Congressional CBO Budget Office
Summary

An Analysis of the Navy's Fiscal Year 2012 Shipbuilding Plan

Through 2011, at the direction of the Congress, the Department of the Navy issued annual reports that described its plans for ship construction over the coming 30 years.[1] But in the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111-383), the Congress relieved the Navy of that requirement except when the Department of Defense submits the Quadrennial Defense Review. Instead, the report accompanying the legislation required the Navy to submit a 10-year shipbuilding plan if requested by the appropriate oversight committees.

Consequently, for fiscal year 2012, the Navy's intentions for shipbuilding came out in stages, in documents that can be combined with one another and with the plan of the previous year to yield a new 30-year plan comparable to previous ones. In late February, the Navy provided briefing slides highlighting the major changes the service had made in the schedule for constructing new ships and retiring older ones during the next 10 years, as well as providing some information about the expected cost of the shipbuilding called for in the new schedule. In late May, at the request of the House Armed Services Committee, the Navy provided tables showing a 30-year schedule that made a number of adjustments to the schedule released one year earlier. CBO viewed those briefing slides and tables as reflecting a 2012 shipbuilding plan that represents a modification to the previous year's plan.

Although the total costs of carrying out the Navy's 2012 plan would be less than those for the 2011 plan, they would still be much higher than the funding levels that the Navy has received in recent years. Specifically:

- The Navy's documents constituting its 2012 shipbuilding plan imply that the service's current goal for its inventory of battle force ships (aircraft carriers, submarines, surface combatants, amphibious warfare ships, and some logistics and support ships) is 328—up from 322 or 323 under the 2011 plan (that plan was unclear as to whether the inventory goal for carriers was 10 or 11) and 313 in the Navy's three previous long-term plans, which were based on its 2005 assessment of the desired force structure.[2] The battle force fleet currently numbers 286 ships. (Summary Box 1 on page 5 describes the major ships in the Navy's fleet.)
- Under the 2012 plan, the Navy would buy a total of 275 ships over the 2012–2041 period: 205 combat ships and 70 logistics and support ships, including

1. The 2011 shipbuilding plan is Department of the Navy, *Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for FY 2011* (February 2010), www.militarytimes.com/static/projects/pages/2011shipbuilding.pdf.

2. If 5 joint high-speed vessels intended to be purchased by the Army but operated by the Navy and included in the Navy's reported inventory of battle force ships are not counted as part of the Navy's inventory objective, then the goal would be 323 ships.

Summary Table 1.

Comparison of the Navy's Long-Term Shipbuilding Plans for Fiscal Years 2011 and 2012

	2011 Plan (2011–2040)	2012 Plan (2012–2041)
	Number of Ships Purchased Over 30 Years	
Aircraft Carriers	6	6
Ballistic Missile Submarines	12	12
Attack Submarines	44	44
Large Surface Combatants	50	52
Littoral Combat Ships	66	71 [a]
Amphibious Warfare Ships	20	20
Combat Logistics Force and Support Ships	78	65
Total Navy Ships	**276**	**270**
Army Support Ships[b]	**n.a.**	**5**
Total Ships	**276**	**275**
	Costs (Billions of 2011 dollars)	
Total Cost of New-Ship Construction over 30 Years[c]		
Navy's estimate	490	465 [d]
CBO's estimate	585	539
Average Annual Cost of New-Ship Construction		
Navy's estimate	16.3	15.5 [d]
CBO's estimate	19.5	18.0
Average Price per Navy Ship		
Navy's estimate	1.8	1.7 [d]
CBO's estimate	2.1	2.0

Source: Congressional Budget Office based on data from the Department of the Navy.

Note: n.a. = not applicable.

a. The Navy plans to have 55 littoral combat ships in service after 2035. However, because those ships are expected to be in service for 25 years each, the Navy will begin buying replacements in 2032.

b. Army support ships are joint high-speed vessels—small fast ferries for transporting small numbers of personnel or equipment within a theater of operations. The Navy will acquire and operate the ships, but the Army will pay for them. The Navy excluded the costs of those ships from its cost estimates but counted the ships themselves in its procurement and inventory of battle force ships. CBO did the same. Including their costs would add about $900 million to the Navy's and CBO's total.

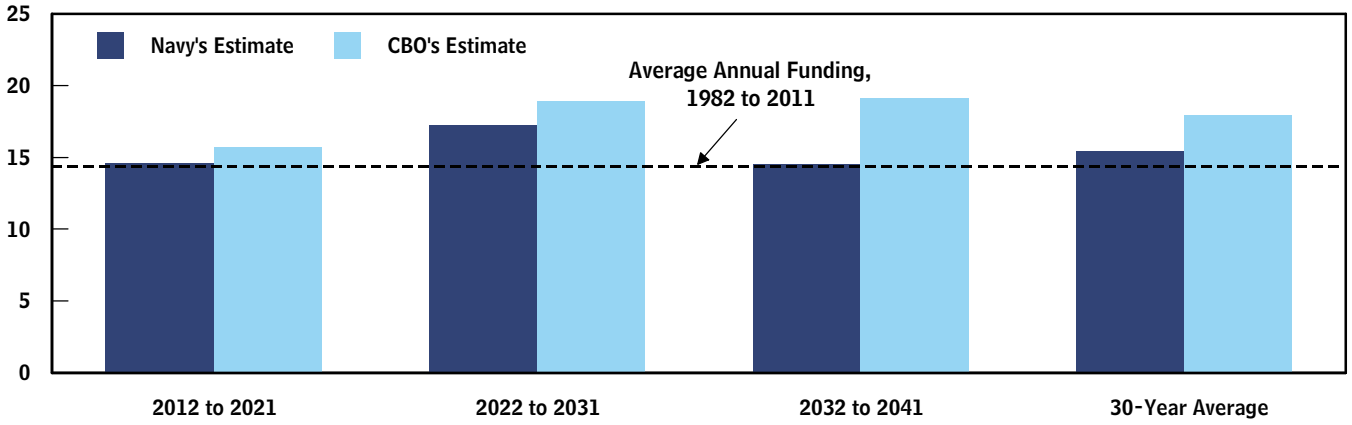
c. The costs to construct new ships exclude the costs of refueling existing nuclear-powered aircraft carriers as well as outfitting and postdelivery costs (which cover various activities and small items, such as tools and equipment, that a ship needs to operate but that are not necessarily provided by the shipyard when the ship is built).

d. CBO adjusted the Navy's estimate to reflect the service's official cost estimate for the SSBN(X) ballistic missile submarine.

Summary Figure 1.

Average Annual Costs of New-Ship Construction Under the Navy's 2012 Plan

(Billions of 2011 dollars)



Source: Congressional Budget Office based on data from the Department of the Navy.

Note: The costs to construct new ships exclude the costs of refueling existing nuclear-powered aircraft carriers as well as outfitting and postdelivery costs (which cover various activities and small items, such as tools and equipment, that a ship needs to operate but that are not necessarily provided by the shipyard when the ship is built).

5 for the Army (see Summary Table 1). Given the rate at which the Navy plans to retire ships from the fleet, that construction plan is insufficient to achieve a 328-ship fleet.

- In comparison, in the 2011 shipbuilding plan, the Navy envisioned buying 198 combat ships and 78 logistics and support ships between 2011 and 2040, for a total of 276. That plan was insufficient to achieve a fleet of 322 or 323 ships.

- The Navy estimates that buying the new ships in the 2012 plan will cost an average of about $15.5 billion per year, or a total of $465 billion over 30 years (about 6 percent less than its estimate for the 2011 plan). Those figures are solely for the construction of new ships, the only type of costs reported in the Navy's 30-year shipbuilding plans. However, other activities typically funded from the Navy's budget accounts for ship construction—such as refueling nuclear-powered aircraft carriers and outfitting new ships with various small pieces of equipment after the ships have been built or delivered—will, in CBO's estimation, add nearly $2 billion to the Navy's average annual shipbuilding costs under the 2012 plan, which would bring the total to $17.3 billion per year on average.

- Using its own models and assumptions, CBO estimates that the cost for new-ship construction under the 2012 plan will average about $18.0 billion per year, or a total of $539 billion through 2041.[3] Including the expense of refueling aircraft carriers as well as outfitting new ships raises that average to about $19.8 billion per year, CBO estimates. Those figures are about 8 percent lower than CBO's estimates of the Navy's 2011 plan.

- CBO's estimate of the costs for new-ship construction in the 2012 shipbuilding plan is about 16 percent higher than the Navy's estimate overall. That figure masks considerable variation over time, however: CBO's estimates are 7 percent higher than the Navy's for the first 10 years of the plan, 10 percent higher for the following decade, and 31 percent higher for the final 10 years of the plan (see Summary Figure 1).

3. Generally, CBO estimates the price of future naval vessels on the basis of the relationship between cost and weight of analogous ships. The estimated cost per ship is then adjusted for factors such as the number of ships of the same type being built at a given shipyard, production efficiencies that occur as more ships of the same class are produced, and the fact that costs of labor and materials in the naval shipbuilding industry have generally risen faster than costs in the economy as a whole.

Those differences result partly from different estimating methods and different assumptions about the designs and capabilities of future ships. The differences also arise partly because CBO accounted for the fact that costs of labor and materials have traditionally grown faster in the shipbuilding industry than in the economy as a whole, whereas the Navy does not appear to have done so; that factor produces a widening gap between the estimates over time.

- If the Navy receives the same amount of funding for ship construction in the next 30 years as it has over the past three decades, it will not be able to afford all of the purchases in the 2012 plan.[4] CBO's estimate of the full cost of the Navy's 2012 shipbuilding plan is about 27 percent above the average funding of almost $16 billion per year (in 2011 dollars) that the Navy has received over the past three decades.

4. For a broader discussion of historical cost trends in Navy shipbuilding, see the statement of Eric J. Labs, Senior Analyst for Naval Forces and Weapons, Congressional Budget Office, before the Subcommittee on Seapower and Expeditionary Forces, House Committee on Armed Services, *The Long-Term Outlook for the U.S. Navy's Fleet* (January 20, 2010).

Summary Box 1.

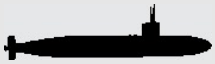
The Roles of Major Types of Ships in the Navy's Fleet

Nimitz Class
Aircraft Carrier

The Navy's 11 **aircraft carriers** are the heart of the battle force fleet. Each carries an air wing of about 60 aircraft, which can attack hundreds of targets per day for up to a month before needing to be rested. Carriers are by far the largest ships in the fleet, with a weight (displacement) of about 100,000 tons. Ten of the 11 current carriers belong to the Nimitz class.

Ohio Class Ballistic
Missile Submarine

Strategic **ballistic missile submarines** carry the major part of the U.S. nuclear deterrent, up to 24 Trident missiles with four to eight nuclear warheads apiece. The Navy has 14 Ohio class ballistic missile submarines in the strategic role and has converted 4 more to a conventional guided missile (SSGN) configuration, each of which displaces about 19,000 tons submerged. Those SSGNs carry up to 154 Tomahawk missiles as well as special-operations forces.



Los Angeles Class
Attack Submarine

Attack submarines are the Navy's premier undersea warfare and antisubmarine weapon. Since the end of the Cold War, however, they have mainly performed covert intelligence-gathering missions. They have also been used to launch Tomahawk missiles at inland targets in the early stages of conflicts. The Navy has 53 attack submarines, 44 of which belong to the Los Angeles class. At 7,000 tons, they are less than half the size of ballistic missile submarines.

Arleigh Burke Class
Destroyer

Large surface combatants—which include cruisers and destroyers—are the workhorses of the fleet. They defend the Navy's aircraft carriers and amphibious warfare ships against other surface ships, aircraft, and submarines. They also perform many day-to-day missions, such as patrolling sea lanes, providing an overseas presence, and conducting exercises with allies. In addition, they are capable of striking land targets with Tomahawk missiles. Different types of surface combatants have displacements ranging from 9,000 to 15,000 tons.

Freedom Class
Littoral Combat Ship

Small surface combatants are frigates and, in the future, littoral combat ships. Frigates today are used to perform many of the same day-to-day missions as large surface combatants. Littoral combat ships are intended to counter mines, small boats, and diesel electric submarines in the world's coastal regions. More routinely, they will also participate in patrolling sea lanes, providing an overseas presence, and conducting exercises with allies. These ships range in size from 3,000 to 4,000 tons.

Wasp Class Amphibious
Assault Ship

The Navy's two classes of **amphibious assault ships** (also known as large-deck amphibious ships or helicopter carriers) are the second largest ships in the fleet at 40,000 tons. They form the centerpiece of amphibious ready groups, and each can carry about half the troops and equipment of a Marine expeditionary unit. They also carry as many as 30 helicopters and 6 fixed-wing Harrier jump jets, or up to 20 Harriers.

Austin Class Amphibious
Transport Dock

The Navy has four other classes of amphibious warfare ships, and such ships are divided into two types: **amphibious transport docks** and **dock landing ships.** Two of those ships together provide the remaining transport capacity for a Marine expeditionary unit in an amphibious ready group. They range in size from 16,000 to 25,000 tons.

Supply Class Fast Combat
Support Ship

The many **logistics and support ships** in the Navy's fleet provide the means to resupply, repair, salvage, or tow combat ships. The most prominent of those vessels are fast combat support ships, which operate with carrier strike groups to resupply them with fuel, dry cargo (such as food), and ammunition. These ships can be as small as 2,000 tons for an ocean-going tug or as large as 50,000 tons for a fully loaded fast combat support ship.

Source: Congressional Budget Office.

Note: Ship silhouettes are not to scale.