.

Proposals by Study Groups

Some study groups have made their own proposals for Navy ship force structure that reflect their own perspectives on the bullet points listed above (particularly the first four and the final one). **Table 8** shows some of these proposals. For reference purposes, it also shows the Navy's 308-ship goal of March 2015.

²⁴ Spoken testimony of Admiral Jonathan Greenert at a March 12, 2014, hearing before the House Armed Services Committee on the Department of the Navy's proposed FY2015 budget, as shown in transcript of hearing.

²⁵ For a discussion, see CRS Report R43838, *A Shift in the International Security Environment: Potential Implications for Defense—Issues for Congress*, by (name redacted) .

Table 8. Recent Study Group Proposals for Navy Ship Force Structure

Ship type	Navy's 308-ship goal of March 2015	Project on Defense Alternatives (PDA) (November 2012)	Heritage Foundation (April 2011)	Cato Institute (September 2010) ^a	Independent Panel Assessment of 2010 QDR (July 2010)	Sustainable Defense Task Force (June 2010)	Center for a New American Security (CNAS) (November 2008)	Center for Strategic and Budgetary Assessments (CSBA) (2008) ^b
<i>Submarines</i>								
SSBN	12	7	14 ^c	6	14	7	14	12
SSGN	0	6-7	4	0	4	4	0	2
SSN	48	42	55	40	55	37	40	41
<i>Aircraft carriers</i>								
CVN	11	9	11	8	11	9	8	11
CVE	0	0	0	0	0	0	0	4
<i>Surface combatants</i>								
Cruiser	88	72-74	88	22	n/a	85	18	14
Destroyer				65	n/a		56	73
Frigate	0	2-7 ⁱ	28 ^d	14	n/a	0	0	9 ^e
LCS	52	12 ^j		4	n/a	25	48	55
SSC	0	1	0	0	n/a	0	40	0 ^f
<i>Amphibious and Maritime Prepositioning Force (Future) (MPF[F]) ships</i>								
Amphibious ships	34	≥23	37	23	n/a	27	36	33
MPF(F) ships	0	n/a	0	0	n/a	n/a	0	3 ^g
LSD station ships	0	0	0	0	0	0	0	7 ^h
<i>Other: Mine warfare (MIW) ships; Combat Logistics Force (CLF) ships (i.e., at-sea resupply ships), and support ships</i>								
MIW	0	14 ⁱ	14	11	0	0	0	0
CLF ships	29	n/a	33	21	n/a			31
Support ships	34	n/a	25	27	n/a	36	40	31
TOTAL battle force ships	308	230	309	241	346	230	300	326ⁱ

Source: Table prepared by CRS based on the following sources: **For Heritage Foundation:** *A Strong National Defense[.] The Armed Forces America Needs and What They Will Cost*, Heritage Foundation, April 5, 2011, pp. 25-26. **For Cato Institute:** Benjamin H. Friedman and Christopher Preble, *Budgetary Savings from Military Restraint*, Washington, Cato Institute, September 23, 2010 (Policy Analysis No. 667), pp. 6, 8-10, and additional information provided by Cato Institute to CRS by email on September 22, 2010. **For Independent Panel Assessment:** Stephen J. Hadley and William J. Perry, co-chairmen, et al., *The QDR in Perspective: Meeting America's National Security Needs In the 21st Century, The Final Report of the Quadrennial Defense Review Independent Panel*, Washington, 2010, Figure 3-2 on pages 58-59. **For Sustainable Defense Task Force:** *Debt, Deficits, and Defense, A Way Forward[.] Report of the Sustainable Defense Task Force*, June 11, 2010, pp. 19-20. **For CNAS:** Frank Hoffman, *From Preponderance to Partnership: American Maritime Power in the 21st Century*, Washington, Center for a New American Security, November 2008, p. 19 (Table 2). **For CSBA:** Robert O. Work, *The US Navy[.] Charting a Course for Tomorrow's Fleet*, Washington, Center for Strategic and Budgetary Assessments, 2008, p. 81 (Figure 5). **For PDA:** Carl Conetta, *Reasonable Defense*, Project on Defense Alternatives, November 14, 2012, 31 pp.

Notes: **n/a** is not addressed in the report. **SSBN** is nuclear-powered ballistic missile submarine; **SSGN** is nuclear-powered cruise missile and special operations forces submarine; **SSN** is nuclear-powered attack submarine; **CVN** is large nuclear-powered aircraft carrier; **CVE** is medium-sized aircraft carrier; **LCS** is Littoral Combat Ship; **SSC** (an acronym created by CRS for this table) is small surface combatant of 1,000+ tons displacement—a ship similar to late-1990s Streetfighter concept; **MPF(F)** is Maritime Prepositioning Force (Future) ship; **LSD** is LSD-41/49 class amphibious ship operating as a station ship for a formation like a Global Fleet Station (GFS); **MIW** is mine warfare ship; **CLF** is combat logistics force (i.e., resupply) ship.

- a. Figures shown are for the year 2020; for subsequent years, reductions from these figures would be considered.
- b. Figures shown are for the year 2028.
- c. The report calls for a force of 280 SLBMs, which appears to equate to a force of 14 SSBNs, each with 20 SLBM tubes.
- d. The report calls for a force of 28 small surface combatants, and appears to use the term small surface combatants the same way that the Navy does in the 30-year shipbuilding plan—as a way of collectively referring to frigates and LCSs. The small surface combatants (SSCs) called for in the November 2008 CNAS report are separate from and smaller than the LCS.
- e. Maritime Security Frigates.
- f. Plan includes 28 patrol craft (PCs) of a few hundred tons displacement each, as well as 29 boat detachments and seven riverine squadrons.
- g. Plan shows three Mobile Landing Platform (MLP) ships that the Navy currently plans for the MPF(F) squadron, plus 16 existing current-generation maritime prepositioning force (MPF) ships and 17 existing prepositioning ships for Army and other service/agency equipment. Plan also shows 67 other DOD sealift ships.
- h. T-LSDs, meaning LSDs operated by the Military Sealift Command (MSC) with a partly civilian crew.
- i. The CSBA report shows a total of 488 units by including 162 additional force units that do not count toward the 308-ship goal under the battle force ships counting method that has been used since the early 1980s for public policy discussions of the size of the Navy. These 162 additional force units include 16 existing current-generation maritime prepositioning force (MPF) ships and 17 existing prepositioning ships for Army and other service/agency equipment, 67 other DOD sealift ships, 28 PCs, 29 boat detachments, and certain other small-scale units. The CSBA report proposes a new counting method for naval/maritime forces that includes units such as these in the total count.
- j. The report “prescribes ending procurement of the LCS with the 12 already purchased. The *Reasonable Defense* model foresees a future cohort of 28 to 33 small surface combatants, including a mix of the 12 LCS that have already been procured, 14 Mine Counter Measure (MCM) ships already in the fleet, and small frigates or ocean-going corvettes. As the MCM ships age and leave the fleet, the LCS should assume their role. The would leave a post-MCM requirement for 16 to 21 additional small surface combatants. For this, the Navy needs a simpler, less expensive alternative to the LCS.”

Fleet Architecture

Some observers, viewing China’s maritime anti-access/area-denial (A2/AD) forces, have raised the question of whether the U.S. Navy should respond by shifting over time to a more highly distributed fleet architecture featuring a reduced reliance on aircraft carriers and other large ships and an increased reliance on smaller ships. The question of whether the U.S. Navy concentrates too much of its combat capability in a relatively small number of high-value units, and whether it should shift over time to a more highly distributed fleet architecture, has been debated at various times over the years, in various contexts. The issue was examined, for example, in a report by DOD’s Office of Force Transformation (OFT) that was submitted to Congress in 2005.²⁶

²⁶ OFT’s report, along with two other reports on Navy fleet architecture that were submitted to Congress in 2005, are discussed at length in CRS Report RL33955, *Navy Force Structure: Alternative Force Structure Studies of 2005—Background for Congress*, by (name redacted). See also Wayne P. Hughes, Jr., *The New Navy Fighting Machine: A Study of the Connections Between Contemporary Policy, Strategy, Sea Power, Naval Operations, and the Composition of the United States Fleet*, Monterey (CA), Naval Postgraduate School, August 2009, 68 pp.

Supporters of shifting to a more highly distributed fleet architecture argue that the Navy's current architecture, including its force of 11 large aircraft carriers, in effect puts too many of the Navy's combat-capability eggs into a relatively small number of baskets on which an adversary can concentrate its surveillance and targeting systems and its anti-ship weapons. They argue that although a large Navy aircraft carrier can absorb hits from multiple conventional weapons without sinking, a smaller number of enemy weapons might cause damage sufficient to stop the carrier's aviation operations, thus eliminating the ship's primary combat capability and providing the attacker with what is known as a "mission kill." A more highly distributed fleet architecture, they argue, would make it more difficult for China to target the Navy and reduce the possibility of the Navy experiencing a significant reduction in combat capability due to the loss in battle of a relatively small number of high-value units.

Opponents of shifting to a more highly distributed fleet architecture argue that large carriers and other large ships are not only more capable, but proportionately more capable, than smaller ships, that larger ships are capable of fielding highly capable systems for defending themselves, and that they are much better able than smaller ships to withstand the effects of enemy weapons, due to their larger size, extensive armoring and interior compartmentalization, and extensive damage-control systems. A more highly distributed fleet architecture, they argue, would be less capable or more expensive than today's fleet architecture. Opponents of shifting to a more highly distributed fleet architecture could also argue that the Navy has already taken important steps toward fielding a more distributed fleet architecture through its plan to acquire 52 LCSs and 11 JHSVs, and through the surface fleet's recently announced concept of distributed lethality, under which offensive weapons are to be distributed more widely across all types of Navy surface ships and new operational concepts for Navy surface ship formations are to be implemented.²⁷

One observer—a person who for many years was the Navy's lead force-structure planner—stated the following in 2014 regarding the Navy's approach to fleet design:

It is time to rethink how we will design the future Fleet in a way that rebalances affordability, platform capability, and deployment processes. We must build it as a whole instead of continuing to "let it happen" one platform requirements decision at a time....

Today the Navy operates about 50 different types of ships and aircraft with individual design-service lives of 20 to 50 years. On average, about two classes of ship or aircraft annually come up for a decision on replacement at the end of their service lives. Each of these decisions, a multi-year joint bureaucratic process with dozens of participating organizations, is made individually. Typically, as a starting point, the new platform must do everything the old one did, except in the more challenging threat environment of the future. All of the decision-making organizations generally advocate for the next-generation platform to have the desired capabilities unmet by the old one—particularly

²⁷ Navy surface fleet leaders announced the distributed lethality concept in early 2015. The aim of distributed lethality is to boost the surface fleet's capability for attacking enemy ships and make it less possible for an enemy to cripple the U.S. fleet by concentrating its attacks on a few very-high-value Navy surface ships (particularly the Navy's aircraft carriers). See Thomas Rowden, Peter Gumataotao, and Peter Fanta, "Distributed Lethality," *U.S. Naval Institute Proceedings*, January 2015: 18-23; Sam LaGrone, "SNA: Navy Surface Leaders Pitch More Lethal Ships, Surface Action Groups," *USNI News*, January 14, 2015; Kris Osborn, "Navy Unveils New Surface Warfare Strategy," *Military.com*, January 14, 2015; Sydney J. Freedberg Jr., "'If It Floats, It Fights': Navy Seeks 'Distributed Lethality,'" *Breaking Defense*, January 14, 2015; Mike McCarthy and Megan Eckstein, "Navy Eyeing A 'Hunter Killer' Surface Fleet, Would Require Upgunning Existing Ship Fleets," *Defense Daily*, January 15, 2015: 1-3; Richard Scott, "Offensive Language: USN Sets Out Surface Firepower Strategy," *Jane's International Defence Review*, May 2015: 42-47; Megan Eckstein, "Navy Studying Implications of Distributed Lethality in Wargames Series," *USNI News*, July 9, 2015; Lara Seligman, "Navy Establishes Task Force To Study Impact of Distributed lethality," *Inside the Navy*, July 10, 2015.

since any additional unit cost is not their bill. It is no surprise that this process leads to steadily increasing platform and overall Fleet cost....

The future Fleet is being designed ad hoc, one platform at a time, and we cannot afford this. How can we change the trend toward an ever-smaller Fleet of ever-better platforms while maintaining the capability superiority needed to execute our missions? It will take a top-down design to provide a structure in which individual platform requirements can be shaped and disciplined despite all of the pressures. We will have to consider distributing capabilities to a greater extent across a force that is securely networked, at least within line of sight, rather than putting as many as possible on each individual platform and continuing to drive up its size and cost.

We will have to consider separating weapon magazines from the sensors that direct the weapons rather than putting both on the same platform. Another option is increasing reliance on deep-magazine directed energy systems, and on force-wide coordinated soft-kill and counter-targeting techniques, rather than on engaging each threat with ever-larger and more expensive kinetic weapons. We can also think about increasing reliance on penetrating high-threat areas with longer-range weapons or with preprogrammed unmanned systems rather than with manned platforms. Few of these options would rise to the top in the requirements decision-making process for any individual platform. They only start to make sense when considered and competed at a Fleet-wide level.

Developing an overall fleet design to structure and discipline individual platform requirements is no small task. Simply constraining platform cost without dealing with how capabilities might be delivered differently is not sufficient. This is not a once-and-done process, as changes in threat and in our own technology options will never stop. But neither can it be a process that changes the design in some fundamental way every year or two—it will have to influence platform requirements for a long period of time to affect a significant number of new platform designs.

We cannot afford to retire legacy platforms prematurely simply because they are not optimized within our new Fleet design, which will take time to implement and have to be done incrementally. Real and fundamental change in the roles, missions, and interdependencies among platform types, and in the balance between manned and unmanned and between platform and payload, is an inevitable outcome of a Fleet design process. That is the point. Change is hard, and it will have to be authorized and directed by the Navy's leadership or risk not happening.

A number of ideas for a new Fleet design have been offered recently from outside the Navy's decision-making mainstream. However, all have had significant flaws, so they have not received serious consideration. They have assumed things such as beyond line-of-sight networking that has no survivable future in the face of adversary counter-space capability; autonomy of unmanned vehicles in executing lethal missions that is beyond the projected capability of software and U.S. rules of engagement to support; and the use of platforms too small to be capable of global deployment and sustained sea-based operations, which is how the U.S. Navy must deliver global naval power. The future Fleet design must be grounded in technical and operational reality, and it has to come from inside the Navy system....

Developing a rich list of operationally-realistic options supported by rigorous analysis of cost and feasibility is foundational. It could include:

- The use of a common large aviation-ship hull for Navy sea-control/power-projection air wings and for Marine Corps vertical-raid/assault-air wings, reconfigurable between the two missions between the deployments;
- Surface combatants with smaller vertical-launch magazines that can reload at sea from logistic ships or remotely fire weapons carried in supplementary magazines on logistic ships;

- Separate classes of surface combatants optimized for air defense or antisubmarine warfare within a common hull type that can self-defend in peacetime but aggregate to fight offensively in wartime;
- Tactical-combat aircraft that are optimized for endurance and carriage of long-range weapons rather than for penetrating sophisticated defenses carrying short-range weapons;
- Large shore-launched unmanned undersea vehicles that take the place of submarines for preprogrammed missions such as covert surveillance or mine-laying;
- Use of a common hull type for all of the large non-combatant ship missions such as command ships, tenders, hospital ships, ground vehicle delivery, and logistics; and
- Elimination of support models that are based on wartime reliance on reach-back access to unclassified cyber networks connected by vulnerable communications satellites or to an indefensible global internet....

The Navy's long-term force structure requirement is a 306-ship Fleet of the currently-planned designs, of which about 120 (or 40 percent of the force) would be deployed day-to-day. It would also be able to surge an additional 75 ships (another 25 percent) within two months to meet warfighting capacity requirements. In other words, about 65 percent is employed or rapidly employable.

This sounds good, but the reality is that 30 of these 120 deployed ships would be permanently homeported overseas; 26 would be LCSs that use the rotation of their small military crews to keep 50 percent of that class forward deployed; and 40 would be Military Sealift Command support ships that use rotational civilian mariner crewing to keep the ships deployed 75 percent of the time. The remaining 25 of the forward-deployed force will be large and complex multibillion dollar warships with all-military crews, supported out of a rotation base of 140 such ships.

In other words, we plan to buy and operate five of our most expensive ships to keep one deployed. This is not an efficient way to operate. In times of reduced funding our design must address ways to meet our deployment goals with a smaller rotation base while preserving wartime surge capacity.

Many studies and trials have been done over the years on options for reducing the total number of ships needed to sustain the Navy's robust peacetime forward-deployed posture. Increasing forward homeporting in other nations always comes up as the first choice. While it is a good one, few countries beyond those that currently support this (Japan, Spain, Italy, and Bahrain) are willing to tolerate a permanent new U.S. shore footprint. Building new shore-support infrastructure in foreign countries to back this results in a large bill for construction jobs outside the United States, which Congress normally finds unappetizing.

Using rotational crews to keep ships forward for extended periods without long deployments for their sailors is an efficient option that works for ships with small crews like LCSs, legacy mine-warfare ships, or Military Sealift Command support ships. Experiments in which this has been done with military crews on large complex warships have not turned out well. This was due both to the logistics of moving large crews overseas for turnovers and the difficulty of maintaining exact configuration commonality within ships of a class so that a crew arriving on a ship overseas has trained before deployment on an identical ship (or simulator) at home. Conversions of ships from military manning to Military Sealift Command civilian mariner crews that routinely rotate individual crewmembers to sustain ships forward are limited by the law of war concerning what military actions civilians can perform, and there are few legal options left for further expansion of this approach.

What is left in the force-generation model of our current Fleet is a force of our most complex warships—aircraft carriers, submarines, destroyers, and amphibious ships—

operating with permanently-assigned military crews in the “Fleet Readiness Program” cycle of maintain-train-deploy with a deployed output of one in five. Future designs must address this model and find ways to get more deployed time out of these expensive ships and crews—without exceeding the current objective of having military crewmembers spend no more than 50 percent of their time away from homeport over a complete multi-year operating cycle. The current limiting factor is the period required to train the crew as a team before deployment following the inactivity and crew turnover of the shipyard maintenance period.

Naval aviation is steadily moving toward the increased use of high-fidelity single and multi-aircraft simulation as a means of developing and sustaining operational proficiency with reduced use of expensive live flying. These simulators are funded as part of the overall fielding plan for the aircraft and were also built for the ballistic-missile submarine force to support its Blue-Gold crew manning concept. There is no equivalent model or set of off-ship simulators for major sections of the crews of conventional surface warships (other than the LCS) for nuclear-aircraft carriers or for attack submarines. A Fleet design that bought such simulation capability as part of its ship production programs—the way that aircraft programs do—would have significant potential for improving operational output by reducing the time to train for deployment after maintenance periods.

Today’s Fleet design is the product of many separate and disconnected decisions about the required capabilities of 50 different types of ships and aircraft. While not ineffective, it is definitely too expensive. The budget constraints facing the Navy for the next 20 years are not matched by a projected reduction in the quantity or capability of forces that must be delivered forward every day or surged forward in wartime.

The only way to meet these demands within available resources is to develop a design that provides a structure within which the capabilities of future platforms can be shaped to meet the Fleet’s missions efficiently as an overall force. Doing this will require a systems-level approach to defining what it must be able to do, and will mean abandoning some cherished traditions of what each type of platform should do. The alternative is a Navy no longer large or capable enough to do the nation’s business.²⁸

Potential Oversight Questions

Potential oversight questions for Congress include the following:

- Under the Administration’s plans, will the Navy in coming years be large enough to adequately counter improved Chinese maritime A2/AD forces while also adequately performing other missions of interest to U.S. policymakers around the world?
- In light of developments in Europe, North Africa, and Syria, is the Mediterranean Sea reemerging as a major operating hub for the U.S. Navy? What implications, if any, might that have for Navy force-structure requirements?
- If the Navy is reduced in size and priority is given to maintaining Navy forces in the Pacific, what will be the impact on Navy force levels in other parts of the world, such as the Persian Gulf/Indian Ocean region or the Mediterranean Sea, and consequently on the Navy’s ability to adequately perform its missions in those parts of the world?
- To what extent could the operational impacts of a reduction in Navy ship numbers be mitigated through increased use of forward homeporting, multiple

²⁸ Arthur H. Barber, “Rethinking The Future Fleet,” *U.S. Naval Institute Proceedings*, May 2014: 48-52.

crewing, and long-duration deployments with crew rotation (i.e., “Sea Swap”)? How feasible are these options, and what would be their potential costs and benefits?²⁹

- Should the Navy shift over time to a new fleet architecture, such as a more highly distributed architecture featuring a reduced reliance on large ships and an increased reliance on smaller ships?
- Particularly in a situation of constrained DOD resources, if enough funding is allocated to the Navy to permit the Navy in coming years to maintain a fleet of 308 ships including 11 aircraft carriers, how much would other DOD programs need to be reduced, and what would be the operational implications of those program reductions in terms of DOD’s overall ability to counter improved Chinese military forces and perform other missions?

Legislative Activity for FY2017

FY2017 Funding Request

The Navy’s proposed FY2017 budget requests funding for the procurement of seven new battle force ships—two Virginia-class attack submarines, two DDG-51 class Aegis destroyers, two Littoral Combat Ships (LCSs), and one LHA-type amphibious assault ship. The Navy’s proposed FY2016 shipbuilding budget also requests funding for ships that have been procured in prior fiscal years, and ships that are to be procured in future fiscal years.

CRS Reports Tracking Legislation on Specific Navy Shipbuilding Programs

Detailed coverage of legislative activity on certain Navy shipbuilding programs (including funding levels, legislative provisions, and report language) can be found in the following CRS reports:

- CRS Report RS20643, *Navy Ford (CVN-78) Class Aircraft Carrier Program: Background and Issues for Congress*, by (name redacted) . (This report also covers the issue of the Navy’s proposal in its FY2017 budget submission to deactivate one of the Navy’s ten carrier air wings.)
- CRS Report R41129, *Navy Ohio Replacement (SSBN[X]) Ballistic Missile Submarine Program: Background and Issues for Congress*, by (name redacted) .
- CRS Report RL32418, *Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress*, by (name redacted) .
- CRS Report RL32109, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, by (name redacted) .
- CRS Report RL33741, *Navy Littoral Combat Ship (LCS)/Frigate Program: Background and Issues for Congress*, by (name redacted) .

²⁹ For further discussion of these options, see CRS Report RS21338, *Navy Ship Deployments: New Approaches—Background and Issues for Congress*, by (name redacted) .

- CRS Report R43543, *Navy LX(R) Amphibious Ship Program: Background and Issues for Congress*, by (name redacted) . (This report also covers the issue of funding for the procurement of a 12th San Antonio [LPD-17] class amphibious ship.)
- CRS Report R43546, *Navy John Lewis (TAO-205) Class Oiler Shipbuilding Program: Background and Issues for Congress*, by (name redacted) .

Individual Navy shipbuilding programs that are not covered in detail in the above reports are covered in this report.

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

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

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

Regarding the first bullet point above, the Navy, for example, reached a late-Cold War peak of 568 battle force ships at the end of FY1987,³⁰ and as of March 17, 2016, included a total of 272 battle force ships. The FY1987 fleet, however, was intended to meet a set of mission requirements that focused on countering Soviet naval forces at sea during a potential multi-theater NATO-Warsaw Pact conflict, while the March 2016 fleet is intended to meet a considerably different set of mission requirements centered on influencing events ashore by countering both land- and sea-based military forces of potential regional threats other than Russia, including improved Chinese military forces and non-state terrorist organizations. In addition, the Navy of FY1987 differed substantially from the March 2016 fleet in areas such as profusion of precision-guided air-delivered weapons, numbers of Tomahawk-capable ships, and the sophistication of C4ISR systems and networking capabilities.³¹

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

The 568-ship fleet of FY1987 may or may not have been capable of performing its stated missions; the 272-ship fleet of March 2016 may or may not be capable of performing its stated missions; and a fleet years from now with a certain number of ships may or may not be capable of performing its stated missions. Given changes over time in mission requirements, ship mixes, and technologies, however, these three issues are to a substantial degree independent of one another.

³⁰ Some publications have stated that the Navy reached a peak of 594 ships at the end of FY1987. This figure, however, is the total number of active ships in the fleet, which is not the same as the total number of battle force ships. The battle force ships figure is the number used in government discussions of the size of the Navy. In recent years, the total number of active ships has been larger than the total number of battle force ships. For example, the Naval History and Heritage Command (formerly the Naval Historical Center) states that as of November 16, 2001, the Navy included a total of 337 active ships, while the Navy states that as of November 19, 2001, the Navy included a total of 317 battle force ships. Comparing the total number of active ships in one year to the total number of battle force ships in another year is thus an apples-to-oranges comparison that in this case overstates the decline since FY1987 in the number of ships in the Navy. As a general rule to avoid potential statistical distortions, comparisons of the number of ships in the Navy over time should use, whenever possible, a single counting method.

³¹ C4ISR stands for command and control, communications, computers, intelligence, surveillance, and reconnaissance.

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

Regarding the second of the two bullet points above, it can be noted that comparisons of the size of the fleet today with the size of the fleet in earlier years rarely appear to consider whether the fleet was appropriately sized in those earlier years (and therefore potentially suitable as a yardstick of comparison), even though it is quite possible that the fleet in those earlier years might not have been appropriately sized, and even though there might have been differences of opinion among observers at that time regarding that question. Just as it might not be prudent for observers years from now to tacitly assume that the 271-ship Navy of September 2015 was appropriately sized for meeting the mission requirements of 2015, even though there were differences of opinion among observers on that question (as reflected, for example, in **Table 8**), simply because a figure of 271 ships appears in the historical records for 2014, so, too, might it not be prudent for observers today to tacitly assume that the number of ships of the Navy in an earlier year was appropriate for meeting the Navy's mission requirements that year, even though there might have been differences of opinion among observers at that time regarding that question, simply because the size of the Navy in that year appears in a table like **Table D-1**.

Previous Navy force structure plans, such as those shown in **Table 1**, might provide some insight into the potential adequacy of a proposed new force-structure plan, but changes over time in mission requirements, technologies available to ships for performing missions, and other force-planning factors, as well as the possibility that earlier force-structure plans might not have been appropriate for meeting the mission demands of their times, suggest that some caution should be applied in using past force structure plans for this purpose, particularly if those past force structure plans are more than a few years old. The Reagan-era plan for a 600-ship Navy, for example, was designed for a Cold War set of missions focusing on countering Soviet naval forces at sea, which is not an appropriate basis for planning the Navy today, and there was considerable debate during those years as to the appropriateness of the 600-ship goal.³²

³² Navy force structure plans that predate those shown in **Table 1** include the Reagan-era 600-ship plan of the 1980s, the Base Force fleet of more than 400 ships planned during the final two years of the George H. W. Bush Administration, the 346-ship fleet from the Clinton Administration's 1993 Bottom-Up Review (or BUR, sometimes also called Base Force II), and the 310-ship fleet of the Clinton Administration's 1997 QDR. The table below summarizes some key features of these plans.

Features of Recent Navy Force Structure Plans

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

Source: Prepared by CRS based on DOD and U.S. Navy data.
(continued...)

Appendix B. Independent Panel Assessment of 2010 QDR

The law that requires DOD to perform QDRs once every four years (10 U.S.C. 118) states that the results of each QDR shall be assessed by an independent panel. The report of the independent panel that assessed the 2010 QDR was released on July 29, 2010. The independent panel's report recommended a Navy of 346 ships, including 11 aircraft carriers and 55 attack submarines.³³ The report stated the following, among other things:

- “The QDR should reflect current commitments, but it must also plan effectively for potential threats that could arise over the next 20 years... we believe the 2010 QDR did not accord sufficient priority to the need to counter anti-access challenges, strengthen homeland defense (including our defense against cyber threats), and conduct post-conflict stabilization missions.” (Page 54)
- “In this remarkable period of change, global security will still depend upon an American presence capable of unimpeded access to all international areas of the Pacific region. In an environment of ‘anti-access strategies,’ and assertions to create unique ‘economic and security zones of influence,’ America’s rightful and historic presence will be critical. To preserve our interests, the United States will need to retain the ability to transit freely the areas of the Western Pacific for security and economic reasons. Our allies also depend on us to be fully present in the Asia-Pacific as a promoter of stability and to ensure the free flow of commerce. A robust U.S. force structure, largely rooted in maritime strategy but including other necessary capabilities, will be essential.” (Page 51)
- “The United States will need agile forces capable of operating against the full range of potential contingencies. However, the need to deal with irregular and hybrid threats will tend to drive the size and shape of ground forces for years to come, whereas the need to continue to be fully present in Asia and the Pacific and other areas of interest will do the same for naval and air forces.” (Page 55)
- “The force structure in the Asia-Pacific needs to be increased. In order to preserve U.S. interests, the United States will need to retain the ability to transit freely the areas of the Western Pacific for security and economic reasons. The

(...continued)

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

³³ Stephen J. Hadley and William J. Perry, co-chairmen, et al, *The QDR in Perspective: Meeting America’s National Security Needs In the 21st Century, The Final Report of the Quadrennial Defense Review Independent Panel*, Washington, 2010, Figure 3-2 on page 58.

United States must be fully present in the Asia-Pacific region to protect American lives and territory, ensure the free flow of commerce, maintain stability, and defend our allies in the region. A robust U.S. force structure, one that is largely rooted in maritime strategy and includes other necessary capabilities, will be essential.” (Page 66)

- “Force structure must be strengthened in a number of areas to address the need to counter anti-access challenges, strengthen homeland defense (including defense against cyber threats), and conduct post-conflict stabilization missions: First, as a Pacific power, the U.S. presence in Asia has underwritten the regional stability that has enabled India and China to emerge as rising economic powers. The United States should plan on continuing that role for the indefinite future. The Panel remains concerned that the QDR force structure may not be sufficient to assure others that the United States can meet its treaty commitments in the face of China’s increased military capabilities. Therefore, we recommend an increased priority on defeating anti-access and area-denial threats. This will involve acquiring new capabilities, and, as Secretary Gates has urged, developing innovative concepts for their use. Specifically, we believe the United States must fully fund the modernization of its surface fleet. We also believe the United States must be able to deny an adversary sanctuary by providing persistent surveillance, tracking, and rapid engagement with high-volume precision strike. That is why the Panel supports an increase in investment in long-range strike systems and their associated sensors. In addition, U.S. forces must develop and demonstrate the ability to operate in an information-denied environment.” (Pages 59-60)
- “To compete effectively, the U.S. military must continue to develop new conceptual approaches to dealing with operational challenges, like the Capstone Concept for Joint Operations (CCJO). The Navy and Air Force’s effort to develop an Air-Sea Battle concept is one example of an approach to deal with the growing anti-access challenge. It will be necessary to invest in modernized capabilities to make this happen. The Chief of Naval Operations and Chief of Staff of the Air Force deserve support in this effort, and the Panel recommends the other military services be brought into the concept when appropriate.” (Page 51; a similar passage appears on page 67)

In recommending a Navy of 346 ships, the independent panel’s report cited the 1993 Bottom-Up Review (BUR) of U.S. defense plans and policies. **Table B-1** compares the Navy’s 308-ship goal of March 2015 to the 346-ship Navy recommended in the 1993 BUR (as detailed partly in subsequent Navy testimony and publications) and the ship force levels recommended in the independent panel report.

Table B-1. Comparison of Navy's 308-ship goal, Navy Plan from 1993 BUR, and Navy Plan from 2010 QDR Review Panel

Ship Type	Navy's 308-ship goal of March 2015	Bottom-Up Review (BUR) (1993)	2010 QDR Independent Review Panel (July 2010)
SSBNs	12	18 (SSBN force was later reduced to 14 as a result of the 1994 Nuclear Posture Review)	14
SSGNs	0	0 (SSGN program did not yet exist)	4
SSNs	48	45 to 55 (55 in FY99, with a long-term goal of about 45)	55
Aircraft carriers	11	11 active + 1 operational/reserve	11 active
Surface combatants	140	124 (114 active + 10 frigates in Naval Reserve Force; a total of 110-116 active ships was also cited)	n/a
Cruisers and destroyers	88	n/a	n/a
Frigates (modified LCSs)	20	n/a	n/a
LCSs	32	0 (LCS program did not exist)	n/a
Amphibious ships	34 (30 operational ships needed to lift 2.0 MEBs)	41 (Enough to lift 2.5 MEBs)	n/a
Dedicated mine warfare ships	0 (to be replaced by LCSs)	26 (LCS program did not exist)	n/a
CLF ships	29	43	n/a
Support ships	34	22	n/a
TOTAL ships	308	346 (numbers above add to 331-341) ^a	346

Source: Table prepared by CRS. **Sources for 1993 Bottom-Up Review:** Department of Defense, *Report on the Bottom-Up Review*, October 1993, Figure 7 on page 28; Department of the Navy, *Highlights of the FY 1995 Department of the Navy Budget*, February 1994, p. 1; Department of the Navy, *Force 2001, A Program Guide to the U.S. Navy*, 1994 edition, p. 15; Statement of VADM T. Joseph Lopez, U.S. Navy, Deputy Chief of Naval Operations (Resources, Warfare Requirements & Assessments), Testimony to the Military Forces and Personnel Subcommittee of the House Armed Services Committee, March 22, 1994, pp. 2-5. **Source for independent panel report:** Stephen J. Hadley and William J. Perry, co-chairmen, et al., *The QDR in Perspective: Meeting America's National Security Needs In the 21st Century, The Final Report of the Quadrennial Defense Review Independent Panel*, Washington, 2010, Figure 3-2 on pages 58-59.

Notes: **n/a** is not addressed in the report. **SSBN** is nuclear-powered ballistic missile submarine; **SSGN** is nuclear-powered cruise missile and special operations forces submarine; **SSN** is nuclear-powered attack submarine; **LCS** is Littoral Combat Ship; **MPF(F)** is Maritime Prepositioning Force (Future) ship; **CLF** is combat logistics force (i.e., resupply) ship; **MEB** is Marine Expeditionary Brigade.

- a. The Navy testified in 1994 that the planned number was adjusted from 346 to 330 to reflect reductions in numbers of tenders and early retirements of some older amphibious ships.

In a letter dated August 11, 2010, Secretary of Defense Robert Gates provided his comments on the independent panel's report. The letter stated in part:

I completely agree with the Panel that a strong navy is essential; however, I disagree with the Panel's recommendation that DoD should establish the 1993 Bottom Up Review's (BUR's) fleet of 346 ships as the objective target. That number was a simple projection of the then-planned size of [the] Navy in FY 1999, not a reflection of 21st century, steady-state requirements. The fleet described in the 2010 QDR report, with its overall target of 313 to 321 ships, has roughly the same number of aircraft carriers, nuclear-powered attack submarines, surface combatants, mine warfare vessels, and amphibious ships as the larger BUR fleet. The main difference between the two fleets is in the numbers of combat logistics, mobile logistics, and support ships. Although it is true that the 2010 fleet includes fewer of these ships, they are all now more efficiently manned and operated by the Military Sealift Command and meet all of DoD's requirements....

I agree with the Panel's general conclusion that DoD ought to enhance its overall posture and capabilities in the Asia-Pacific region. As I outlined in my speech at the Naval War College in April 2009, "to carry out the missions we may face in the future... we will need numbers, speed, and the ability to operate in shallow waters." So as the Air-Sea battle concept development reaches maturation, and as DoD's review of global defense posture continues, I will be looking for ways to meet plausible security threats while emphasizing sustained forward presence – particularly in the Pacific.³⁴

³⁴ Letter dated August 11, 2010, from Secretary of Defense Robert Gates to the chairmen of the House and Senate Armed Services and Appropriations Committees, pp. 3 and 4. The ellipsis in the second paragraph appears in the letter.

Appendix C. U.S. Strategy and the Size and Structure of U.S. Naval Forces

This appendix presents some observations on the relationship between U.S. strategy and the size and structure of U.S. naval forces that can form part of the context for assessing Navy force structure goals and shipbuilding plans.³⁵

Strategic considerations that can be considered in assessing Navy force structure goals and shipbuilding plans include, among other things, the U.S. strategic rebalancing toward the Asia-Pacific region,³⁶ China's modernization of its maritime military capabilities,³⁷ and requests from U.S. regional combatant commanders (COCOMs) for forward-deployed U.S. naval forces that the Navy has testified would require a Navy of about 450 ships to fully meet.³⁸

More broadly, from a strategic perspective it can be noted that that U.S. naval forces, while not inexpensive, give the United States the ability to convert the world's oceans—a global commons that covers more than two-thirds of the planet's surface—into a medium of maneuver and operations for projecting U.S. power ashore and otherwise defending U.S. interests around the world. The ability to use the world's oceans in this manner—and to deny other countries the use of the world's oceans for taking actions against U.S. interests—constitutes an immense asymmetric advantage for the United States. This point would be less important if less of the world were covered by water, or if the oceans were carved into territorial blocks, like the land. Most of the world, however, is covered by water, and most of those waters are international waters, where naval forces can operate freely. The point, consequently, is not that U.S. naval forces are intrinsically special or privileged—it is that they have a certain value simply as a consequence of the physical and legal organization of the planet.

An additional point that can be noted in relating U.S. naval forces to U.S. national strategy is that most of the world's people, resources, and economic activity are located not in the Western Hemisphere, but in the other hemisphere, particularly Eurasia. In response to this basic feature of world geography, U.S. policymakers for the last several decades have chosen to pursue, as a key element of U.S. national strategy, a goal of preventing the emergence of a regional hegemon in one part of Eurasia or another, on the grounds that such a hegemon could represent a concentration of power strong enough to threaten core U.S. interests by, for example, denying the United States access to some of the other hemisphere's resources and economic activity. Although U.S. policymakers do not often state this key national strategic goal explicitly in public, U.S. military operations in recent decades—both wartime operations and day-to-day operations—have been carried out in no small part in support of this key goal.

³⁵ This appendix adapts material originally presented in Statement of Ronald O'Rourke, Specialist in Naval Affairs, Congressional Research Service, Before the House Armed Services Committee Subcommittee on Seapower and Projection Forces on the Navy's FY2014 30-Year Shipbuilding Plan, October 23, 2013, pp. 1, 17-18.

³⁶ For more on the strategic rebalancing, see CRS Report R42146, *Assessing the January 2012 Defense Strategic Guidance (DSG): In Brief*, by (name redacted) and (name redacted), and CRS Report R42448, *Pivot to the Pacific? The Obama Administration's "Rebalancing" Toward Asia*, coordinated by (name redacted).

³⁷ For more on China's modernization of its maritime military capabilities, see CRS Report RL33153, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, by (name redacted).

³⁸ Navy officials testified in March 2014 that a Navy of 450 ships would be required to fully meet COCOM requests for forward-deployed Navy forces. (Spoken testimony of Admiral Jonathan Greenert at a March 12, 2014, hearing before the House Armed Services Committee on the Department of the Navy's proposed FY2015 budget, as shown in transcript of hearing.)

The U.S. goal of preventing the emergence of a regional hegemon in one part of Eurasia or another is a major reason why the U.S. military is structured with force elements that enable it to cross broad expanses of ocean and air space and then conduct sustained, large-scale military operations upon arrival. Force elements associated with this goal include, among other things, an Air Force with significant numbers of long-range bombers, long-range surveillance aircraft, long-range airlift aircraft, and aerial refueling tankers, and a Navy with significant numbers aircraft carriers, nuclear-powered attack submarines, large surface combatants, large amphibious ships, and underway replenishment ships.

The United States is the only country in the world that designs its military to cross broad expanses of ocean and air space and then conduct sustained, large-scale military operations upon arrival. The other countries in the Western Hemisphere do not design their forces to do this because they cannot afford to, and because the United States is, in effect, doing it for them. Countries in the other hemisphere do not design their forces to do this for the very basic reason that they are already in the other hemisphere, and consequently instead spend their defense money on forces that are tailored largely for influencing events in their own local region.

The fact that the United States designs its military to do something that other countries do not design their forces to do—cross broad expanses of ocean and air space and then conduct sustained, large-scale military operations upon arrival—can be important to keep in mind when comparing the U.S. military to the militaries of other nations. For example, in observing that the U.S. Navy has 11 aircraft carriers while other countries have no more than one or two, it can be noted other countries do not need a significant number of aircraft carriers because, unlike the United States, they are not designing their forces to cross broad expanses of ocean and air space and then conduct sustained, large-scale military operations upon arrival.

As another example, it is sometimes noted, in assessing the adequacy of U.S. naval forces, that U.S. naval forces are equal in tonnage to the next dozen or more navies combined, and that most of those next dozen or more navies are the navies of U.S. allies. Those other fleets, however, are mostly of Eurasian countries, which do not design their forces to cross to the other side of the world and then conduct sustained, large-scale military operations upon arrival. The fact that the U.S. Navy is much bigger than allied navies does not necessarily prove that U.S. naval forces are either sufficient or excessive; it simply reflects the differing and generally more limited needs that U.S. allies have for naval forces. (It might also reflect an underinvestment by some of those allies to meet even their more limited naval needs.)

Countries have differing needs for naval and other military forces. The United States, as a country located in the Western Hemisphere with a goal of preventing the emergence of a regional hegemon in one part of Eurasia or another, has defined a need for naval and other military forces that is quite different from the needs of allies that are located in Eurasia. The sufficiency of U.S. naval and other military forces consequently is best assessed not through comparison to the militaries of other countries, but against U.S. strategic goals.

Appendix D. Size of the Navy and Navy Shipbuilding Rate

Size of the Navy

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

As shown in the table, the total number of battle force ships in the Navy reached a late-Cold War peak of 568 at the end of FY1987 and began declining thereafter.³⁹ The Navy fell below 300 battle force ships in August 2003 and as of March 17, 2016, included 272 battle force ships.

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

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

³⁹ Some publications have stated that the Navy reached a peak of 594 ships at the end of FY1987. This figure, however, is the total number of active ships in the fleet, which is not the same as the total number of battle force ships. The battle force ships figure is the number used in government discussions of the size of the Navy. In recent years, the total number of active ships has been larger than the total number of battle force ships. For example, the Naval History and Heritage Command (formerly the Naval Historical Center) states that as of November 16, 2001, the Navy included a total of 337 active ships, while the Navy states that as of November 19, 2001, the Navy included a total of 317 battle force ships. Comparing the total number of active ships in one year to the total number of battle force ships in another year is thus an apples-to-oranges comparison that in this case overstates the decline since FY1987 in the number of ships in the Navy. As a general rule to avoid potential statistical distortions, comparisons of the number of ships in the Navy over time should use, whenever possible, a single counting method.

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

FY^a	Number	FY^a	Number	FY^a	Number	FY^a	Number
1948	737	1970	769	1992	466	2014	289
1949	690	1971	702	1993	435	2015	271
1950	634	1972	654	1994	391		
1951	980	1973	584	1995	373		
1952	1,097	1974	512	1996	356		
1953	1,122	1975	496	1997	354		
1954	1,113	1976	476	1998	333		
1955	1,030	1977	464	1999	317		
1956	973	1978	468	2000	318		
1957	967	1979	471	2001	316		
1958	890	1980	477	2002	313		
1959	860	1981	490	2003	297		
1960	812	1982	513	2004	291		
1961	897	1983	514	2005	282		
1962	959	1984	524	2006	281		
1963	916	1985	541	2007	279		
1964	917	1986	556	2008	282		
1965	936	1987	568	2009	285		
1966	947	1988	565	2010	288		
1967	973	1989	566	2011	284		
1968	976	1990	547	2012	287		
1969	926	1991	526	2013	285		

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

- a. Data for earlier years in the table may be for the end of the calendar year (or for some other point during the year), rather than for the end of the fiscal year.

Shipbuilding Rate

Table D-2 shows past (FY1982-FY2016) and requested or programmed (FY2017-FY2021) rates of Navy ship procurement.

Table D-2. Battle Force Ships Procured or Requested/Programmed, FY1982-FY2021
(Procured FY1982-FY2016; requested or programmed FY2017-FY2021)

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

Source: CRS compilation based on Navy budget data and examination of defense authorization and appropriation committee and conference reports for each fiscal year. The table excludes non-battle force ships that do not count toward the 308-ship goal, such as certain sealift and prepositioning ships operated by the Military Sealift Command and oceanographic ships operated by agencies such as the National Oceanic and Atmospheric Administration (NOAA).

- a. The totals shown for FY2006, FY2007, and FY2008, reflect the cancellation two LCSs funded in FY2006, another two LCSs funded in FY2007, and an LCS funded in FY2008.
- b. The total shown for FY2012 includes two JHSVs—one that was included in the Navy’s FY2012 budget submission, and one that was included in the Army’s FY2012 budget submission. Until FY2012, JHSVs were being procured by both the Navy and the Army. The Army was to procure its fifth and final JHSV in FY2012, and this ship was included in the Army’s FY2012 budget submission. In May 2011, the Navy and Army signed a Memorandum of Agreement (MOA) transferring the Army’s JHSVs to the Navy. In the FY2012 DOD Appropriations Act (Division A of H.R. 2055/P.L. 112-74 of December 23, 2011), the JHSV that was in the Army’s FY2012 budget submission was funded through the Shipbuilding and Conversion, Navy (SCN) appropriation account, along with the JHSV that the Navy had included in its FY2012 budget submission. The four JHSVs that were procured through the Army’s budget prior to FY2012, however, are *not* included in the annual totals shown in this table.

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