



Summary of *An Analysis of the Navy's Fiscal Year 2017 Shipbuilding Plan*

The Department of Defense (DoD) submitted the Navy's 2017 shipbuilding plan, which covers fiscal years 2017 to 2046, to the Congress in July 2016.¹ The average annual cost of carrying out that plan over the next 30 years—about \$21 billion in 2016 dollars, the Congressional Budget Office estimates—would be one-third more than the average amount of funding that the Navy has received for shipbuilding in recent decades. The Navy's 2017 shipbuilding plan is similar to its 2016 plan with respect to the goal for the total inventory of battle force ships, the number and types of ships that the Navy would purchase, and the funding proposed to implement its plans.

The Navy's 2017 Plan Aims to Expand the Fleet to 308 Battle Force Ships

In November 2016, the fleet numbered 272 battle force ships—aircraft carriers, submarines, surface combatants, amphibious ships, combat logistics ships, and some support ships. (Other support ships are not included in that number.) The Navy's goal (in military parlance, its requirement), as stated in its 2017 shipbuilding plan and reflecting its 2014 force structure assessment, was to maintain a fleet of 308 battle force ships. Toward that end, the Navy would buy a total of 254 ships over the 2017–2046 period: 209 combat ships and 45 combat logistics and support ships (see Table 1). If the Navy adhered to its current schedule for retiring ships, it would meet the goal of 308 ships under the 2017 plan by 2021, and it would be able to maintain its inventory at that

level or higher through 2028. After that, however, the fleet would fall below 308 ships. By the 2030s, the fleet would number fewer than 300 ships.²

In mid-December 2016, the Navy released a new force structure assessment, which called for building a fleet of 355 ships.³ This CBO report assesses the projected outcomes under the 2017 plan against the 308-ship goal set in the 2014 force structure assessment that was in effect when the plan was written, rather than against the larger December number.

The 2017 shipbuilding plan falls short of the 2014 force structure assessment's specific goals for some types of ships in some years. With the exception of small surface combatants, the shortfalls are slightly smaller than those in the plans for the previous two years, which also incorporated a goal of 308 ships. But when compared with the 355-ship target called for by the new 2016 force structure assessment, the current plan falls short of the specific goals for most types of ships by larger amounts.

1. Department of the Navy, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2017* (July 2016), <https://news.usni.org/2016/07/12/20627>.

2. Although most new ships are built to replace older ships as they retire (such as the new ballistic missile submarines that are proposed for the 2020s and 2030s), the Navy sometimes builds ships to fulfill a new mission or to satisfy a specific need. For example, several years ago, the Navy canceled the DDG-1000 destroyer program and restarted its DDG-51 destroyer line after assessing the need for different types of ships. The new Montford Point class of expeditionary transfer docks represents a new type of ship meeting a new need for the Navy.

3. Department of the Navy, *Executive Summary, 2016 Force Structure Assessment (FSA)* (December 14, 2016), <http://tinyurl.com/zgdk5o7>.

Table 1.

The Navy's 2016 and 2017 Shipbuilding Plans

	2016 Plan (2016–2045)	2017 Plan (2017–2046)	Change From 2016 to 2017
Number of Ships Purchased Over 30 Years			
Combat Ships			
Aircraft carriers	6	6	0
Ballistic missile submarines	12	12	0
Attack submarines	45	44	-1
Large surface combatants	65	66	1
Small surface combatants	67	58 ^a	-9
Amphibious warfare ships	23	23	0
Subtotal	218	209	-9
Combat Logistics and Support Ships	46	45	-1
Total	264	254	-10
Costs of New-Ship Construction^b (Billions of 2016 dollars)			
Total Cost Over 30 Years			
Navy's estimate	503	509	6
CBO's estimate	562	566	4
Average Annual Cost			
Navy's estimate	16.8	17.0	0.2
CBO's estimate	18.7	18.9	0.2
Average Cost per Ship			
Navy's estimate	1.9	2.0	0.1
CBO's estimate	2.1	2.2	0.1
Memorandum:			
Average Annual Costs of All Activities Typically Funded From Budget Account for Ship Construction			
Navy's estimate	18.6	18.8	0.2
CBO's estimate	20.5	20.7	0.2

Source: Congressional Budget Office, using data from the Department of the Navy.

- a. Under the 2017 plan, the Navy would have 40 small surface combatants in service after 2029. However, because each of those ships is expected to be in service for 25 years, the Navy would begin buying replacements in 2029.
- b. Amounts shown for new-ship construction exclude the costs of refueling nuclear-powered aircraft carriers and of other items funded by the Navy's shipbuilding account, including ship conversions, construction of ships that are not part of the Navy's battle force (such as oceanographic survey ships), training ships, and outfitting and postdelivery (which includes the purchase of smaller tools and pieces of equipment that are needed to operate a ship but that are not necessarily provided by the manufacturing shipyard as part of ship construction). The costs of the mission packages for littoral combat ships, which are not funded by the Navy's shipbuilding account, are also excluded.

The size of the Navy does not depend on ship construction alone; the length of time that particular ships remain in the fleet also affects the force structure. The Navy often shows flexibility in its approach to retiring ships: A ship may be retired before the end of its service life to save money or kept beyond it to maintain a desired force level. Generally, the Navy's estimates of expected service life align with historical experience. However, in its current plan, the Navy assumes a 35- or 40-year service life

for its large surface combatants despite the fact that, in the past, few of those ships remained in the fleet for longer than 30 years. (See Table 2 for the composition of the fleet and the planned service life of the major types of ships.) If those surface combatants were to have a shorter service life than projected in the Navy's plan, then the shortfalls in the number of those ships would be larger than those shown in the 2017 plan.

Table 2.
The Navy's Inventory of Ships and Their Expected Service Life, by Major Ship Type, as of November 2016

	Inventory	Service Life (Years)
Aircraft Carriers	10	50
Ballistic Missile Submarines	14	42
Guided Missile Submarines	4	42
Attack Submarines	52	33
Large Surface Combatants	85	35–40
Small Surface Combatants and Mine Countermeasures Ships	19	25–30
Amphibious Warfare Ships	31	40
Combat Logistics and Support Ships	57	30–45
Total	272	

Source: Congressional Budget Office, using data from the Department of the Navy.

CBO Estimates That Spending for New Ships in the Navy's Plan Would Average \$18.9 Billion per Year

The Navy estimates that buying the new ships specified in the 2017 plan would cost \$509 billion (in 2016 dollars) over 30 years, or an average of \$17.0 billion per year—slightly more than the amount that the Navy estimated the construction of new ships would be under its 2016 plan. Using its own models and assumptions, CBO estimates that those new ships would cost a total of \$566 billion (in 2016 dollars) over 30 years, or an average of \$18.9 billion per year.

CBO's estimates are higher because its estimating methods and assumptions regarding future ships' design and capabilities differ from those that the Navy uses and because its treatment of growth in the costs of labor and materials for building ships is different from the Navy's. CBO's constant-dollar estimate is 2 percent higher than the Navy's for the first 5 years covered in the plan, 6 percent higher for the next 5 years, and 15 percent higher for the final 20 years (see Figure 1).⁴ The difference widens over time in part because the Navy's method of developing constant-dollar estimates does not account for the faster growth in the costs of labor and materials in the shipbuilding industry than in the economy as a whole and thus does not reflect the increase in the inflation-adjusted costs of ships with

today's capabilities that would be anticipated if such ships were purchased in the future.

The Navy's shipbuilding plan reports only the costs of new-ship construction. It excludes other activities typically funded from the Navy's budget account for ship construction—such as refueling nuclear-powered aircraft carriers or outfitting new ships with various small pieces of equipment after they are built and delivered—that would, by CBO's estimate, add \$1.8 billion to the Navy's average annual shipbuilding costs under the 2017 plan. (From 2011 to 2016, the cost of those other activities averaged \$2.0 billion per year.) CBO estimates that with those extra costs included, the average annual cost of the Navy's 2017 plan would be \$20.7 billion per year—10 percent greater than the Navy's estimate with those additional costs added in.

The Navy's Shipbuilding Plan for the Next 30 Years Would Cost Almost One-Third More Than It Has Spent Over the Past 30 Years

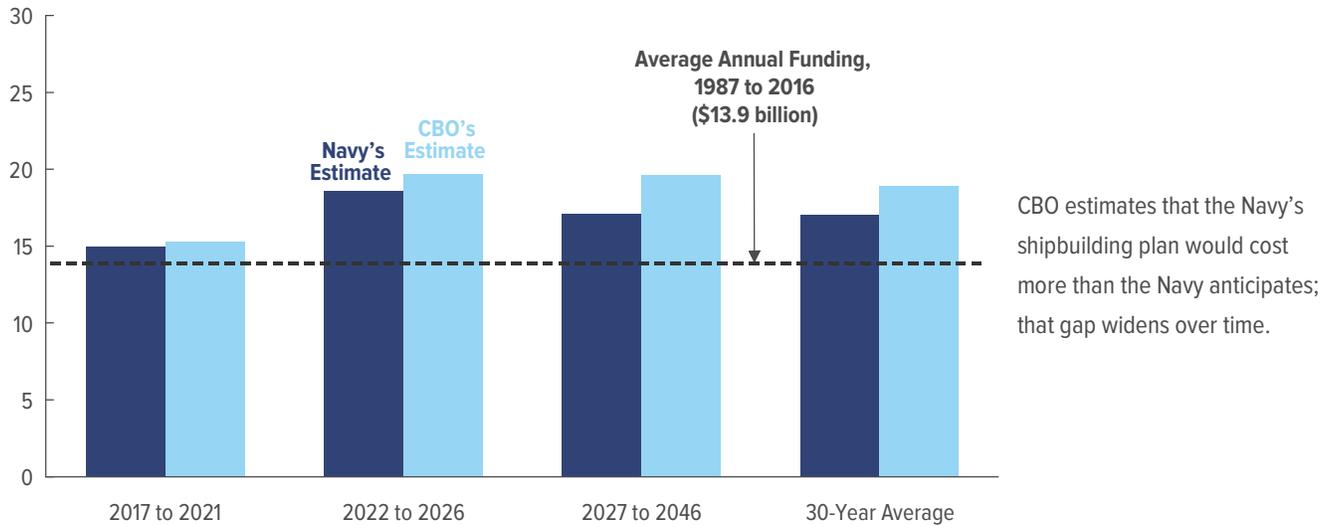
If the Navy received the same average annual amount of funding (in constant dollars) for ship construction in each of the next 30 years that it received over the past three decades, the service would not be able to afford its 2017 plan. CBO's estimate of \$18.9 billion per year for new-ship construction under the Navy's 2017 shipbuilding plan is 36 percent more than the historical average of \$13.9 billion (in 2016 dollars) in annual funding for new-ship construction. CBO's estimate of \$20.7 billion per year for the full cost of the plan is 30 percent higher than the \$15.9 billion the Navy has spent annually, on average, over the past 30 years for all activities funded by its shipbuilding account. If funding continued at its 30-year average, under one possible approach to ship construction, the Navy would be able to build about 74 fewer battle force ships than it currently plans, CBO estimates. Conversely, a notional fleet of 350 ships, which some policymakers have called for and which is similar in size to the goals articulated by the Navy in its December 2016 force structure assessment, could cost \$25 billion per year, or 60 percent above the historical average.

4. The Navy restructured the time frames in its shipbuilding plan this year. Whereas in the past the Navy divided the plan by decade, the 2017 plan defines the near term as the first 5 years (the same period as the Department of Defense's Future Years Defense Program), the midterm as the second 5 years, and the far term as the final 20 years.

Figure 1.

Average Annual Costs of New-Ship Construction Under the Navy's 2017 Plan

Billions of 2016 Dollars



Source: Congressional Budget Office, using data from the Department of the Navy.

Amounts shown exclude the costs of refueling nuclear-powered aircraft carriers and of other items funded by the Navy's shipbuilding account, including ship conversions, construction of ships that are not part of the Navy's battle force (such as oceanographic survey ships), training ships, and outfitting and postdelivery (which includes the purchase of smaller tools and pieces of equipment that are needed to operate a ship but that are not necessarily provided by the manufacturing shipyard as part of ship construction). The costs of the mission packages for littoral combat ships, which are not funded by the Navy's shipbuilding account, are also excluded.

Implementing the Navy's Shipbuilding Plan Might Be Difficult Under Current Law

For 2017 through 2021, the Navy's shipbuilding plan incorporates the assumption that total discretionary funding for DoD will accord with the President's 2017 budget submission and the associated 2017 Future Years Defense Program (FYDP; a five-year funding plan that DoD updates annually). However, the funding proposed in the 2017 FYDP exceeds the amounts available to DoD under current law: The Budget Control Act of 2011 (BCA) placed caps on both defense and nondefense discretionary spending that remain in effect through 2021. (The BCA does not address specific budget accounts such as the one for shipbuilding.)

If, under the BCA's caps, the Navy received the same portion of DoD's budget and devoted the same percentage of its budget to ship construction over the 2017–2021 period that it has over the past 15 years, the annual shipbuilding budget would fall 20 percent short of CBO's estimate of the amount required to execute the Navy's 2017 plan over that period. If all shipbuilding programs were cut proportionately, a reduction of that magnitude would require the Navy to purchase 9 fewer ships than the 38 it plans to purchase over that period. Consequently, under current law, policymakers face a choice between implementing the

Navy's 2017 shipbuilding plan and cutting costs elsewhere in the Navy's budget (or in DoD's budget more broadly), scaling back the 2017 plan, or taking some combination of those actions. Facing similar constraints, in setting the appropriations for each year from 2013 through 2016, the Congress added \$1 billion to \$2 billion to the Administration's request for shipbuilding.

This summary of *An Analysis of the Navy's Fiscal Year 2017 Shipbuilding Plan* is being released in advance of the full report. In accordance with CBO's mandate to provide objective, impartial analysis, the document makes no recommendations.

Eric J. Labs of CBO's National Security Division prepared the document with guidance from David Mosher. An electronic version is available on CBO's website (www.cbo.gov/publication/52324). When the full report is published, it will be available at that location as well.

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