
Summary

In the view of the Congressional Budget Office (CBO), the U.S. Navy will have trouble carrying out its current acquisition and modernization plans without a substantial increase in annual funding over the next 20 years. If such an increase does not occur, how could the Navy structure itself to perform its missions in the coming decades?

The Navy's strategy has evolved since the Cold War—from combating a large Soviet fleet in the world's deep oceans to confronting smaller, regional powers in coastal (littoral) areas. Nevertheless, although the size of the Navy has shrunk dramatically during the past decade, its composition has largely remained the same. The service continues to buy many of the same weapons that it did during the Cold War. In addition, it plans to build a more-modern version of each major type of vessel it uses. But CBO estimates that carrying out those plans—and sustaining the Navy at its current size of about 300 ships—will cost \$105 billion annually (adjusted for inflation) through 2020. That amount is about \$17 billion more per year than the service receives now.

Without more funding, the Navy will face trade-offs in terms of which missions it can perform or how well it can perform them. This study presents four alternative force structures, each of which emphasizes one of the Navy's current missions. Each of the alternative fleets would cost roughly \$90 billion per year (in today's dollars) through 2020. For that sum, the future Navy could focus on:

- o Continuing to provide visible military presence around the world (known as forward presence) with aircraft carriers but fewer other ships;
- o Providing forward presence with other surface combat ships, including a new multipurpose presence vessel, which would be designed specifically for littoral operations;
- o Performing strike missions (attacking targets on land) with a fleet of new strike submarines, which would be less vulnerable to regional foes armed with antiship cruise missiles, mines, or small submarines than U.S. surface ships would be; or
- o Providing more support to the amphibious operations of the Marine Corps.

Those alternatives are by no means exhaustive. They simply illustrate some of the directions that the future Navy might take at today's funding level.

Conceptually, determining what missions the Navy should perform or whether it has enough ships ought to begin by assessing the U.S. role in the post-Cold War world and by identifying specific foreign policy objectives. From that analysis would follow a national security strategy, which would include the option of military force and how it might be used to execute that strategy. Planners could then determine the missions that the Navy (or any of the services)

should be ready to carry out, the Navy's size and composition, and the level of funding necessary to support that force structure. However, whether or to what extent the current Navy is consistent with the Administration's national security strategy is beyond the scope of this analysis. Instead, this study examines the size, composition, and funding requirements of the Navy with only general reference to the current national security strategy.

The Navy in the Post-Cold War World

Throughout the Cold War, the Navy had a number of clearly defined missions: maintaining control of the seas, operating the sea-based "leg" of the United States' nuclear deterrent, monitoring the Soviet fleet of ballistic missile submarines, and defeating any enemy concentration of naval power should war occur. To carry out those missions, the Navy invested heavily in attack submarines and other weapon systems for anti-submarine warfare. It also equipped its surface combatants with the sophisticated Aegis air-defense system. During most of the 1980s, the Navy's goal for its force—what it needed to fulfill its main missions

and other duties—was a fleet of 600 ships, including 100 attack submarines and 15 aircraft carriers.

By the mid-1980s, it had become clear that the U.S. Navy far outstripped the Soviet fleet. Shortly thereafter, the Soviet Union collapsed and the Cold War ended. The Navy's civilian and military leadership began to redefine the service's roles and missions. Those efforts resulted in the white papers . . . *From the Sea* in 1992 and *Forward . . . From the Sea* in 1994.

With those papers, the Navy's doctrine evolved to focus on a different kind of threat and on a mission that encompasses both peacetime and war. That evolution shifted the Navy's wartime mission from fighting the Soviet navy to projecting military power ashore in the world's littoral areas against regional foes (as part of the overall U.S. strategy of being able to fight two nearly simultaneous major theater wars). The Navy's peacetime mission emphasizes forward presence through regular patrols and the stationing of naval vessels around the world. Training and practicing to fight a large opponent with a global deep-water navy is very different from training and practicing to fight much smaller opponents who operate in the littorals. For example, tracking Soviet ballistic missile submarines in the quiet, deep waters of open oceans

Summary Table 1.
Distribution of Navy Ships, 1990 and 2000

	1990		2000	
	Number of Ships	Percentage of Fleet	Number of Ships	Percentage of Fleet
Aircraft Carriers	15	3	12	4
Surface Combatants	213	37	116	37
Attack Submarines	97	17	56	18
Ballistic Missile Submarines	35	6	18	6
Amphibious Ships	66	11	39	12
Combat Logistics Ships	60	10	34	11
Mine Warfare Ships and Fleet Auxiliaries	88	15	41	13
Total	574	100	316	100

SOURCE: Congressional Budget Office based on data from the Navy.

requires different skills and equipment from those needed to detect diesel-electric submarines in the noisy, shallow waters of coastal regions.

Yet despite that shift in doctrine, the Navy continued throughout the 1990s to buy weapons similar to those it bought during the Cold War, including Aegis-equipped ships, nuclear-powered aircraft carriers, and attack submarines. Although the total number of ships has dropped from 574 in 1990 to 316 by 2000, the distribution of forces among the Navy's three major warfare "communities"—air, surface, and submarine—is similar to what it was during the Cold War (see Summary Table 1). Although Navy officials might disagree, today's force could be characterized as a reduced version of the Cold War Navy.

Can the Navy Sustain a 300-Ship Fleet?

CBO's analysis of the Navy's budgetary and procurement plans suggests that the service will have difficulty maintaining a fleet of 300 ships within its current annual funding of about \$90 billion. That funding level is unlikely to cover all of the ships and aircraft the Navy will need to buy and also support readiness and a good quality of life for the service's sailors, pilots, and marines. To sustain its 300-ship fleet, its inventory of aircraft, and the infrastructure that supports them, the Navy will need an annual budget of about \$105 billion in today's dollars—\$17 billion more than it is expected to receive, on average, under the Administration's Future Years Defense Program (FYDP) for fiscal years 2001 through 2005.

The Navy plans to build 45 ships between 2000 and 2005, or seven and a half ships per year (see Summary Table 2). Those vessels include more of the current models of aircraft carriers and destroyers. They also include new designs, such as the DD-21 destroyer, the Virginia class attack submarine, and the LPD-17 amphibious ship. Assuming that the average service life of a Navy vessel is 35 years, that planned shipbuilding rate is sufficient to keep the Navy at about 300 ships through the coming decade. Eventually, however, as more ships reach the end of their ser-

Summary Table 2.
The Navy's Planned Purchases of New Ships and Aircraft Through 2020

	2000-2005	2006-2020 ^a
Ships		
Aircraft carriers	1	4
Surface combatants	14	48
Submarines	5	38
Amphibious ships	11	5
All others	<u>14</u>	<u>33</u>
Total	45	128
Aircraft		
Fighters	267	219
Strike aircraft	0	984
Medium lift aircraft	246	374
Trainers	160	210
All others	<u>37</u>	<u>439</u>
Total	710	2,226

SOURCE: Congressional Budget Office based on data from the Navy.

a. These purchases represent the Navy's preliminary projections for the future rather than its official requirements or programmatic decisions.

vice lives than are replaced, the Navy must buy larger numbers of ships or the size of the fleet will decline.

With respect to aircraft, the Navy is planning to buy planes in smaller quantities than required to maintain the current inventory. To sustain a fleet of about 3,500 aircraft, the Navy needs to buy, on average, 152 planes and helicopters per year. Under the 2001 FYDP, it will purchase 710 aircraft through 2005, or an average of 118 a year.

Alternatives for Structuring Future Naval Forces

If the Navy does not receive more resources in the future than it is getting now, it will eventually have to reduce its force structure. That could be done in many

ways. In this analysis, CBO assumes that the Navy's funding is fixed at \$90 billion (adjusted for future inflation)—roughly its average budget for the next five years under the 2001 FYDP.

CBO constructed four alternative fleets that the Department of the Navy could pursue between today and 2020 to fit within a \$90 billion budget. Each of the options emphasizes a particular portion of the Navy's existing force structure. They illustrate different ways in which the Navy could reduce its fleet further and still replace older ships with newer and usually more-capable ones. Which of the alternatives is the "best" choice for the force structure, under the budgetary assumptions of this analysis, depends on how the world evolves between now and 2020 and on what missions the Navy is asked to perform.

Each alternative has advantages and disadvantages, which are discussed in the context of the differ-

ent directions that the world might take over the next 20 years. It should be emphasized, however, that the alternatives illustrate only what a smaller Navy might look like; this analysis does not consider the numerous other potential ways to structure U.S. naval forces.

Alternative I: Rely on Aircraft Carriers and Focus on Providing Forward Presence

This option would keep the Navy's fleet of aircraft carriers at its current size, 12, which would mean limiting the numbers of other types of ships. Proponents of keeping a large carrier fleet would argue that maintaining a robust forward presence with those ships deters aggressors, reassures friends, and allows the United States to respond more quickly in a crisis than if its fleet sailed from U.S. ports.

Summary Table 3.
Force Structure Under the Navy's Current Plan and Four Alternatives

	Navy's Current Plan ^a	Alternative I: Keep a 12-Carrier Navy for Forward Presence	Alternative II: Use Other Ships for Presence Missions	Alternative III: Build a Submarine Strike Navy	Alternative IV: Reorient the Navy to Provide More Support to the Marine Corps
Aircraft Carriers	12	12	7	7	10
Surface Combatants	117	83	118	58	93
Attack Submarines	55	25	34	72	30
Strike Submarines	0	0	0	50	0
Ballistic Missile Submarines	14	10	10	10	10
Amphibious Ships	36	24	6	18	43
Combat Logistics Ships	31	26	26	26	26
Mine Warfare Ships	16	16	16	16	47
Fleet Auxiliaries	23	23	23	29	23
Total Ships	304	219	240	286	282
Aircraft Carrier Air Wings	11	11	6	6	9

SOURCE: Congressional Budget Office.

a. Assumes that the Navy achieves the force goal of the Quadrennial Defense Review, after adjustments in 2007 and 2012, plus five additional submarines and one additional surface combatant.

To pay for 12 carriers and their upkeep, the Navy would have to reduce the surface combatant force from the currently planned level of 117 ships to 83 by 2020—a decline of almost 30 percent. Under this option, that force would consist of 58 Arleigh Burke destroyers and 25 “sea dominance” versions of the DD-21 destroyer, which is a less-capable ship than the version of the DD-21 that the Navy is now planning to buy. The current fleet’s 27 Ticonderoga class cruisers would be retired and not replaced.

Other cuts under Alternative I would include reducing the number of attack submarines from 55 to 25 and the number of ballistic missile submarines from 14 to 10 (see Summary Table 3). This fleet would also have fewer support (logistics) ships than the planned Navy. Because the option emphasizes aircraft carriers, the Navy and Marine Corps would buy both the F/A-18E/F fighter aircraft and the Joint Strike Fighter.

Overall, this force would support the same level of forward presence with aircraft carriers as the planned Navy. It would be effective for carrying out that mission day to day in regions considered vital to U.S. interests and for responding quickly to any rapidly developing crises there. This fleet would also be an effective instrument for controlling the seas. However, the Navy would have less ability to use surface combatants to fill any gaps that arose in maintaining forward presence with aircraft carriers. In addition, other presence missions that do not require carriers (such as operations to prevent drug smuggling or joint exercises with other navies) would probably have to be curtailed.

Furthermore, this alternative’s fleet would be able to fight two nearly simultaneous major theater wars, but it would be less flexible in performing unmanned strike missions because it would have fewer Tomahawk missile launchers. It would also have fewer attack submarines available for forward deployment. That limitation, according to a 1999 Pentagon review, would make it difficult for the attack submarine force to perform either its peacetime or its wartime missions.

Alternative II: Use Other Ships for Presence Missions

Some critics have argued that the Navy is not designing and building the right kinds of ships to operate mainly in coastal waters. This option illustrates one way to address that criticism. It would cut the number of aircraft carriers and use the resulting savings to develop a surface combatant force especially designed for overseas presence. Under this alternative, the Navy would have seven aircraft carriers, 118 surface combatants (58 Arleigh Burke destroyers and 60 “presence” ships, described below), six large flat-deck amphibious ships, 34 attack submarines, 10 ballistic missile submarines, and slightly fewer support ships than under the Navy’s current plan (see Summary Table 3).

Instead of building the surface combatant force around the DD-21 destroyer, the Navy would commission a new type of presence ship. It would be a multi-purpose vessel that could perform many of the missions in littoral areas that are now distributed among several classes of ships. As suggested by Admiral William Owens (former Deputy Chief of Naval Operations and Vice Chairman of the Joint Chiefs of Staff), the ship would resemble a hybrid of a surface combatant and a flat-deck amphibious ship. It could carry and deploy marines, shoot Tomahawk and Standard missiles from vertical launch system cells, and provide long-range gunfire support to troops on shore.

This alternative would provide a robust forward presence. The U.S. carrier that is currently based in Japan could provide full-time presence in the Western Pacific. The remaining carriers could provide either a modest level of presence in both the Mediterranean and Persian Gulf regions or nearly full-time presence in one of those two areas. At the same time, this option would allow the Navy to maintain eight presence ships and five attack submarines in continuous forward deployment.

What this option would add to performing the presence mission, however, it would subtract from the

Navy's ability to fight two major theater wars. Even several presence ships would be unlikely to prove as effective in wartime as an aircraft carrier. One criticism of the hybrid presence ship is that it could perform many missions but none of them optimally. Yet in other ways, the presence ship could be quite flexible because, as a large multipurpose ship, it could adapt more easily to changes in technology than could smaller, more specialized craft.

Alternative III: Build a Submarine Strike Navy

This alternative would deemphasize the forward presence mission in favor of increasing the Navy's ability to carry out large strike operations with missiles. In the future, the areas where the Navy may operate could be dominated by regional powers armed with large numbers of relatively inexpensive antiship cruise missiles and small diesel-electric submarines. Because such developments could make surface ships more vulnerable, this alternative would build more submarines to perform the strike missions that are now conducted by surface combatants and carrier-based aircraft. The quietness of submarines makes them ideal for stealthy strike operations from the sea.

The fleet under this option would be very different from the force structure that the Navy now envisions (see Summary Table 3). In this alternative, the Navy would design and acquire 50 new "strike submarines"; like the current Trident ballistic missile submarines, each strike submarine would have two crews. Those new submarines would be large vessels with the means to launch hundreds, if not thousands, of various land-attack weapons, including missiles and unmanned vehicles. This alternative would also increase the attack submarine force to 72 (compared with 55 under the Navy's current plan), for a total fleet of 122 submarines. The Navy considers an attack submarine force of 72 to be the minimum size necessary to meet all of its peacetime requirements for presence and intelligence collection by 2020. The surface combatant force would be reduced to just the 58 Arleigh Burke destroyers, whose principal mission would be to protect the seven remaining aircraft carriers. The amphibious fleet would be cut by half and the number of support ships reduced slightly, but the number of sub-

marine tenders (vessels that provide a floating maintenance facility) would jump from two to eight.

The Navy's principal mission under this alternative would be to provide a capability for land-attack warfare with missiles that would be difficult to defeat or destroy—in military terms, this fleet would be "highly survivable." About 25 strike submarines (each with two crews) and 12 attack submarines could be forward deployed continuously, ready to strike a potential aggressor with a large amount of ordnance. However, the Tomahawk missiles that submarines fire today are not as flexible a weapon as aircraft launched from carriers. The major virtue of this option is the fleet's ability to strike with great power and yet survive in an environment in which surface ships may not be able to operate safely. In addition, as new technologies were developed to make missiles smaller, more versatile, and more accurate, the bombardment capability of the strike submarine force would increase dramatically. Whether that capability could ever exceed the capability of today's carrier fleet, though, is an open question.

Of the four options examined in this study, Alternative III would be the least effective in providing visible forward presence during peacetime. With so few surface ships in the fleet, substantial periods of time could elapse during which large U.S. ships were unavailable in different regions of the world. In wartime, however, this fleet could effectively deny other navies or civilian ships the use of the sea because of its large attack submarine force.

Alternative IV: Reorient the Navy to Provide More Support to the Marine Corps

Shaping the fleet to provide more support to the Marine Corps may be a logical approach to force structure in the post-Cold War world. The United States is unlikely to face a global competitor like the Soviet Union for many years to come. At worst, it may someday confront one or more smaller, regional powers that endanger U.S. interests by, for example, threatening allies or interfering with the free flow of commercial shipping. The amphibious assault capabilities of the Marine Corps could prove useful against

such opponents, should the United States need to attack them with ground forces. In addition, the Corps is well suited to perform most of the missions that U.S. forces have been involved in since the end of the Cold War: peacekeeping operations, humanitarian interventions, hostage rescues, and evacuations of civilian personnel. The Marines are structured and trained to conduct precisely those missions, which often arise with little warning.

Compared with the Navy's current plan, this alternative would spend more on amphibious ships. It would buy 12 large helicopter carriers (either the LHA or LHD class) and 12 LSD transport docks, the same numbers slated for purchase in the current plan. However, this option would also buy 19 LPD-17 dock landing ships to the current plan's 12 (see Summary Table 3). The extra seven LPD-17s would allow the Navy to meet the Marine Corps's goal of being able to transport the assault echelons of three Marine expeditionary brigades.

In addition, Alternative IV would buy 31 more mine-clearing ships than the Navy's current plan calls for. To pay for those ships, it would cut the carrier force to 10 and the surface combatant force to 93 (58 Arleigh Burke destroyers and 35 maritime support versions of the DD-21). The submarine force would also shrink: the number of attack submarines would fall to 30, and the number of ballistic missile submarines would drop to 10.

The central mission of the Navy under this alternative would be to support the Marine Corps in any operation it might have to conduct from the sea. This fleet would be better suited for that role than the fleet created under any other alternative, including the Navy's current plan. It would provide more transport

capacity, more mine-clearing capability, and more gunfire support. But by orienting its fleet primarily toward supporting the Marine Corps, the Navy would give up some capabilities—most notably its performance of deep-strike missions. Under this alternative, those missions would fall to the Air Force, and the Navy's carrier aircraft would be used to provide closer air support to the Marine Corps.

Conclusions

The Navy's roles and missions in the post-Cold War environment are still evolving. The old Navy of the open ocean is becoming a Navy that focuses on coastal warfare. But uncertainty abounds regarding the right combination of ships and aircraft for that new orientation. Compounding that uncertainty is the reality that the Navy's budget is not large enough to pay for all of its programs—including those designed to conduct coastal warfare. To purchase what it wants, the service must either receive a substantial increase in procurement funding or cut its force structure.

As the Navy seeks a balance between its roles, missions, and budget, there are many alternatives to its current plans that it could explore. This study outlines four such options. Each has strengths and weaknesses in its approach to different threats and environments, and each focuses on performing one of the Navy's varied missions. Determining which alternative (or combination of them) is "best" depends on which missions one considers most important and which threats or challenges the United States is likely to face well into the 21st century.