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Coast Guard Cutter Procurement: Background and Issues for Congress

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Summary

The Coast Guard's program of record (POR) calls for procuring 8 National Security Cutters (NSCs), 25 Offshore Patrol Cutters (OPCs), and 58 Fast Response Cutters (FRCs) as replacements for 90 aging Coast Guard cutters and patrol craft. The NSC, OPC, and FRC programs have a combined estimated acquisition cost of about $21.1 billion, and the Coast Guard's proposed FY2015 budget requests a total of $768 million in acquisition funding for the three programs.

NSCs are the Coast Guard's largest and most capable general-purpose cutters. They have an estimated average procurement cost of about $684 million per ship. The first three are now in service, the fourth through seventh are in various stages of construction, and long lead time materials (LLTM) are being procured for the eighth. The Coast Guard's proposed FY2015 budget requests $638 million for the NSC program, including $558.7 million for the eighth NSC.

OPCs are to be smaller, less expensive, and in some respects less capable than NSCs. They have an estimated average procurement cost of about $484 million per ship. The first OPC is to be procured in FY2017. The Coast Guard's proposed FY2015 budget requests $20 million in acquisition funding for the OPC program.

FRCs are considerably smaller and less expensive than OPCs. They have an estimated average procurement cost of about $73 million per boat. A total of 30 have been funded through FY2014. As of March 28, 2014, the first eight had been commissioned into service. The Coast Guard's proposed FY2014 budget requests $110 million in acquisition funding for two FRCs and associated program costs.

Potential oversight issues for Congress regarding the NSC, OPC, and FRC programs include the following:

- the adequacy of the Coast Guard's planned NSC, OPC, and FRC procurement quantities;
- the Coast Guard's FY2015 request for acquisition funding for two (rather than four or six) FRCs;
- the adequacy of FY2015 funding requested for the OPC program;
- the Coast Guard's acquisition strategy for the OPC;
- the potential for using multiyear procurement (MYP) in acquiring new cutters;
- whether 8 NSCs, 25 OPCs, and 58 FRCs is the best mix of cutters that could be procured for roughly the same total amount of acquisition funding; and
- the adequacy of information available to Congress to support review and oversight of Coast Guard procurement programs, including cutter procurement programs.

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Introduction

This report provides background information and potential oversight issues for Congress on the Coast Guard's programs for procuring 8 National Security Cutters (NSCs), 25 Offshore Patrol Cutters (OPCs), and 58 Fast Response Cutters (FRCs). These 91 planned cutters are intended as replacements for 90 aging Coast Guard cutters and patrol craft. The Coast Guard began procuring NSCs and FRCs a few years ago, and the first few NSCs and FRCs are now in service. The Coast Guard plans to begin procuring OPCs within the next few years. The NSC, OPC, and FRC programs have a combined estimated acquisition cost of about $21.1 billion, and the Coast Guard's proposed FY2015 budget requests a total of $768 million in acquisition funding for the three programs.

The issue for Congress is whether to approve, reject, or modify the Coast Guard's funding requests and acquisition strategies for the NSC, OPC, and FRC programs. Congress's decisions on these three programs could substantially affect Coast Guard capabilities and funding requirements, and the U.S. shipbuilding industrial base.

The NSC, OPC, and FRC programs have been subjects of congressional oversight for several years, and were previously covered in an earlier CRS report that is now archived.[1] The Coast Guard's plans for modernizing its fleet of polar icebreakers are covered in a separate CRS report.[2]

Background

Older Ships to Be Replaced by NSCs, OPCs, and FRCs

The 91 planned NSCs, OPCs, and FRCs are intended to replace 90 older Coast Guard ships—12 high-endurance cutters (WHECs), 29 medium-endurance cutters (WMECs), and 49 110-foot patrol craft (WPBs).[3] The Coast Guard's 12 Hamilton (WHEC-715) class high-endurance cutters entered service between 1967 and 1972.[4] The Coast Guard's 29 medium-endurance cutters

[1] The earlier report was CRS Report RL33753, *Coast Guard Deepwater Acquisition Programs: Background, Oversight Issues, and Options for Congress*, by Ronald O'Rourke. From the late 1990s until 2007, the Coast Guard's efforts to acquire NSCs, OPCs, and FRCs were parts of a larger, integrated Coast Guard acquisition effort aimed at acquiring several new types of cutters and aircraft that was called the Integrated Deepwater System (IDS) program, or Deepwater for short. In 2007, the Coast Guard broke up the Deepwater effort into a series of individual cutter and aircraft acquisition programs, but continued to use the term Deepwater as a shorthand way of referring collectively to these now-separated programs. In its FY2012 budget submission, the Coast Guard stopped using the term Deepwater entirely as a way of referring to these programs. Congress, in acting on the Coast Guard's proposed FY2012 budget, did not object to ending the use of the term Deepwater. Reflecting this development, CRS Report RL33753, *Coast Guard Deepwater Acquisition Programs: Background, Oversight Issues, and Options for Congress* was archived in early 2012, following final congressional action on the FY2012 budget, and remains available to congressional readers as a source of historical reference information on Deepwater acquisition efforts.

[2] CRS Report RL34391, *Coast Guard Polar Icebreaker Modernization: Background and Issues for Congress*, by Ronald O'Rourke.

[3] In the designations WHEC, WMEC, and WPB, W means Coast Guard ship, HEC stands for high-endurance cutter, MEC stands for medium-endurance cutter, and PB stands for patrol boat.

[4] Hamilton-class cutters are 378 feet long and have a full load displacement of about 3,400 tons.

include 13 Famous (WMEC-901) class ships that entered service between 1983 and 1991,[5] 14 Reliance (WMEC-615) class ships that entered service between 1964 and 1969,[6] and two one-of-a-kind cutters that originally entered service with the Navy in 1944 and 1971 and were later transferred to the Coast Guard.[7] The Coast Guard's 49 110-foot Island (WPB-1301) class patrol boats entered service between 1986 and 1992.[8]

Many of these 90 ships are manpower-intensive and increasingly expensive to maintain, and have features that in some cases are not optimal for performing their assigned missions. Some of them have already been removed from Coast Guard service: eight of the Island-class patrol boats were removed from service in 2007 following an unsuccessful effort to modernize and lengthen them to 123 feet; the one-of-a-kind cutter that originally entered service with the Navy in 1944 was decommissioned in 2011; and Hamilton-class cutters are being decommissioned as new NSCs enter service. A July 2012 Government Accountability Office (GAO) report discusses the generally poor physical condition and declining operational capacity of the Coast Guard's older high-endurance cutters, medium-endurance cutters, and 110-foot patrol craft.[9]

Missions of NSCs, OPCs, and FRCs

NSCs, OPCs, and FRCs, like the ships they are intended to replace, are to be multimission ships for routinely performing 7 of the Coast Guard's 11 statutory missions, including

- search and rescue (SAR);
- drug interdiction;
- migrant interdiction;
- ports, waterways, and coastal security (PWCS);
- protection of living marine resources;
- other/general law enforcement; and
- defense readiness operations.[10]

[5] Famous class cutters are 270 feet long and have a full load displacement of about 1,800 tons.

[6] Reliance class cutters are 210 feet long and have a full load displacement of about 1,100 tons.

[7] The two one-of-a-kind cutters are the *Acushnet* (WMEC-167), which originally entered service with the Navy in 1944, and the *Alex Haley* (WMEC-39), which originally entered service with the Navy in 1971. The *Acushnet* served in the Navy from until 1946, when it was transferred to the Coast Guard. The ship was about 214 feet long and had a displacement of about 1,700 tons. The *Alex Haley* served in the Navy until 1996. It was transferred to the Coast Guard in 1997, converted into a cutter, and re-entered service with the Coast Guard in 1999. It is 282 feet long and has a full load displacement of about 2,900 tons.

[8] Island-class boats are 110 feet long and have a full load displacement of about 135 to 170 tons.

[9] Government Accountability Office, *Coast Guard[:]Legacy Vessels' Declining Conditions Reinforce Need for More Realistic Operational Targets*, GAO-12-741, July 2012, 71 pp.

[10] The four statutory Coast Guard missions that are not to be routinely performed by NSCs, OPCs, and FRCs are marine safety, aids to navigation, marine environmental protection, and ice operations. These missions are performed primarily by other Coast Guard ships. The Coast Guard states, however, that "while [NSCs, OPCs, and FRCs] will not routinely conduct [the] Aids to Navigation, Marine Safety, or Marine Environmental Protection missions, they may periodically be called upon to support these missions (i.e., validate the position of an Aid to Navigation, transport personnel or serve as a Command and Control platform for a Marine Safety or Marine Environmental Response mission, etc.)." (Source: Coast Guard information paper provided to CRS on June 1, 2012.)

Smaller Coast Guard patrol craft and boats contribute to the performance of some of these seven missions close to shore. NSCs, OPCs, and FRCs perform them both close to shore and in the deepwater environment, which generally refers to waters more than 50 miles from shore.

NSC Program

National Security Cutters (**Figure 1**), also known as Legend (WMSL-750) class cutters,[11] are the Coast Guard's largest and most capable general-purpose cutters.[12] The Coast Guard's program of record (POR)—the service's list, established in 2004, of planned procurement quantities for various new types of ships and aircraft—calls for procuring 8 NSCs as replacements for the service's 12 Hamilton class high-endurance cutters.

Figure 1. National Security Cutter

Source: U.S. Coast Guard photo accessed May 2, 2012, at http://www.flickr.com/photos/coast_guard/5617034780/sizes/l/in/set-72157629650794895/.

Although the NSC program's official total acquisition cost estimate is $4.749 billion, or an average of about $594 million per ship,[13] the Coast Guard more recently estimated the combined

[11] In the designation WMSL, W means Coast Guard ship and MSL stands for maritime security cutter, large. NSCs are being named for legendary Coast Guard personnel.

[12] The Coast Guard's three polar icebreakers are much larger than NSCs, but are designed for a more specialized role of operations in polar waters.

[13] *Department of Homeland Security, United States Coast Guard, Fiscal Year 2013 Congressional Justification*, p. CG-AC&I-12 (pdf page 166 of 400).

procurement cost of the eight ships at $5.474 billion, or an average of about $684 million per ship, assuming the seventh and eighth ships were funded in FY2014 and FY2015, respectively.[14]

NSCs are larger and technologically more advanced than Hamilton-class cutters.[15] The Coast Guard states that

> Of the Coast Guard's white-hull patrol cutter fleet, the NSC is the largest and most technologically sophisticated in the Coast Guard. Each NSC is capable of operating in the most demanding open ocean environments, including the hazardous fisheries of the North Pacific and the vast approaches of the Southern Pacific where much of the American narcotics traffic occurs. With robust Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) equipment, stern boat launch and aviation facilities, as well as long-endurance station keeping, the NSCs are afloat operational-level headquarters for complex law enforcement and national security missions involving multiple Coast Guard and partner agency participation.[16]

NSCs are built by Ingalls Shipbuilding of Pascagoula, MS, a shipyard that forms part of Huntington Ingalls Industries (HII).

The first three NSCs are now in service, the fourth through seventh are in various stages of construction, and long lead time materials (LLTM) are being procured for the eighth. The Coast Guard's proposed FY2015 budget requests $638 million for the NSC program, including $558.7 million for the eighth NSC.

OPC Program

Offshore Patrol Cutters (**Figure 2**) are to be smaller, less expensive, and in some respects less capable than NSCs. The Coast Guard's POR calls for procuring 25 OPCs as replacements for the service's 29 medium-endurance cutters. Under the Coast Guard's FY2014 five-year (FY2014-FY2018) capital investment plan, the first OPC is to be procured in FY2017.

[14] Source: Coast Guard information paper on NSC procurement costs provided to CRS on May 14, 2012.

[15] The NSC design is 418 feet long and has a full load displacement of about 4,500 tons. The displacement of the NSC design is about equal to that of Navy's Oliver Hazard Perry (FFG-7) class frigates, which are 453 feet long and have a full load displacement of about 4,200 tons.

[16] U.S. Coast Guard description of the NSC, accessed April 26, 2013, at http://www.uscg.mil/acquisition/nsc/features.asp.

Figure 2. Offshore Patrol Cutter (Generic Conceptual Rendering)

Source: U.S. Coast Guard generic conceptual rendering accessed May 3, 2012, at http://www.uscg.mil/hq/cg9/opc/default.asp.

The Coast Guard estimates the OPC program's total acquisition cost at $12.101 billion, or an average of about $484 million per ship. These figures reflect a revised OPC program baseline that was approved in April 2012; they represent a 49% increase over the previous figures of $8.098 billion and $324 million, respectively.[17] A September 2012 GAO report states that

> The initial Deepwater baseline included an $8 billion estimate for the Offshore Patrol Cutter program. However, program officials stated they did not have good data for how the lead systems integrator for the Deepwater program generated the original estimate, and that the current estimate approved by DHS in April 2012—with a threshold of approximately $12 billion—is higher likely because the original estimate was developed before the program requirements were established. Program officials also cited delays in the program, and the corresponding inflation associated with those delays, as additional reasons for the cost increase. Even though the Coast Guard used the original 2007 Deepwater Baseline estimate of $8 billion to characterize the expected cost of the program multiple times to Congress, it now characterizes the revised acquisition program baseline as the initial cost estimate for the program.[18]

The Coast Guard's Request for Proposal (RFP) for the program, released on September 25, 2012, establishes an affordability requirement for the program of an average unit price of $310 million per ship, or less, in then-year dollars (i.e., dollars that are not adjusted for inflation) for ships 4

[17] Government Accountability Office, *Coast Guard[:] Portfolio Management Approach Needed to Improve Major Acquisition Outcomes*, GAO-12-918, September 2012, p. 13 (Figure 13).

[18] Government Accountability Office, *Coast Guard[:] Portfolio Management Approach Needed to Improve Major Acquisition Outcomes*, GAO-12-918, September 2012, p. 15.

through 9 in the program.[19] This figure represents the shipbuilder's portion of the total cost of the ship; it does not include the cost of government-furnished equipment (GFE) on the ship,[20] or other program costs—such as those for program management, system integration, and logistics—that contribute to the above-cited figure of $484 million per ship.[21]

The service states that OPCs

> will complement the Coast Guard's current and future fleet to extend the service's operational capabilities. The OPC will replace the service's 210-foot and 270-foot Medium Endurance Cutters. It will feature increased range and endurance, powerful weapons, a larger flight deck, and improved command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) equipment. The OPC will accommodate aircraft and small boat operations in all weather.[22]

The Coast Guard's acquisition strategy for the first 9 to 11 ships in the program is as follows:

> The OPC procurement shall implement a two-phase down select strategy. Phase I entails a full and open competition for Preliminary and Contract Design (P&CD) awarded to a maximum of three offerors. The Coast Guard intends to competitively award the Phase I contract in Fiscal Year (FY) 2013. P&CD will culminate in a Contract Design Review (KDR). After KDR, the three contractors will submit proposals which will result in a down selection to one contractor to continue with Phase II.
>
> (h) Phase II award is planned for FY.... Phase II's down selection will be accomplished by exercising one option with a single contractor for Detail Design (DD) with additional options for Long Lead Time Materials, lead ship and eight to ten follow ships. DD will start after option exercise and be complete upon delivery of the first ship. The contractor will present the OPC design at the Initial Critical Design Reviews (ICDR) and Final Critical Design Review (FCDR) followed by a Production Readiness Review (PRR). During Phase II contract performance, the contractor will be encouraged to submit a fixed price proposal (before construction begins on the Hull #6) for option Hulls #6 through #11 (LRIP 2). If the priced effort is deemed fair and reasonable the contractor shall be eligible for Hulls #10 and #11. If not, the contract will continue with the FPI structure and the contract will end with Hull #9.[23]

At least eight shipyards expressed interest in the program. The firms were:

- Bollinger Shipyards of Lockport, LA;
- Eastern Shipbuilding Group of Panama City, FL;
- General Dynamics Bath Iron Works (GD/BIW) of Bath, ME;
- Huntington Ingalls Industries (HII) of Pascagoula, MS;

[19] Source: Section C.5 of the RFP, accessed October 31, 2012, at http://www.uscg.mil/ACQUISITION/newsroom/updates/opc092512.asp.

[20] GFE is equipment that the government procures and then delivers to the shipyard for installation on the ship.

[21] Source: Coast Guard emails to CRS dated June 25, 2013.

[22] Coast Guard fact sheet on the OPC accessed April 26, 2013, at http://www.uscg.mil/acquisition/opc/pdf/opc.pdf.

[23] Source: Section C.1 of the RFP, accessed March 26, 2013, at http://www.uscg.mil/ACQUISITION/newsroom/updates/opc092512.asp.

- Marinette Marine Corporation of Marinette, WS;
- General Dynamics National Steel and Shipbuilding Company (GD/NASSCO) of San Diego, CA;
- Vigor Shipyards of Seattle, WA; and
- VT Halter Marine of Pascagoula, MS.[24]

On February 11, 2014, the Coast Guard announced that it had awarded Phase I Preliminary and Contract Design (P&CD) contracts to **Bollinger**, **Eastern**, and **GD/BIW**. A February 11, 2014, Coast Guard news release on the award stated:

> The U.S. Coast Guard today awarded three firm fixed-price contracts for preliminary and contract design (P&CD) for the Offshore Patrol Cutter (OPC) acquisition project. The contracts were awarded to Bollinger Shipyards Lockport LLC (Lockport, La.), Eastern Shipbuilding Group Inc. (Panama City, Fla.), and General Dynamics, Bath Iron Works (Bath, Maine). The total value of the award is approximately $65 million.
>
> Awarding multiple design contracts ensures that competition is continued through to a potential down-select for detailed design and construction, establishes a fixed-price environment for the remainder of the contract, and incorporates a strategy to maximize affordability. This strategy was developed by analyzing lessons learned from other major government shipbuilding programs and through collaboration with industry on how to best design and produce the most affordable OPC....
>
> The Coast Guard issued the P&CD Request for Proposal (RFP) Sept. 25, 2012. Responses were received in January 2013, and the Coast Guard conducted a thorough evaluation of proposals based on technical, management, past performance and price factors. To support the effort to acquire an affordable OPC, the Coast Guard engaged industry prior to RFP release through industry day events, one-on-one meetings and providing opportunities for potential offerors to review and comment on OPC draft technical packages, specifications and solicitation language.[25]

HII and VT Halter Marine reportedly filed protests of the Coast Guard's award decision on February 24 and 25, respectively; GAO's rulings on the protests are expected by June 4 and 5, respectively. The Coast Guard has issued stop work orders to Bollinger, Eastern, and GD/BIW pending GAO's rulings.[26]

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[24] Source: U. S. Coast Guard Offshore Patrol Cutter (OPC) List of Interested Contractors Updated July 2012, accessed online October 23, 2012, at http://www.uscg.mil/ACQUISITION/opc/pdf/companiesinterested.pdf; and Kevin Brancato and Anne Laurent, *Coast Guard's $12 Billion Cutter Competition Spurs Eight Shipyards to Dive In*, Bloomberg Government Study, November 8, 2012, 6 pp. The Coast Guard document states that these firms "expressed interest in the Offshore Patrol Cutter acquisition and have agreed to their names provided on the Coast Guard website." See also Stew Magnuson, "New Coast Guard Cutter Sparks Fierce Competition Among Shipbuilders," *National Defense (www.nationaldefensemagazine.org)*, April 2013, accessed March 26, 2013, at http://www.nationaldefensemagazine.org/archive/2013/April/Pages/NewCoastGuardCutterSparksFierceCompetitionAmongShipbuilders.aspx.

[25] U.S. Coast Guard news release entitled, "Acquisition Update: U.S. Coast Guard Awards Three Contracts for Offshore Patrol Cutter Preliminary and Contract Design," February 11, 2014, accessed February 14, 2014, at http://www.uscg.mil/hq/cg9/newsroom/updates/opc021114.asp.

[26] Calvin Biesecker, "Coast Guard Issues Stop Work Orders On OPC Following Protests," *Defense Daily*, February 28, 2014: 2-3. See also Christopher P. Cavas, "Ingalls Protesting US Coast Guard Cutter Contract," *DefenseNews.com*, February 26, 2014.

The Coast Guard's proposed FY2015 budget requests $20 million in acquisition funding for the OPC program.

FRC Program

Fast Response Cutters (**Figure 3**), also called Sentinel (WPC-1101) class patrol boats, are considerably smaller and less expensive than OPCs, but are larger than the Coast Guard's older patrol boats.[27] The Coast Guard's POR calls for procuring 58 FRCs as replacements for the service's 49 Island-class patrol boats.

Figure 3. Fast Response Cutter

(With an older Island-class patrol boat behind)

Source: U.S. Coast Guard photo accessed May 4, 2012, at http://www.flickr.com/photos/coast_guard/6871815460/sizes/l/in/set-72157629286167596/.

The Coast Guard states that

> The planned fleet of FRCs will conduct primarily the same missions as the 110' patrol boats being replaced. In addition, the FRC will have several increased capabilities enhancing overall mission execution. The FRC is designed for rapid response, with approximately a 28 knot speed capability, and will typically operate in the coastal zones. Examples of missions that FRCs will complete include SAR, Migrant Interdiction, Drug Interdiction and Ports Waterways and Coastal Security.

[27] FRCs are 154 feet long and have a full load displacement of 353 tons.

> FRCs will provide enhanced capabilities over the 110's including improved C4ISR capability and interoperability; stern launch and recovery (up through sea state 4) of a 40 knot, Over-the-Horizon, 7m cutter boat; a remote operated, gyro stabilized MK38 Mod 2, 25mm main gun; improved sea keeping; and enhanced crew habitability.[28]

The Coast Guard estimates the FRC program's total acquisition cost at $4.243 billion, or an average of about $73 million per boat.[29] A total of 30 have been funded through FY2014. As of March 28, 2014, the first eight had been commissioned into service. On September 18, 2013, the FRC program received approval from DHS to enter full-rate production.[30]

FRCs are currently built by Bollinger Shipyards of Lockport, LA. Bollinger's contract with the Coast Guard originally included options to build up to 34 FRCs, but some of the options were not fully exercised by the Coast Guard, so Bollinger's contract can now cover up to 30 FRCs. The builder of the remaining 28 planned FRCs has not yet been determined. The Coast Guard holds the data rights for the Sentinel-class design and plans to hold a competition in 2015 for the contract to build the remaining boats in the class.[31]

The Coast Guard's proposed FY2014 budget requests $110 million in acquisition funding for two FRCs and associated program costs.

NSC, OPC, and FRC Funding in FY2013 Five-Year Capital Investment Plan

Table 1 shows annual acquisition funding for the NSC, OPC, and FRC programs in the Coast Guard's FY2013, FY2014, and FY2015 budget submissions.

[28] *Department of Homeland Security, United States Coast Guard, Fiscal Year 2013 Congressional Justification*, p. CG-AC&I-28 (pdf page 182 of 400).

[29] Government Accountability Office, *Coast Guard[:] Portfolio Management Approach Needed to Improve Major Acquisition Outcomes*, GAO-12-918, September 2012, p. 13 (Figure 13).

[30] "Acquisition Update: Sentinel-class Fast Response Cutter Project Achieves Acquisition Milestone," September 18, 2013, accessed November 18, 2013, at http://www.uscg.mil/acquisition/newsroom/updates/frc092413.asp.

[31] Mike McCarthy, "House Markup Would Avoid Slipping USCG's New Cutters," *Defense Daily*, May 15, 2012: 3.

Table 1. NSC, OPC, and FRC Funding in FY2013, FY2014, and FY2015 Budget Submissions

(millions of then-year dollars)

	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
NSC program							
FY13 budget	683	0	0	0	0		
FY14 budget		616	710	38	0	45	
FY15 budget			638	n/a	n/a	n/a	n/a
OPC program							
FY13 budget	30	50	40	200	530		
FY14 budget		25	65	200	530	430	
FY15 budget			20	n/a	n/a	n/a	n/a
FRC program							
FY13 budget	139	360	360	360	360		
FY14 budget		75	110	110	110	110	
FY15 budget			110	n/a	n/a	n/a	n/a
Total							
FY13 budget	852	410	400	560	890		
FY14 budget		716	885	348	640	585	
FY15 budget			768	n/a	n/a	n/a	n/a

Source: FY2013, FY2014, and FY2015 budget submissions. As of march 28, 2014, data for FY2016-FY2019 for the FY2015 budget submission were not available.

Issues for Congress

Adequacy of Planned NSC, OPC, and FRC Procurement Quantities

One potential oversight issue for Congress concerns the adequacy of the Coast Guard's planned NSC, OPC, and FRC procurement quantities. The POR's planned force of 91 NSCs, OPCs, and FRCs is about equal in number to the Coast Guard's legacy force of 90 high-endurance cutters, medium-endurance cutters, and 110-foot patrol craft. NSCs, OPCs, and FRCs, moreover, are to be individually more capable than the older ships they are to replace. Even so, Coast Guard studies have concluded that the planned total of 91 NSCs, OPCs, and FRCs would be considerably fewer ships than the number that would be needed to fully perform the service's statutory missions in coming years, in part because Coast Guard mission demands are expected to be greater in coming years than they were in the past. CRS first testified about this issue in 2005.[32]

[32] See Statement of Ronald O'Rourke, Specialist in National Defense, Congressional Research Service, Before the Senate Commerce, Science, and Transportation Committee, Subcommittee on Fisheries and the Coast Guard, Hearing on The Coast Guard's Revised Deepwater Implementation Plan, June 21, 2005, pp. 1-5.

The Coast Guard estimates that with the POR's planned force of 91 NSCs, OPCs, and FRCs, the service would have capability or capacity gaps[33] in 6 of its 11 statutory missions—search and rescue (SAR); defense readiness; counter-drug operations; ports, waterways, and coastal security (PWCS); protection of living marine resources (LMR); and alien migrant interdiction operations (AMIO). The Coast Guard judges that some of these gaps would be "high risk" or "very high risk."

Public discussions of the POR frequently mention the substantial improvement that the POR force would represent over the legacy force. Only rarely, however, have these discussions explicitly acknowledged the extent to which the POR force would nevertheless be smaller in number than the force that would be required, by Coast Guard estimate, to fully perform the Coast Guard's statutory missions in coming years. Discussions that focus on the POR's improvement over the legacy force while omitting mention of the considerably larger number of cutters that would be required, by Coast Guard estimate, to fully perform the Coast Guard's statutory missions in coming years could encourage audiences to conclude, contrary to Coast Guard estimates, that the POR's planned force of 91 cutters would be capable of fully performing the Coast Guard's statutory missions in coming years.

In a study completed in December 2009 called the Fleet Mix Analysis (FMA) Phase 1, the Coast Guard calculated the size of the force that in its view would be needed to fully perform the service's statutory missions in coming years. The study refers to this larger force as the objective fleet mix. **Table 2** compares planned numbers of NSCs, OPCs, and FRCs in the POR to those in the objective fleet mix.

Table 2. Program of Record Compared to Objective Fleet Mix

From Fleet Mix Analysis Phase 1 (2009)

Ship type	Program of Record (POR)	Objective Fleet Mix From FMA Phase 1	Objective Fleet Mix compared to POR	
			Number	%
NSC	8	9	+1	+13%
OPC	25	57	+32	+128%
FRC	58	91	+33	+57%
Total	**91**	**157**	**+66**	**+73%**

Source: Fleet Mix Analysis Phase 1, Executive Summary, Table ES-8 on page ES-13.

As can be seen in **Table 2**, the objective fleet mix includes 66 additional cutters, or about 73% more cutters than in the POR. Stated the other way around, the POR includes about 58% as many cutters as the objective fleet mix.

As intermediate steps between the POR force and the objective fleet mix, FMA Phase 1 calculated three additional forces, called FMA-1, FMA-2, and FMA-3. (The objective fleet mix was then relabeled FMA-4.) **Table 3** compares the POR to FMAs 1 through 4.

[33] The Coast Guard uses *capability* as a qualitative term, to refer to the kinds of missions that can be performed, and *capacity* as a quantitative term, to refer to how much (i.e., to what scale or volume) a mission can be performed.

Table 3. POR Compared to FMAs 1 Through 4

From Fleet Mix Analysis Phase 1 (2009)

Ship type	Program of Record (POR)	FMA-1	FMA-2	FMA-3	FMA-4 (Objective Fleet Mix)
NSC	8	9	9	9	9
OPC	25	32	43	50	57
FRC	58	63	75	80	91
Total	**91**	**104**	**127**	**139**	**157**

Source: Fleet Mix Analysis Phase 1, Executive Summary, Table ES-8 on page ES-13.

FMA-1 was calculated to address the mission gaps that the Coast Guard judged to be "very high risk." FMA-2 was calculated to address both those gaps and additional gaps that the Coast Guard judged to be "high risk." FMA-3 was calculated to address all those gaps, plus gaps that the Coast Guard judged to be "medium risk." FMA-4—the objective fleet mix—was calculated to address all the foregoing gaps, plus the remaining gaps, which the Coast Guard judge to be "low risk" or "very low risk." **Table 4** shows the POR and FMAs 1 through 4 in terms of their mission performance gaps.

Table 4. Force Mixes and Mission Performance Gaps

From Fleet Mix Analysis Phase 1 (2009)—an X mark indicates a mission performance gap

Missions with performance gaps	Risk levels of these performance gaps	Program of Record (POR)	FMA-1	FMA-2	FMA-3	FMA-4 (Objective Fleet Mix)
Search and Rescue (SAR) capability	Very high	X				
Defense Readiness capacity	Very high	X				
Counter Drug capacity	Very high	X				
Ports, Waterways, and Coastal Security (PWCS) capacity[a]	High	X	X			
Living Marine Resources (LMR) capability and capacity[a]	High	X	X			[all gaps addressed]
PWCS capacity[b]	Medium	X	X	X		
LMR capacity[c]	Medium	X	X	X		
Alien Migrant Interdiction Operations (AMIO) capacity[d]	Low/very low	X	X	X	X	
PWCS capacity[e]	Low/very low	X	X	X	X	

Source: Fleet Mix Analysis Phase 1, Executive Summary, page ES-11 through ES-13.

Notes: In the first column, The Coast Guard uses *capability* as a qualitative term, to refer to the kinds of missions that can be performed, and *capacity* as a quantitative term, to refer to how much (i.e., to what scale or volume) a mission can be performed.

a. This gap occurs in the Southeast operating area (Coast Guard Districts 7 and 8) and the Western operating area (Districts 11, 13, and 14).

b. This gap occurs in Alaska.

c. This gap occurs in Alaska and in the Northeast operating area (Districts 1 and 5).

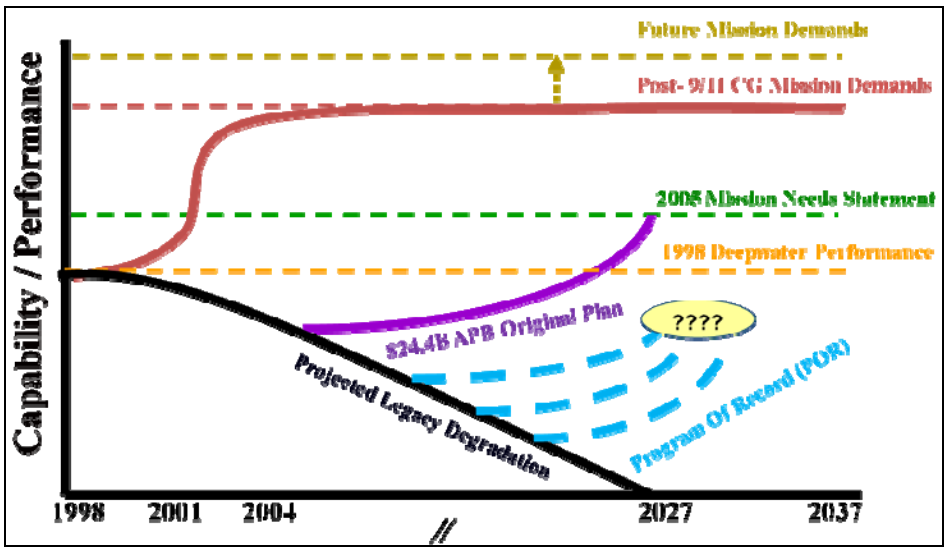
d. This gap occurs in the Southeast and Western operating areas.

e. This gap occurs in the Northeast operating area.

Figure 4, taken from FMA Phase 1, depicts the overall mission capability/performance gap situation in graphic form. It appears to be conceptual rather than drawn to precise scale. The black line descending toward 0 by the year 2027 shows the declining capability and performance of the Coast Guard's legacy assets as they gradually age out of the force. The purple line branching up from the black line shows the added capability from ships and aircraft to be procured under the POR, including the 91 planned NSCs, OPCs, and FRCs. The level of capability to be provided when the POR force is fully in place is the green line, labeled "2005 Mission Needs Statement." As can be seen in the graph, this level of capability is substantially below a projection of Coast Guard mission demands made after the terrorist attacks of September 11, 2001 (the red line, labeled "Post-9/11 CG Mission Demands"), and even further below a Coast Guard projection of future mission demands (the top dashed line, labeled "Future Mission Demands"). The dashed blue lines show future capability levels that would result from reducing planned procurement quantities in the POR or executing the POR over a longer time period than originally planned.

Figure 4. Projected Mission Demands vs. Projected Capability/Performance

From Fleet Mix Analysis Phase 1, Executive Summary



Source: Fleet Mix Analysis Phase 1, Executive Summary, Figure ES-1 on p. ES-2.

FMA Phase 1 was a fiscally unconstrained study, meaning that the larger force mixes shown in **Table 3** were calculated primarily on the basis of their capability for performing missions, rather than their potential acquisition or life-cycle operation and support (O&S) costs.

Although the FMA Phase 1 was completed in December 2009, the figures shown in **Table 3** were generally not included in public discussions of the Coast Guard's future force structure needs

until April 2011, when GAO presented them in testimony.[34] GAO again presented them in a July 2011 report.[35]

The Coast Guard completed a follow-on study, called Fleet Mix Analysis (FMA) Phase 2, in May 2011. Among other things, FMA Phase 2 includes a revised and updated objective fleet mix called the refined objective mix. **Table 5** compares the POR to the objective fleet mix from FMA Phase 1 and the refined objective mix from FMA Phase 2.

Table 5. POR Compared to Objective Mixes in FMA Phases 1 and 2

From Fleet Mix Analysis Phase 1 (2009) and Phase 2 (2011)

Ship type	Program of Record (POR)	Objective Fleet Mix from FMA Phase 1	Refined Objective Mix from FMA Phase 2
NSC	8	9	9
OPC	25	57	49
FRC	58	91	91
Total	**91**	**157**	**149**

Source: Fleet Mix Analysis Phase 1, Executive Summary, Table ES-8 on page ES-13, and Fleet Mix Analysis Phase 2, Table ES-2 on p. iv.

As can be seen in **Table 5**, compared to the objective fleet mix from FMA Phase 1, the refined objective mix from FMA Phase 2 includes 49 OPCs rather than 57. The refined objective mix includes 58 additional cutters, or about 64% more cutters than in the POR. Stated the other way around, the POR includes about 61% as many cutters as the refined objective mix.

Compared to the POR, the larger force mixes shown in **Table 3** and **Table 5** would be more expensive to procure, operate, and support than the POR force. Using the average NSC, OPC, and FRC procurement cost figures presented earlier (see "Background"), procuring the 58 additional cutters in the Refined Objective Mix from FMA Phase 2 might cost an additional $10.7 billion, of which most (about $7.8 billion) would be for the 24 additional FRCs. (The actual cost would depend on numerous factors, such as annual procurement rates.) O&S costs for these 58 additional cutters over their life cycles (including crew costs and periodic ship maintenance costs) would require billions of additional dollars.[36]

The larger force mixes in the FMA Phase 1 and 2 studies, moreover, include not only increased numbers of cutters, but also increased numbers of Coast Guard aircraft. In the FMA Phase 1 study, for example, the objective fleet mix included 479 aircraft—93% more than the 248 aircraft

[34] Government Accountability Office, *Coast Guard[:]Observations on Acquisition Management and Efforts to Reassess the Deepwater Program, Testimony Before the Subcommittee on Coast Guard and Maritime Transportation, Committee on Transportation and Infrastructure, House of Representatives, Statement of John P. Hutton, Director Acquisition and Sourcing Management*, GAO-11-535T, April 13, 2011, p. 10.

[35] Government Accountability Office, *Coast Guard[:]Action Needed As Approved Deepwater Program Remains Unachievable*, GAO-11-743, July 2011, p. 46.

[36] The FMA Phase 1 and Phase 2 studies present acquisition and life-cycle ownership cost calculations for force mixes that include not only larger numbers of NSC, OPCs, and FRCs, but corresponding larger numbers of Coast Guard aircraft.

in the POR mix. A decision to procure larger numbers of cutters like those shown in **Table 3** and **Table 5** might thus also imply a decision to procure, operate, and support larger numbers of Coast Guard aircraft, which would require billions of additional dollars. The FMA Phase 1 study estimated the procurement cost of the objective fleet mix of 157 cutters and 479 aircraft at $61 billion to $67 billion in constant FY2009 dollars, or about 66% more than the procurement cost of $37 billion to $40 billion in constant FY2009 dollars estimated for the POR mix of 91 cutters and 248 aircraft. The study estimated the total ownership cost (i.e., procurement plus life-cycle O&S cost) of the objective fleet mix of cutters and aircraft at $201 billion to $208 billion in constant FY2009 dollars, or about 53% more than the total ownership cost of $132 billion to $136 billion in constant FY2009 dollars estimated for POR mix of cutters and aircraft.[37]

The POR was originally defined in 2004 as the optimal mix of assets that could be acquired for a total estimated acquisition cost of about $24 billion, and the $24 billion figure is often referenced as a baseline in discussing Coast Guard plans for acquiring new deepwater-capable ships and aircraft. GAO's July 2011 report, for example, notes that the total estimated acquisition cost of the POR has grown to as much as $29.3 billion, or about $5 billion more than the original estimate of $24.2 billion, and that there could be additional cost growth beyond that figure.[38]

GAO has expressed strong doubts, given growth in the estimated acquisition cost of the POR and the amounts of acquisition funding that the Coast Guard has received in recent years, about the Coast Guard's ability to afford the POR, let alone any larger force mix, and has recommended in its July 2011 report and subsequent work that the Coast Guard instead examine force mixes that are smaller than the POR.[39] Force mixes that are smaller than the POR might lead to overall capability levels similar to those shown by the dashed blue lines in **Figure 4**, and mission performance gaps that are greater in magnitude than those indicated for the POR force in **Table 4**.

At a March 7, 2012, hearing before the Oceans, Atmosphere, Fisheries, and Coast Guard subcommittees of the Senate Commerce, Science, and Transportation Committee, Admiral Robert J. Papp, the Commandant of the Coast Guard, in commenting on GAO's July 2011 report, stated in part:

> And I think part of the GAO report as I read it was also saying maybe we need to recalculate getting fewer ships or whatever else. But what I don't have is people taking—giving us fewer missions. Our missions continue to increase so I remain committed to the original baseline of the eight national security cutters, the 25 OPCs and others [other systems] as they are in the projects [sic: POR?].[40]

Similarly, in commenting on a draft version of a September 2012 GAO report, the Coast Guard stated in part:

[37] Fleet Mix Analysis Phase 1, Executive Summary, Table ES-11 on page ES-19, and Table ES-10 on page ES-18. The life-cycle O&S cost was calculated through 2050.

[38] Government Accountability Office, *Coast Guard[:]Action Needed As Approved Deepwater Program Remains Unachievable*, GAO-11-743, July 2011, summary page.

[39] See, for example, Government Accountability Office, *Coast Guard[:]Action Needed As Approved Deepwater Program Remains Unachievable*, GAO-11-743, July 2011, p. 46; and Government Accountability Office, *Observations on the Coast Guard's and the Department of Homeland Security's Fleet Studies*, GAO-12-751R, May 31, 2012.

[40] Source: Transcript of hearing.

> The assets required to meet Coast Guard statutorily required missions do not change on the basis of budgetary constraints. While changes in the fiscal environment may impact the rate and efficiency at which the Coast Guard can acquire new cutters, aircraft, boats and C4ISR systems to replace aging and failing equipment, it does not reduce or otherwise change the needs of the Service.[41]

The September 2012 GAO report refers multiple times to a need for the Coast Guard, in managing its acquisition programs, to work within "realistic fiscal constraints" and "expected funding levels," which the report appears to define as an amount of acquisition funding level similar to the Coast Guard's FY2013 request and to the amounts that the Coast Guard received in the five years prior to FY2013.[42] Although the annual amounts of acquisition funding that the Coast Guard has received in recent years are one potential guide to what Coast Guard acquisition funding levels might or should be in coming years, there may be other potential guides. For example, one could envision potential guides that focus on whether Coast Guard funding for ship acquisition and sustainment is commensurate with Coast Guard funding for the personnel that in many cases will operate the ships. Observations that might be made in connection with this example based on the Coast Guard and Navy FY2014 budget submissions include the following:

- The Coast Guard has about 12.9% as many active-duty personnel as the Navy.[43] If the amount of funding for surface ship acquisition and sustainment in the Coast Guard's budget were equivalent to 12.9% of the amount of funding in the Navy's shipbuilding account, it would be about $1.8 billion per year, or about 142% more than the $743.0 million than the Coast Guard requested for FY2014 for surface ship acquisition and sustainment programs.[44]
- Funding in the Navy's shipbuilding account is equivalent to about 51% of the Navy's funding for active-duty personnel.[45] If Coast Guard funding for surface ship acquisition and sustainment were equivalent to 51% of Coast Guard funding for military pay and allowances, it would be about $1.7 billion per year.[46]

It is not clear whether either of the two above observations would be appropriate as guides for determining appropriate levels of funding for Coast Guard surface ship acquisition and sustainment in coming years, or more appropriate than other guides. But it might also be argued that it is not clear that recent Coast Guard acquisition funding levels are the sole or most appropriate guide for determining appropriate levels of such funding in coming years, particularly since the Coast Guard has entered a period where it is seeking to replace multiple classes of

[41] Letter dated September 13, 2012, from Jim H. Crumpacker, Director, [DHS] Departmental GAO-OIG Liaison Office, to John P. Hutton, Director, Acquisition Sourcing Management, U.S. Government Accountability Office, as reprinted in Government Accountability Office, *Coast Guard[:] Portfolio Management Approach Needed to Improve Major Acquisition Outcomes*, GAO-12-918, September 2012, p. 53.

[42] Government Accountability Office, *Coast Guard[:] Portfolio Management Approach Needed to Improve Major Acquisition Outcomes*, GAO-12-918, September 2012, p. 22-23, including Figure 7 on p. 23.

[43] The Coast Guard for FY2014 appears to be requesting an active-duty end strength—the number of active-duty military personnel—of 41,594 (measured by the Coast Guard in full-time equivalent [FTE] positions); the Navy for FY2014 is requesting an active-duty end strength of 323,600.

[44] The Navy's proposed FY2014 budget requests $14,078 million for the Shipbuilding and Conversion, Navy (SCN) appropriation account.

[45] The Navy's proposed FY2014 budget requests $27,824 million for the Military Personnel, Navy (MPN) appropriation account.

[46] The Coast Guard's proposed FY2014 budget requests $3,425.3 million for military pay and allowances.

assets. Although prior-year funding levels are often used in federal budgeting to determine what might be a realistic funding level for a program area for coming years, it might also be argued that a sole reliance on such a standard could short-circuit the policymaking process and limit options available to congressional (and executive branch) policymakers by in effect ruling out the option of deciding, as a matter of policy, that a program area is a high-enough priority that funding for it should be increased above prior-year levels, even while overall federal funding remains constrained. Supporters of this perspective might argue that what constitutes a realistic level of funding in coming years for a given program area is a policy question for congressional (and executive branch) policymakers to decide, and that an unvarying approach of basing future-year funding for various program areas on their prior-year funding levels would hamper the ability of the congressional (and executive branch) policymakers to alter the composition of the federal budget over time to meet changing federal needs.

At an October 4, 2011, hearing on the Coast Guard's major acquisition programs before the Coast Guard and Maritime Transportation subcommittee of the House Transportation and Infrastructure Committee, the following exchange occurred:

> REPRESENATIVE FRANK LOBIONDO:
>
> Can you give us your take on what percentage of value must be invested each year to maintain current levels of effort and to allow the Coast Guard to fully carry out its missions?
>
> ADMIRAL ROBERT J. PAPP, COMMANDANT OF THE COAST GUARD:
>
> I think I can, Mr. Chairman. Actually, in discussions and looking at our budget—and I'll give you rough numbers here, what we do now is we have to live within the constraints that we've been averaging about $1.4 billion in acquisition money each year.
>
> If you look at our complete portfolio, the things that we'd like to do, when you look at the shore infrastructure that needs to be taken care of, when you look at renovating our smaller icebreakers and other ships and aircraft that we have, we've done some rough estimates that it would really take close to about $2.5 billion a year, if we were to do all the things that we would like to do to sustain our capital plant.
>
> So I'm just like any other head of any other agency here, as that the end of the day, we're given a top line and we have to make choices and tradeoffs and basically, my tradeoffs boil down to sustaining frontline operations balancing that, we're trying to recapitalize the Coast Guard and there's where the break is and where we have to define our spending.[47]

An April 18, 2012, blog entry stated:

> If the Coast Guard capital expenditure budget remains unchanged at less than $1.5 billion annually in the coming years, it will result in a service in possession of only 70 percent of the assets it possesses today, said Coast Guard Rear Adm. Mark Butt.
>
> Butt, who spoke April 17 [2012] at [a] panel [discussion] during the Navy League Sea Air Space conference in National Harbor, Md., echoed Coast Guard Commandant Robert Papp in stating that the service really needs around $2.5 billion annually for procurement.[48]

[47] Source: Transcript of hearing.

[48] David Perera, "The Coast Guard Is Shrinking," *FierceHomelandSecurity.com*, April 18, 2012, accessed July 20, (continued...)

At a May 9, 2012, hearing on the Coast Guard's proposed FY2013 budget before the Homeland Security subcommittee of the Senate Appropriations Committee, Admiral Papp testified, "I've gone on record saying that I think the Coast Guard needs closer to $2 billion dollars a year [in acquisition funding] to recapitalize—[to] do proper recapitalization."[49]

Potential oversight questions for Congress include the following:

- Under the POR force mix, how large a performance gap, precisely, would there be in each of the missions shown in **Table 4**? What impact would these performance gaps have on public safety, national security, and protection of living marine resources?
- How sensitive are these performance gaps to the way in which the Coast Guard translates its statutory missions into more precise statements of required mission performance?
- Given the performance gaps shown in **Table 4**, should planned numbers of Coast Guard cutters and aircraft be increased, or the Coast Guard's statutory missions reduced, or both?
- How much larger would the performance gaps in **Table 4** be if planned numbers of Coast Guard cutters and aircraft are reduced below the POR figures?
- Has the executive branch made sufficiently clear to Congress the difference between the number of ships and aircraft in the POR force and the number that would be needed to fully perform the Coast Guard's statutory missions in coming years? Why has public discussion of the POR focused mostly on the capability improvement it would produce over the legacy force, and rarely on the performance gaps it would have in the missions shown in **Table 4**?
- Why was the POR designed to fit within an originally estimated acquisition cost of about $24 billion? What analysis led to the selection of $24 billion as the appropriate total acquisition cost target for the POR?
- Are recent Coast Guard acquisition funding levels the sole or most appropriate guide in determining future Coast Guard acquisition funding levels? If recent Coast Guard acquisition funding levels are used as a guide in setting future Coast Guard acquisition funding levels, how would that affect Coast Guard ship and

(...continued)

2012, at http://www.fiercehomelandsecurity.com/story/coast-guard-shrinking/2012-04-18.

[49] Source: transcript of hearing. Papp may have been referring to remarks he made to the press before giving his annual state of the Coast Guard speech on February 23, 2012, in which reportedly stated that the Coast Guard would require about $2 billion per year in acquisition funding to fully replace its current assets. (See Adam Benson, "Coast Guard Cutbacks Will Cost 1,000 Jobs," *Norwich Bulletin*, February 23, 2012, accessed May 31, 2012, at http://www.norwichbulletin.com/news/x1138492141/Coast-Guard-cutbacks-will-cost-1-000-jobs#axzz1wSDAFCzX. See also "Coast Guard Leader Calls For More Ships," *MilitaryFeed.com*, February 24, 2012, accessed May 31, 2012, at http://militaryfeed.com/coast-guard-leader-calls-for-more-ships-5/; Associated Press, "Coast Guard Commandant Calls for New Ships," *TheLog.com*, March 10, 2012, accessed May 31, 2012, at http://www.thelog.com/SNW/Article/Coast-Guard-Commandant-Calls-for-New-Ships-to-Replace-Aging-Fleet; Mickey McCarter, "Congress Poised to Give Coast Guard More Money Than Requested for FY 2013," *HSToday.us*, May 10, 2012, accessed May 31, 2012, at http://www.hstoday.us/focused-topics/customs-immigration/single-article-page/congress-poised-to-give-coast-guard-more-money-than-requested-for-fy-2013.html.) See also "Interview, Adm. Robert Papp, US Coast Guard Commandant," *Defense News*, November 11, 2013: 30.

aircraft force levels, and consequently Coast Guard mission capability and capacity, over the long run?

FRC Program: FY2015 Request for Two (Rather than Four or Six) Ships

Another potential oversight issue for Congress concerns the Coast Guard's FY2015 request for acquisition funding for two (rather than four or six) FRCs. Compared to a procurement rate of four or six boats per year, a procurement rate of two per year would increase unit procurement costs and lengthen the time needed to complete the 58-boat program (which in turn would require the Coast Guard to either operate and maintain older Island-class patrol boats for a longer period of time or accept a reduction in patrol boat capacity while the 58-boart FRC program was being completed). A similar issue arose in connection with the Coast Guard's FY2014 budget submission, which also requested funding for the procurement of two FRCs. As part of its action on the Coast Guard's FY2014 budget, Congress provided funding for six FRCs.

OPC Program: FY2015 Funding Request Less than Projected Under FY2014 Budget

Another potential oversight issue for Congress concerns the $20 million in acquisition funding requested for FY2015 for the OPC program. As shown in **Table 1**, this figure is less than one-third of the $65 million that was projected for FY2015 under the Coast Guard's FY2014 budget submission.

OPC Program: Cost, Design, and Acquisition Strategy

Another potential oversight issue for Congress concerns the Coast Guard's acquisition strategy for the Offshore Patrol Cutter. Potential oversight questions for Congress include the following:

- Has the Coast Guard fully incorporated into the OPC acquisition strategy lessons learned from the NSC and FRC programs? What, in the Coast Guard's view, are those lessons?
- As mentioned earlier, the Coast Guard's RFP for the OPC program establishes an affordability requirement of an average unit price of $310 million per ship, or less, in then-year dollars for ships 4 through 9 in the program. How was the $310 million figure determined?
- What process is the Coast Guard using to evaluate tradeoffs in OPC performance features against this target construction price? What performance features have been reduced or eliminated to meet the target construction price?
- How much confidence does the Coast Guard have that the OPC that emerges from the tradeoff process could be built within the Coast Guard's target construction price?
- As mentioned earlier, the Coast Guard plans to award preliminary and contract design (P&CD) contracts as many as three competitors in FY2013. Is the number

of potential P&CD contracts too high, too low, or about right? How did the Coast Guard arrive at this number?

- As also mentioned earlier, the Coast Guard plans to evaluate the P&CD efforts and then award one of the competitors a contract for detailed design development and ship construction. What process does the Coast Guard plan to use in evaluating the P&CD efforts? What evaluation factors does the Coast Guard plan to use, and how much weight will be assigned to each?

2012 Testimony

Some of the above questions have been discussed over the past two years at hearings on the Coast Guard's proposed FY2013 and FY2014 budgets. For example, at a March 6, 2012, hearing on the Coast Guard's proposed FY2013 budget before the Homeland Security Committee of the House Appropriations Committee, Admiral Robert J. Papp, Jr., the Commandant of the Coast Guard, stated:

> When I came in as commandant, I realized that this [the OPC program] was the most expensive project that the Coast Guard has ever taken on, honestly, as each [of the] 25 ships are a significant investment. And I also understood looking out at the horizon and seeing the storm clouds that restrict the budgets coming up there we needed to build a ship that was affordable.
>
> We rescrubbed the requirements. We have battled ourselves within the Coast Guard to make sure we're asking for just exactly what we need, nothing more nothing less. And I have said three things to my staff as we go on forward—affordable, affordable, affordable.
>
> And now I'm very pleased to say that just last week that the department [DHS] has reviewed—we passed a major milestone with acquisition decision event number two which validated our requirements for the type of cutter that we're looking for and we are ready to go towards the preliminary and contract design work this next year.[50]

Later in the hearing, the following exchange occurred:

> ADERHOLT:
>
> And there has been a discussion as to the capability of the OPC with objective design being more capable than the—than the threshold capability.[51] What is the current plan and capability of the OPC and what capability thresholds are you considering?
>
> PAPP:
>
> We—the driving one as I said is affordability, but having said that—and I'm not—I'm not trying to be funny here, but the—the sea-keeping capability being, you know, to operate in Sea State 5 is probably the most important to us right now because with fewer national security cutters, at least fewer than the hindrance posed that we have right now.

[50] Source: Transcript of hearing.

[51] In the design of many U.S. weapon systems, *threshold* refers to a minimally acceptable level of capability, and *objective* refers to a higher (but also more expensive or technically challenging) level of capability.

> None of our medium endurance cutters—the 210 foot and 270 foot [medium-endurance] cutters that we have—can operate in the Gulf of Alaska and the Bering Sea and they do not have the long legs to be able to send them out in the—on some of the longer deployments that we do in the Pacific.
>
> So it has to be able to launch the aircraft and boats in Sea State 5, you know, which is standard offset in the Bering Sea and also have endurance that we'll be able to keep it out there on station. And I believe it was 45 days [of operation at sea] we're looking for without refueling.[52]

2013 Testimony

At an April 16, 2013, hearing before the Coast Guard and Maritime Transportation subcommittee of the House Transportation and Infrastructure Committee on the FY2014 budget for the Coast Guard and maritime transportation, the following exchange occurred:

> REPRESENTATIVE DON YOUNG: Admiral, I understand this morning you told the corporation you're going to reconsider the requirement for the Offshore Patrol Cutter and reopen the design competition; if that is correct, how long will this delay construction of much of the needy cutters, I mean, how long was—what will happen?

[52] Source: Transcript of hearing. At a March 7, 2012, hearing on the proposed FY2013 budgets for the Coast Guard and maritime transportation programs before the Coast Guard and Maritime Transportation subcommittee of the House Transportation and Infrastructure Committee, the following similar exchange occurred:

> REPRESENATIVE LARSEN:
>
> Admiral Papp, some questions about the offshore patrol cutter. Obviously, we're—we're a little bit (inaudible) before that's operational. And I have a question about whether or not the requirements for the OPC will prioritize one set of factors over a different set of factors. (inaudible) and Endurance, that might be more helpful in the Pacific versus speed, armament, and other requirements. How are you approaching the requirement—setting requirements to the OPC?
>
> PAPP:
>
> Sir, realizing that this is going to be the largest acquisition project that the Coast Guard has ever done and recognizing that these ships are going to last us 40 years, we're taking the law beyond this [sic: a long look at this?]. And I realize there are some people that feel like we have dragged our feet a little bit or pushed this to the right a little bit, and I would say that's just not the case. It is a little delayed from where we started out.
>
> But when I came in as commandant, I realized that we were going to be facing constrained budgets. So I had the staff take a look at the OPC once again, scrub the requirements with a direction that the primary requirement is affordability. We just could not afford everything that was in the requirements before, so we set new thresholds for it.
>
> But the most important is the sea-keeping capability because with a reduced number of national security cutters, if we only have eight national security cutters replacing the 12 Hamilton class cutters, we have to have a ship that's capable of going up into the Gulf of Alaska, the Bering Sea, the Western Pacific.
>
> Our medium endurance cutters right now, and speaking as a captain of a 270-foot cutter, we cannot—those ships cannot perform in the extreme weather conditions that you find sometimes in the North Atlantic much less the Arctic, and the—the Bering Sea.
>
> So keeping the requirements for sea state five for helicopter launching and boat launching, and the Endurance were most important. And I'm really pleased to say that we have finally passed that hurdle. We went through acquisition decision event number two with the Department of Homeland Security last week, and they approved our requirements so we're—we're stepping out smartly now, moving ahead.
>
> (Transcript of hearing)

> ARMIRAL ROBERT PAPP, COMNMANDANT OF THE COAST GUARD: Sir, that wasn't quite an accurate report, I said that we remain committed to the Offshore Patrol Cutter and I was asked if the ability to operate in Sea State-5 was hard and fast and I said the highest requirement for the Offshore Patrol Cuter is affordability and as we evaluate the candidate vessels we may need to go back and look at some of the requirements, I'm hopeful that we don't have to.
>
> I think we hammered off these requirements, in fact reduce some of them when I came in as (inaudible) [sic: Commandant?] because I want to make sure this ship is affordable and I've reported to this subcommittee and other sub-committees that we are intent on making this an affordable ship for the Coast Guard.
>
> If we had opened it up to revise the see keeping capability there probably would be a delay but I have no intent to open that up at this point, we'd have to evaluate all the candidates that we have and I'm hopeful that we'll find three candidates that look affordable because we're going to need to operate this ship in Alaska and it's going to need to be able to launch and recover boats and aircraft while operating the barring sea.[53]

Similarly, at an April 16, 2013, hearing on the Coast Guard's proposed FY2014 budget before the Homeland Security subcommittee of the House Appropriations Committee, the following exchange occurred:

> REPRESENTATIVE (UNKNOWN):[54] Thank you, Mr. Chairman. Admiral, there's been much discussion as to the capability of the OPC specifically the requirement to operate at sea state 5. Admiral, why is this requirement important? And if the current proposals come in too high, will you decrease the sea state requirement in order to meet the target price?
>
> ADMIRAL PAPP: I would not like to do that because that would probably delay the process, but we may have to recomplete the request for proposals by changing that standard. The reason we need the standard is because we'll have only eight National Security Cutters and while they are tremendously capable ships, they can't be in the same places as 12 high endurance cutters were that they are replacing.
>
> We've been comfortable with 12 high endurance cutters because that gave us enough to operate in the Bering Sea and in the Gulf of Alaska and the broad ranges of the—of the Pacific given the fact that we'll have fewer ships, in fact, we'll only have six National Security Cutters out on the West Coast because we need to keep two on the East Coast. We need to make sure that the offshore patrol cutters are capable of operating in Alaska.
>
> The 270-foot medium endurance cutters that we have were originally intended to be able to operate everywhere. We've tried to operate them in Alaska. You can't launch and recover boats and you can't launch and recover aircraft. They just aren't—cannot survive the sea state up there. And that is our—that is our world of work. We have to be able to launch boats for our boarding teams to go aboard fishing vessels. We need to be able to launch helicopters for search and rescue.
>
> So this requirement for sea state 5 has been our highest priority on that ship. I'm sorry. It's not been the highest priority. The highest priority has been affordability. And when people have asked me what are the three most important things about the offshore patrol cutter, I've constantly said, affordability, affordability, affordability. So that will be the driving factor on

[53] Transcript of hearing.

[54] The transcript of the hearing shows the speaker as "unknown."

> our down select for these three candidates and I'm hopeful that all three will not only be affordable but be able to survive in sea state 5—I'm sorry, not survive, but operate in sea state 5.[55]

September 2012 GAO Report

Regarding the Coast Guard's requirements development process for the OPC, a September 2012 GAO report states:

> **Coast Guard Took Positive Steps to Improve Requirements Development and Consider Affordability for the Offshore Patrol Cutter**
>
> The Coast Guard took some steps to improve the requirements development process for the Offshore Patrol Cutter—the largest acquisition in DHS's acquisitions portfolio and, according to officials, the first acquisition in the Deepwater surface fleet in which the Coast Guard had complete control over the requirements development process. The Coast Guard undertook studies and analysis that, in part, considered the measurability and testability as required by guidance of the following four key performance parameters: operating range, operational sustainment and crew, speed, and patrol endurance. For example, the range requirement, which is the distance the cutter can travel between refueling, is clearly stated as a minimum acceptable requirement of 8,500 nautical miles at a constant speed of 14 knots to a maximum level of 9,500 nautical miles. Although cutters typically transit at various speeds over the course of a patrol, the Coast Guard conducted analysis to determine that the 14 knots speed at the minimum and maximum ranges would provide enough days between refueling given the percentage of time that the Coast Guard normally operates at certain speeds. By developing a measurable range requirement, the Coast Guard helped to promote a clear understanding of Offshore Patrol Cutter performance by potential shipbuilders and sought to balance the cost of additional range with the value that it provides. Furthermore, officials at the independent test authority—the Navy's Commander Operational Test and Evaluation Force—told us that they have been actively involved through the requirements development process and many of their questions regarding testability have been resolved.
>
> Two other key performance parameters—seakeeping and interoperability—are not as consistent with the Coast Guard's guidelines of measurability and testability as identified in the Major Systems Acquisition Manual. For example the seakeeping key performance parameter described in the requirements document states that the Offshore Patrol Cutter shall be able to launch small boats and helicopters in 8.2- to 13.1-foot waves. However, in the specifications document, which is used to translate the requirements document into a level of detail from which contractors can develop a reasonably priced proposal, the Coast Guard states that the Offshore Patrol Cutter shall be able to launch small boats and helicopters in no more than 10.7 foot waves while transiting in a direction that minimizes the pitch and roll of the vessel—an important detail not specified in the requirements document. Further, the interoperability key performance parameter states that the Coast Guard must be able to exchange voice, video, and data with the Department of Defense and Homeland Security agencies. However, it does not list specific external partners or substantial details regarding the systems required to exchange data and the types and size of these data that could be examples of measurability and testability. This key performance parameter does not make this distinction between parts of the military that the Coast Guard operates with most often, such as the U.S. Navy and the intelligence community, and simply requires interoperability with all of DOD. Similarly, the interoperability key performance parameter does not specify

[55] Transcript of hearing.

the DHS agencies for which the Coast Guard must exchange data with, which makes this parameter difficult to test. Coast Guard's independent testing officials agreed that this key performance parameter, as currently written, is not testable in a meaningful way and stated that there are ongoing efforts to improve the clarity of this requirement.

During the requirements development process for the Offshore Patrol Cutter, the Coast Guard also made some decisions with respect to affordability. The following are examples where the Coast Guard made capability trades that are expected to help lower the program's acquisition cost:

- Speed—after a series of analyses, the Coast Guard decided to reduce the minimum acceptable speed from 25 to 22 knots thereby, according to officials, potentially eliminating the need for two diesel engines. According to a study completed by the Coast Guard, this trade could reduce the acquisition cost of each cutter by $10 million.

- Stern Launch—the Coast Guard removed the stern launch ramp capability from the Offshore Patrol Cutter design. While this trade-off may inhibit the launch and recovery of small boats in certain conditions, such as substantial roll or side-to-side movement of the vessel, Coast Guard officials stated that it will reduce the cost of the cutter because a stern launch ramp requires the cutter to be heavier, thus adding cost.

- C4ISR—the Coast Guard eliminated a minimum requirement for an integrated C4ISR system and instead is requiring a system built with interfaces to communicate between different software programs. According to Coast Guard officials, the Coast Guard now plans to use a Coast Guard-developed software system—Seawatch—rather than the more costly lead systems integrator-developed software system currently installed on the National Security Cutter, even though this system does not provide the Coast Guard with the capability to exchange near real-time battle data with DOD assets.

The improvements and affordability decisions that the Coast Guard has made in its requirements development process for the Offshore Patrol Cutter are even more evident when compared with the process for generating requirements for its other major cutter—the National Security Cutter. Due to the nature of the lead systems integrator strategy that the Coast Guard initially used to buy the National Security Cutter, Integrated Coast Guard Systems developed the requirements, designed, and began producing the National Security Cutter before the requirements document was completed. The Coast Guard did not have an operational requirements document at the time the Coast Guard awarded the construction contract for the first cutter in 2004, but the Coast Guard documented the requirements in 2006. Further, even as the third National Security Cutter was in production, Coast Guard was refining the requirements and, in January 2010, made the decision to clarify some key performance parameters such as anti-terrorism/force protection and underwater mine detection because the existing requirements were not testable. To further remedy the lack of clear requirements, Coast Guard officials stated that they are currently developing a second version of the requirements document that improves the specificity and definition of many of the National Security Cutter's requirements and will be used as criteria during operational testing. To date, the Coast Guard has not reduced the National Security Cutter's capability for the purpose of affordability as it has done for the Offshore Patrol Cutter. However, according to Coast Guard officials, there is a revised acquisition program baseline under review which will reflect an ongoing effort to lower the acquisition cost of the vessel.[56]

[56] Government Accountability Office, *Coast Guard[:] Portfolio Management Approach Needed to Improve Major Acquisition Outcomes*, GAO-12-918, September 2012, pp. 28-31.

Regarding the potential accuracy of the Coast Guard's estimated procurement cost for the OPC, given the known procurement cost of the NSC, the September 2012 GAO report states:

> **Major Cutter Requirements and Missions Have Similarities, but Costs Vary Greatly and Concerns Remain about Affordability**
>
> The requirements and missions for the National Security Cutter and the Offshore Patrol Cutter programs have similarities, but the actual cost for one National Security Cutter compared to the estimated cost of one Offshore Patrol Cutter varies greatly. Even though the Coast Guard took steps to consider affordability while developing the requirements for the Offshore Patrol Cutter, those affordability decisions do not explain the magnitude in the difference between these two costs....
>
> This comparison raises questions whether the Offshore Patrol Cutter could be a less expensive, viable substitute for the National Security Cutter or whether there are assumptions built into the Offshore Patrol Cutter cost estimate, not related to requirements, which are driving the estimated costs down. With respect to the first, DHS, motivated by concerns about the affordability of the National Security Cutter program, completed a Cutter Study in August 2011 which included an analysis to examine the feasibility of varying the combination of objective—or optimal performing—Offshore Patrol Cutters and National Security Cutters in the program of record. Through this analysis, DHS found that defense operations is a key factor in determining the quantity of National Security Cutters needed and that the Coast Guard only needs 3.5 National Security Cutters per year to fully satisfy the planned requirement for defense-related missions. DHS concluded that with six National Security Cutters the Coast Guard can meet its goals for defense operations and mitigate some of the near-term capacity loss of the five National Security Cutter fleet modeled in the Cutter Study. DHS Program Analysis and Evaluation officials stated that this, in conjunction with other information, helped to inform the decision to not include the last two National Security Cutter hulls—hulls 7 and 8—in the fiscal years 2013-2017 capital investment plan. However, the DHS Cutter Study also notes that the time line for the two acquisitions makes a trade-off between the National Security Cutter and the Offshore Patrol Cutter difficult since the National Security Cutter program is in production whereas the Offshore Patrol Cutter program is only in the design phase. Similarly, we have reported that the Coast Guard may face an operational gap in its ability to perform missions using major cutters due to the condition of the legacy fleet.
>
> With respect to the second possibility that there are assumptions built into the Offshore Patrol Cutter cost estimate that are driving the estimated costs down, the Coast Guard included three key assumptions in the Offshore Patrol Cutter's life cycle cost estimate, generally not related to the cutter's key requirements, which lower the estimated cost in comparison to the actual cost of the National Security Cutter. These three assumptions are:
>
> - **Learning Curve.** The Coast Guard assumes that the shipyard(s) will generally continue to reduce the labor hours required to build the Offshore Patrol Cutter through the production of all 25 vessels. This may prove optimistic, particularly for later ships in the class, because the amount of additional learning per vessel–or efficiencies gained during production due to improving the manufacturing process to build the ship in a way that requires fewer labor hours–typically decreases over time in a shipbuilding program.
>
> - **Military versus Commercial Standards.** The life cycle cost estimate assumes that certain areas of the Offshore Patrol Cutter's construction and material would reflect an average of 55 percent commercial standards—or construction standards that are typically used for military sealift ships that provide ocean transportation—and 45 percent military standards—or construction standards typically used for Navy combat

vessels. Any changes in this assumption could have a significant effect on the cost estimate because military standards require more sophisticated construction applications, particularly in the areas of shock hardening and signature reduction, to prepare a ship to survive battle. Such sensitivity could help to explain the difference in costs between the Offshore Patrol Cutter program and the National Security Cutter program and officials stated that the latter program is being built to about 90 percent military standards.

- **Production Schedule.** The cost estimate reflects the Coast Guard's plan to switch from building one Offshore Patrol Cutter per year to building two Offshore Patrol Cutters per year beginning with the fourth and fifth vessel in the class. If the Coast Guard cannot achieve or maintain this build rate due to budget constraints, it may choose to stretch the schedule for the program which in turn could increase costs.

Coast Guard program officials generally agreed that these three variables are important to the cost of the Offshore Patrol Cutter and are key reasons why the Coast Guard expects one Offshore Patrol Cutter to cost less than half of one National Security Cutter. However, these officials recognized that the cost estimate for the Offshore Patrol Cutter is still uncertain since the cutter has yet to be designed—thus, the National Security Cutter's actual costs are more reliable. Coast Guard program officials also added that the cost estimate for the Offshore Patrol Cutter is optimistic in that it assumes that the cutter will be built in accordance with the current acquisition strategy and planned schedule. They noted that any delays, design issues, or contract oversight problems—all of which were experienced during the purchase of the National Security Cutter—could increase the eventual price of the Offshore Patrol Cutter.[57]

Multiyear Procurement (MYP)

Another potential oversight issue for Congress concerns the potential for using multiyear procurement (MYP), also known as multiyear contracting, in acquiring new cutters. With congressional approval, certain Department of Defense (DOD) programs for procuring ships, aircraft, and other items employ MYP as a way of reducing procurement costs. As part of its Navy's FY2013 budget submission, for example, the Navy requested (and Congress approved) authority for using MYP arrangements for DDG-51 destroyers to be procured in FY2013-FY2017, for Virginia-class submarines to be procured in FY2014-FY2018, and for V-22 Osprey tilt-rotor aircraft to be procured in FY2013-FY2017. Compared to the standard or default approach of annual contracting, MYP has the potential for reducing procurement costs by several percent.[58]

The statute that governs the use of MYP—10 U.S.C. 2306b—makes MYP available with congressional approval not only to DOD, but to other government departments, including DHS, the parent department of the Coast Guard.[59] Unlike the Navy and other DOD services, however, the Coast Guard is not using MYP for any of its ship or aircraft procurement programs.

[57] Government Accountability Office, *Coast Guard[:] Portfolio Management Approach Needed to Improve Major Acquisition Outcomes*, GAO-12-918, September 2012, pp. 31, 33-35.

[58] For more on MYP, see CRS Report R41909, *Multiyear Procurement (MYP) and Block Buy Contracting in Defense Acquisition: Background and Issues for Congress*, by Ronald O'Rourke and Moshe Schwartz.

[59] 10 U.S.C. 2306b(b)(2)(B).

A May 10, 2013, press report quotes Michael Petters, the CEO of Huntington Ingalls Industries (the builder of NSCs), as stating:

> We basically have proposed that if we really want to save some money, we should do multi-years on [the] National Security Cutter. We've not had any commitment to that from the Congress, and so those [contracts] are one ship at a time.[60]

Potential oversight questions for Congress include the following:

- Has the Coast Guard considered using MYP for procuring NSCs, OPCs, or FRCs? If not, why not?
- What would be the potential savings of using MYP for procuring the final two or three NSCs, for procuring OPCs, or for procuring FRCs?
- What are the potential risks or downsides of using MYP for procuring NSCs, OPCs, or FRCs?

Alternative Force Mixes Equal in Cost to Program of Record

Another potential oversight issue for Congress is whether 8 NSCs, 25 OPCs, and 58 FRCs is the best mix of cutters that could be procured for the roughly the same total amount of acquisition funding. This issue was explored in a DHS Cutter Study that was completed in August 2011.[61] The study's synopsis states that

> In 2010, DHS was directed to conduct a study of USCG's major cutter recapitalization plan. The goal of this study was to evaluate whether an alternative cutter fleet mix could improve USCG's performance while maintaining current acquisition costs of the recapitalization program of record (POR). This question was motivated by the current fiscal environment and the increasing cost of the National Security Cutter (NSC), which in turn generated questions about its affordability and cost-effectiveness. However, the desired outcome was to provide insight into determining the most cost-effective fleet to execute USCG missions both near term and well into the future....
>
> The study was led by DHS Program Analysis and Evaluation (PA&E) with contract support from Center for Naval Analysis (CNA) and MicroSystems Integration (MSI)....
>
> The starting assumption for this study was that available USCG recapitalization funding is fixed at the cost of the POR. The study then identified and assessed the performance of alternative cutter fleets of equal acquisition cost, and compared the performance of these alternatives to the POR.[62]

The DHS Cutter Study examined force mixes that included not only NSCs, OPCs, and FRCs, but also two other ship-acquisition options—a modernized version of the Coast Guard's 270-foot

[60] Michael Fabey, "HII: U.S. Non-Nuclear Shipbuilding Facing More Uncertainty Than Nuclear," *Aerospace Daily & Defense Report*, May 10, 2013: 4.

[61] Alarik Fritz, Raymond Gelhaus, and Kent Nordstrom, *Options for the Future USCG Cutter Fleet, Performance Trade-Offs with Fixed Acquisition Cost*, IPR 14297, August 2011, 392 pp., accessed online October 23, 2012, at http://assets.fiercemarkets.net/public/sites/govit/dhscoastguardcutterstudy.pdf.

[62] Alarik Fritz, Raymond Gelhaus, and Kent Nordstrom, *Options for the Future USCG Cutter Fleet, Performance Trade-Offs with Fixed Acquisition Cost*, IPR 14297, August 2011, Synopsis of Results, p. 1.

Famous (WMEC-901) class medium-endurance cutter ("Mod-270" for short), and the Navy's Littoral Combat Ship (LCS).[63] (In recent years, some observers have suggested that the Coast Guard should procure the LCS in lieu of planned cutters, while other observers have suggested that the Navy should procure a modified version of the NSC in lieu of the LCS.) **Table 6** shows the nine alternative force mixes examined by the DHS Cutter Study, along with the POR mix.

Table 6. Alternative Force Mixes Examined in DHS Cutter Study

		Group A			Group B			Group C		
Ship type	**POR**	**Fleet 1**	**Fleet 2**	**Fleet 3**	**Fleet 4**	**Fleet 5**	**Fleet 6**	**Fleet 7**	**Fleet 8**	**Fleet 9**
NSC	8	5	7	9	5	7	8	8	8	8
OPC	25	30	26	23	0	0	0	22	19	16
Mod-270	0	0	0	0	41	37	34	0	0	0
LCS	0	0	0	0	0	0	0	3	6	9
FRC	58	58	62	59	60	58	58	58	58	58

Source: Alarik Fritz, Raymond Gelhaus, and Kent Nordstrom, *Options for the Future USCG Cutter Fleet, Performance Trade-Offs with Fixed Acquisition Cost*, IPR 14297, August 2011, p. 2

Regarding these alternative force mixes, the synopsis stated:

> Several alternative fleets were found to improve performance in certain missions and regions when compared to the POR. However, any improvements in mission performance over the POR came at a cost to mission performance in other areas. Thus, the study found that if DHS is willing to accept lower performance than the POR in selected missions and regions, it has two alternatives to the major cutter recapitalization POR:
>
> [Fleet 1]: Increase Offshore Patrol Cutter (OPC) fleet size in lieu of acquiring NSCs 6-8.
>
> [Fleet 6]: Increase OPC fleet size while selectively reducing OPC capability.[64]

The synopsis stated that exercising both of the above alternatives in tandem would lead to Fleet 4.[65] The synopsis stated that

> Both alternatives [Fleets 1 and 6] improve several end-state Coast Guard-wide measures of performance... without increasing USCG's major cutter acquisition costs. Moreover, these options are not mutually exclusive, and can be implemented in tandem. However, both alternatives require tradeoffs, and before selecting an alternative fleet recapitalization plan, DHS must determine whether the general performance benefits... are sufficient to offset these particular tradeoffs....

[63] For more on the LCS program, see CRS Report RL33741, *Navy Littoral Combat Ship (LCS) Program: Background and Issues for Congress*, by Ronald O'Rourke.

[64] Alarik Fritz, Raymond Gelhaus, and Kent Nordstrom, *Options for the Future USCG Cutter Fleet, Performance Trade-Offs with Fixed Acquisition Cost*, IPR 14297, August 2011, Synopsis of Results, pp. 1-2.

[65] Alarik Fritz, Raymond Gelhaus, and Kent Nordstrom, *Options for the Future USCG Cutter Fleet, Performance Trade-Offs with Fixed Acquisition Cost*, IPR 14297, August 2011, Synopsis of Results, p. 2.

> Compared to the POR, the increased performance for these alternatives would likely not be seen, until the early 2030s, whereas some of the decreases in capability for [Fleet 1] would begin in 2018 and for [Fleet 6] by 2020. Also, [Fleet 1's] cumulative performance improvement will not meet and exceed the POR's until 2055....
>
> While the study did not model the performance of a six-NSC fleet, the near-term impacts were analyzed. Adding a sixth NSC to [Fleet 1] mitigates some of the near-term capacity loss when compared to the Program of Record, and mitigates some risk to performance of Defense Operations and Homeland Security Contingency response.
>
> This study also evaluated the potential for Navy's Littoral Combat Ship (LCS) to cost-effectively replace or augment the OPC fleet. An analysis of alternative cutter fleets that incorporated small numbers of LCS in the most favorable operating conditions showed that the LCS is not well-suited to USCG operations due to its limited range and ensuing inability to maintain effective presence. While the LCS has advanced capabilities, most notably its top-end speed, this does not offset its reduced presence. Therefore, based on acquisition costs used in this study, the OPC is clearly more cost-effective at executing USCG's major cutter mission set.[66]

GAO reviewed the DHS Cutter Study, as well as the Coast Guard's FMA Phase 1 and Phase 2 studies, and provided some observations on the three studies in a May 2012 report.[67] GAO states that "DHS PA&E and OMB [Office of Management and Budget] have so far used the Cutter Study to inform the fiscal year 2013 budget. For example, DHS PA&E officials stated that the Cutter Study provided information that DHS and OMB used, in conjunction with other information sources, to inform the decision to not include the last two NSC hulls—hulls 7 and 8—in the FY2013-2017 capital investment plan."[68] GAO further states that

> In the Cutter Study, the Center for Naval Analysis (CNA) recommends that DHS explore additional fleet mix options, including looking at a mid-capability OPC.
>
> The mid-capability OPC would reduce the speed and range of the objective OPC but otherwise maintain its presence capabilities including an ability to operate in sea state 5.
>
> A CNA official responsible for the analysis stated that other characteristics of this mid-capability OPC could include removing or reducing the following from the objective OPC without affecting presence:
>
> - Sensitive Compartmentalized Information Facility
> - Air Search and Fire Control Radars (acquire the positions of targets and provide these data to a ship's command and control and weapon systems)
> - Electronic Warfare Support Measures
> - Berthing space (114 instead of 122)

[66] Alarik Fritz, Raymond Gelhaus, and Kent Nordstrom, *Options for the Future USCG Cutter Fleet, Performance Trade-Offs with Fixed Acquisition Cost*, IPR 14297, August 2011, Synopsis of Results, pp. 2-3.

[67] Government Accountability Office, *Observations on the Coast Guard's and the Department of Homeland Security's Fleet Studies*, GAO-12-751R, May 31, 2012.

[68] Government Accountability Office, *Observations on the Coast Guard's and the Department of Homeland Security's Fleet Studies*, GAO-12-751R, May 31, 2012, p. 3.

- Weapons suite (e.g., 25mm gun instead of 57mm)

The CNA official also stated that CNA has not studied whether these changes to the objective OPC would otherwise affect mission performance.[69]

Potential oversight questions for Congress include the following:

- What role, exactly, did the DHS Cutter Study play in the executive branch decision to not include funding for the seventh and eighth NSC in the Coast Guard's FY2013 five-year capital investment plan? Does the DHS Cutter Study provide a sufficient analytical basis for such a decision?
- Is the Coast Guard's currently planned mix of 8 NSCs, 25 OPCs, and 58 FRCs the best mix of cutters that could be procured for the roughly the same amount of acquisition funding? What were the conclusions of the DHS Cutter Study regarding the levels of overall mission effectiveness of the nine alternative forces mixes relative to one another, and to the POR mix?
- What is the Coast Guard's assessment of the option of developing and procuring a modified version of the 270-foot Famous-class medium-endurance cutter?
- What is the Coast Guard's assessment of the option suggested by the CNA official for acquiring a "mid-capability OPC" as described in the GAO report?

Information for Supporting Congressional Oversight of Procurement Programs

Another oversight issue for Congress concerns the adequacy of information available to Congress to support review and oversight of Coast Guard procurement programs, including cutter procurement programs. The Coast Guard has entered a period where, like the Navy, it is requesting significant funding each year from Congress to execute multiple ship procurement and modernization programs. Congress, however, lacks ready access to basic information exhibits on Coast Guard shipbuilding programs that are equivalent to those that support congressional review and oversight of Navy ship procurement programs.

Basic information exhibits readily available to Congress that support congressional review and oversight of Navy ship procurement programs include but are not limited to the following:

- annual **Budget Item Justification Sheets (P-40 Exhibits)**, **Weapon System Cost Analysis sheets (P-5 Exhibits)**, and **Ship Production Schedules (P-27 Exhibits)** for each Navy shipbuilding program—exhibits that present detailed information on year-to-year program funding, unit procurement costs, and production schedules (see **Appendix B** for examples);
- annual **Selected Acquisition Reports (SARs)** that DOD prepares for major DOD acquisition programs, which present supplementary data on program cost estimates, annual funding, and contract;

[69] Government Accountability Office, *Observations on the Coast Guard's and the Department of Homeland Security's Fleet Studies*, GAO-12-751R, May 31, 2012, briefing slide 18.

- a concise statement of the Navy's **ship force structure goal**—the Navy's current force structure goal is to achieve and maintain a fleet of about 310-316 battle force ships, consisting of certain types and numbers of ships (see **Appendix C**);
- an annual **five-year Navy shipbuilding plan** that shows planned annual procurement quantities for each type of ship being procured (see **Appendix D**); and
- an annual **30-year Navy shipbuilding plan** that shows annual procurement quantities and projected Navy ship force levels over the next 30 years (see **Appendix E**).

These information exhibits assist Congress in doing the following, among other things, in reviewing and conducting oversight on Navy shipbuilding programs:

- identifying and evaluating cost growth and schedule delays in the execution of shipbuilding programs;
- understanding the relationship between annual procurement rates and unit procurement cost;
- evaluating whether programs are achieving satisfactory production learning curves over time;
- evaluating whether proposed sequences of annual procurement quantities for programs would be efficient to execute from an industrial standpoint;
- evaluating stability in Navy shipbuilding planning by tracking year-to-year changes in the five-year shipbuilding plan;
- identifying potential financial and industrial-base linkages between shipbuilding programs that are being funded in overlapping years;
- identifying and evaluating Navy assumptions concerning service lives and retirement dates for existing ships;
- evaluating whether ship procurement needs are being pushed into the future, potentially creating an expensive ship procurement "bow wave" in coming years; and
- understanding when the Navy will achieve its ship force level goals, and whether the Navy will experience ship inventory shortfalls relative to those goals that could affect the Navy's ability to perform its missions in coming years.

Although the Coast Guard and the Department of Homeland Security submit substantial budget-related information to Congress each year, Congress lacks ready access to the five sources of detailed program information listed above:

- Although the Coast Guard's annual budget submission includes a budget-justification book,[70] the entries in that book for the Coast Guard's ship procurement programs do not present information as detailed and structured as that presented in the P-40, P-5, and P-27 exhibits.

[70] For the FY2013 budget, this is *Department of Homeland Security, United States Coast Guard, Fiscal Year 2012 Congressional Justification*, 400 pp.

- Reports on Coast Guard programs equivalent to DOD's SAR reports are not readily available to Congress.
- The Coast Guard's POR is a statement of desired procurement quantities for certain procurement programs, but not a concise statement of the Coast Guard's overall ship force structure objective, which would take into account continued service of existing ships that are not in need of immediate replacement.
- The Coast Guard's five-year capital investment plan shows annual funding amounts for individual programs, but not annual procurement quantities, and annual procurement quantities are not always easy to discern from annual funding amounts.
- The Coast Guard's budget submission does not include an equivalent of the Navy's 30-year shipbuilding plan.

A lack of ready access to these five sources of detailed program information can make it more difficult for Congress to conduct similar evaluations of Coast Guard programs. As a consequence, programs might, for example, be more likely to be reviewed over shorter time horizons, or in isolation from one another.

A potential issue for Congress is whether to require the Coast Guard and the Department of Homeland Security to provide equivalents to some or all of the five information sources listed above. Opponents of this option might argue that the Coast Guard and DHS already provide substantial budget-justification information to Congress, and that preparing Coast Guard equivalents to some or all of these five information sources would be an expensive and time-consuming proposition. Supporters of this option might argue that the cost of preparing and submitting this information would be small relative to the combined total acquisition cost the NSC, OPC, and FRC programs, and that information of this kind has proven to be of value in supporting congressional review and oversight of Navy shipbuilding programs.

Legislative Activity for FY2015

Summary of Appropriations Action on FY2015 Acquisition Funding Request

Table 7 summarizes appropriations action on the Coast Guard's request for FY2015 acquisition funding for the NSC, OPC, and FRC programs.

Table 7. Summary of Appropriations Action on FY2015 Acquisition Funding Request

Figures in millions of dollars, rounded to nearest tenth

Request	Request	House Appropriations Committee	Senate Appropriations Committee	Final
NSC program	638			
OPC program	20			
FRC program	110			
TOTAL	768			

Source: For request: Coast Guard FY2015 budget submission.

Appendix A. Findings and Recommendations of DHS Cutter Study

This appendix reprints the findings and recommendations of the August 2011 DHS Cutter study. They are as follows:

Findings

These are our major findings:

- **Replacing some NSCs with OPCs has a small, positive impact on OpEff [operational effectiveness].** Differences are on the order of 5 percent from POR [the program of record] and scale with the difference in cutter availability.

- **Replacing all OPCs with mod-270 has a significant positive impact on OpEff.** It increases drug interdiction by roughly 20 percent over POR. The increase in performance is much less than the increase in cutters. Performance in missions other than counter-drug and in regions outside the southeast is comparable to or slightly below POR.

- **Replacing OPCs with LCSs reduces OpEff significantly.** Given that LCS acquisition cost will be at least as much as OPC, we cannot construct a cost-effective way to use LCS to increase UCSG mission performance.

- **Moving away from POR adds uncertainty.** Reducing the number of NSCs may limit USCG ability to support defense operations (DEFOPS), and switching to a mod-270 [cutter design] creates a fleet that has trouble operating in poor weather.

- **Long-term total ownership cost is similar for all excursions.** Group B [alternative fleets 4, 5, and 6] is most expensive, due to higher personnel costs.

- **Updated or changed assumptions could change OpEff significantly.** More efficient patrol patterns could increase POR OpEff by 5 percentage points at no cost, while a potential "mid-capability" OPC could narrow the OpEff gap between group B and POR by another 5 percentage points. With both changes, group A [alternative fleets 1, 2, and 3] and group B should have about equal OpEff.

Recommendations

Based on our findings, we make the following recommendations.

- **USCG should quantify the DEFOPS requirement to assess the impact of reducing NSC numbers.** A 2.0 NSC presence will be difficult to support with only 5 NSC if they are also supporting other missions.

- **DHS PA&E should work with USCG to quantify distant, poor-weather operating areas to inform or mitigate the limitations of the mod-270.** Additional NSCs could offset some of the range and seakeeping deficiencies of the mod-270. Further study is necessary to see if it would be cost-effective.

- **DHS PA&E should explore additional fleet mix options.** Cost data should be updated as new information becomes available to confirm that the modeled excursions are still feasible. New options, such as a "mid-capability" OPC could improve fleet OpEff or decrease cost.

- **USCG should optimize its cutter basing and CONOPS.** Choosing cutter homeports and operating patterns to maximize on-station patrol time will get the most out of a cost-limited fleet.

- **DHS PA&E should commission a similar study for aircraft.** This study did not consider changes in aviation, which could have significant impact on performance. There may be opportunities to trade off air and surface assets to maximize total OpEff.

- **DHS PA&E should track long-term acquisition profiles and recapitalization priorities.** The multi-year spending profile for cutter acquisition has periods of significantly higher- and lower-than-average expenditure, which could have significant interplay with other DHS acquisition priorities.[71]

[71] Alarik Fritz, Raymond Gelhaus, and Kent Nordstrom, *Options for the Future USCG Cutter Fleet, Performance Trade-Offs with Fixed Acquisition Cost*, IPR 14297, August 2011, pp. 2-3.

Appendix B. P-5, P-40, and P-27 Data Exhibits for Littoral Combat Ship (LCS) Program

This appendix presents the Budget Item Justification Sheet (Exhibit P-40), Weapon System Cost Analysis sheet (Exhibit P-5), and Ship Production Schedule (Exhibit P-27) for the Navy's Littoral Combat Ship (LCS) program, as examples of the kind of information that is available each year to support congressional review and oversight of Navy shipbuilding programs.

Figure B-1. Budget Item Justification Sheet (Exhibit P-40)

For Navy Littoral Combat Ship (LCS) Program

CLASSIFICATION: UNCLASSIFIED

BUDGET ITEM JUSTIFICATION SHEET (P-40)
FY 2013 President's Budget

DATE: February 2012

APPROPRIATION/BUDGET ACTIVITY
SHIPBUILDING AND CONVERSION, NAVY/BA 2 Other Warships

P-1 LINE ITEM NOMENCLATURE
LITTORAL COMBAT SHIP (LCS)
BLI: 2127 / SUBHEAD NO.

(Dollars in Millions)	PRIOR YR	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	TO COMP	TOTAL PROG
QUANTITY	4	2	4	4	4	4	2	2	27	53
End Cost	2,434.3	1,162.6	1,834.0	1,785.0	1,819.6	1,881.5	1,013.0	896.0	17,562.4	30,388.4
Less Advance Procurement	0.0	0.0	78.9	0.0	0.0	0.0	0.0	0.0	0.0	78.9
Full Funding TOA	2,434.3	1,162.6	1,755.1	1,785.0	1,819.6	1,881.5	1,013.0	896.0	17,562.4	30,309.5
Plus Advance Procurement	0.0	78.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.9
Total Obligational Authority	2,434.3	1,241.5	1,755.1	1,785.0	1,819.6	1,881.5	1,013.0	896.0	17,562.4	30,388.4
Plus Outfitting / Plus Post Delivery	2.8	4.7	49.0	60.1	76.4	132.7	133.8	210.0	663.6	1,333.1
Total	2,437.1	1,246.2	1,804.1	1,845.1	1,896.0	2,014.2	1,146.8	1,106.0	18,226.0	31,721.5
Unit Cost (Ave. End Cost)	608.6	581.3	458.5	446.3	454.9	470.4	506.5	448.0	650.5	573.4

MISSION:

Provides for the design, construction, integration and testing of the Littoral Combat Ship (LCS), including Ordnance, Government Furnished Equipment (GFE), and includes Program Office and change order costs. LCS is a fast, agile, and networked surface combatant with capabilities optimized to defeat asymmetric threats, and assure naval and joint force access into contested littoral regions. It uses open-systems-architecture design, modular weapons, and sensor systems, and a variety of manned and unmanned vehicles to expand the battle space and project offensive power into the littoral. LCS operates with focused-mission packages that deploy manned and unmanned vehicles to execute a variety of missions, including littoral anti-submarine warfare (ASW), surface warfare (SUW), and mine countermeasures (MCM). LCS also possesses inherent capabilities, regardless of mission package installed, including Intelligence Surveillance Reconnaissance (ISR), homeland defense, Maritime Interdiction/Interception Operations (MIO), anti-terrorism/force protection (AT/FP), air self-defense, joint littoral mobility, and Special Operating Forces (SOF) and logistic support for movement of personnel and supplies. This relatively small, high-speed surface combatant will complement the U.S. Navy's AEGIS fleet, by operating in environments where it is less desirable to employ larger, multi-mission ships. It can deploy independently to overseas littoral regions, remain on station for extended periods of time either with a battle group or through a forward-basing arrangement and is capable of underway replenishment. It will operate with Carrier Strike Groups, Surface Action Groups, in groups of other similar ships, or independently for diplomatic and presence missions. Additionally, it can operate cooperatively with the U.S. Coast Guard and Allies.

Characteristics	LM	GD/AUSTAL
Overall Length:	115.3m	127.6m
Max Beam:	17.5m	31.6m
Displacement	3089 mt	2842 mt

	FY11	FY11	FY12	FY12	FY12	FY12	FY13	FY13	FY13	FY13
Production Status:	LCS 7	LCS 8	LCS 9	LCS 10	LCS 11	LCS 12	LCS 13	LCS 14	LCS 15	LCS 16
Contract Award Date	3/11	3/11	3/12	3/12	3/12	3/12	3/13	3/13	3/13	3/13
Months to Completion										
a) Contract Award to Delivery	49 months	43 months	47 months	41 months	53 months	48 months	47 months	41 months	53 months	46 months
b) Construction Start to Delivery	35 months	36 months	35 months	36 months	37 months	35 months	35 months	35 months	36 months	35 months
Delivery Date	4/15	10/14	2/16	8/15	8/16	3/16	2/17	8/16	8/17	1/17
Completion of Fitting Out	8/15	2/15	6/16	12/15	12/16	7/16	6/17	12/16	12/17	5/17
Obligation Work Limiting Date	7/16	1/16	5/17	11/16	11/17	6/17	5/18	11/17	11/18	4/18

Source: *Department of the Navy Fiscal Year (FY) 2013 Justification of Estimates, Shipbuilding and Conversion, Navy*, February 2012, p. 11-1 (pdf page 156 of 246).

Figure B-2. Weapon System Cost Analysis Sheet (Exhibit P-5)

For Navy Littoral Combat Ship (LCS) Program

CLASSIFICATION: UNCLASSIFIED

APPROPRIATION: SHIPBUILDING AND CONVERSION, NAVY

P-5 EXHIBIT
FY 2013 President's Budget
February 2012

WEAPON SYSTEM COST ANALYSIS (EXHIBIT P-5)
(Dollars in Thousands)

BUDGET ACTIVITY: 2	P-1 LINE ITEM NOMENCLATURE	SUBHEAD NO. BLI: 2127
Other Warships	LITTORAL COMBAT SHIP (LCS)	

	FY 2009		FY 2010		FY 2011		FY 2012		FY 2013	
ELEMENT OF COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST	QTY	COST
PLAN COSTS	2	36,603	2	24,438	2	91,386	4	83,459	4	83,989
BASIC CONST/CONVERSION		1,138,316		955,325		809,749		1,485,671		1,453,694
CHANGE ORDERS		38,610		45,950		43,100		82,100		72,684
ELECTRONICS		21,677		26,992		27,245		55,417		56,350
HM&E		4,595		5,908		6,806		13,843		14,078
OTHER COST		106,761		1,000		166,942		76,927		67,038
ORDNANCE		11,090		17,056		17,300		36,625		37,126
TOTAL SHIP ESTIMATE		1,357,652		1,076,669		1,162,528		1,834,042		1,784,959
LESS ADVANCE PROCUREMENT FY12								78,949		
LESS SCN AND MATERIALS TRANSFER FY06		340,700								
NET P-1 LINE ITEM:		1,016,952		1,076,669		1,162,528		1,755,093		1,784,959

Source: *Department of the Navy Fiscal Year (FY) 2013 Justification of Estimates, Shipbuilding and Conversion, Navy*, February 2012, p. 11-2 (pdf page 157 of 246).

Figure B-3. Ship Production Schedule (Exhibit P-27)

For Navy Littoral Combat Ship (LCS) Program

CLASSIFICATION: UNCLASSIFIED

SHIPBUILDING AND CONVERSION, NAVY

SHIP PRODUCTION SCHEDULE

EXHIBIT P-27

FY 2013 President's Budget

DATE:

February 2012

SHIP TYPE	HULL NUMBER	SHIPBUILDER	FISCAL YEAR AUTHORIZED	CONTRACT AWARD	START OF CONSTRUCTION	DELIVERY DATE
LCS	3	LOCKHEED MARTIN	09	MAR-09	APR-09	JUN-12
LCS	4	GD/AUSTAL	09	MAY-09	OCT-09	MAR-13
LCS	5	LOCKHEED MARTIN	10	DEC-10	JUL-11	AUG-14
LCS	6	AUSTAL	10	DEC-10	JUN-11	JUN-14
LCS	7	LOCKHEED MARTIN	11	MAR-11	MAY-12	APR-15
LCS	8	AUSTAL	11	MAR-11	OCT-11	OCT-14
LCS	9	LOCKHEED MARTIN	12	MAR-12	MAR-13	FEB-16
LCS	10	AUSTAL	12	MAR-12	SEP-12	AUG-15
LCS	11	LOCKHEED MARTIN	12	MAR-12	AUG-13	AUG-16
LCS	12	AUSTAL	12	MAR-12	APR-13	MAR-16
LCS	13	LOCKHEED MARTIN	13	MAR-13	MAR-14	FEB-17
LCS	14	AUSTAL	13	MAR-13	SEP-13	AUG-16
LCS	15	LOCKHEED MARTIN	13	MAR-13	AUG-14	AUG-17
LCS	16	AUSTAL	13	MAR-13	FEB-14	JAN-17
LCS	17	LOCKHEED MARTIN	14	MAR-14	MAR-15	FEB-18
LCS	18	AUSTAL	14	MAR-14	OCT-14	JUL-17
LCS	19	LOCKHEED MARTIN	14	MAR-14	AUG-15	AUG-18
LCS	20	AUSTAL	14	MAR-14	FEB-15	DEC-17
LCS	21	LOCKHEED MARTIN	15	MAR-15	MAR-16	FEB-19
LCS	22	AUSTAL	15	MAR-15	SEP-15	JUL-18
LCS	23	LOCKHEED MARTIN	15	MAR-15	AUG-16	AUG-19
LCS	24	AUSTAL	15	MAR-15	FEB-16	NOV-18
LCS	25	TBD	16	MAR-16	MAR-17	FEB-20
LCS	26	TBD	16	MAR-16	SEP-16	JUL-19
LCS	27	TBD	17	MAR-17	SEP-17	JUL-20
LCS	28	TBD	17	MAR-17	MAR-18	FEB-21

Source: *Department of the Navy Fiscal Year (FY) 2013 Justification of Estimates, Shipbuilding and Conversion, Navy*, February 2012, p. 11-2 (pdf page 159 of 246).

Appendix C. Navy Ship Force Structure Objective

Table C-1 presents the Navy's current ship force structure objective.

Table C-1. Navy Ship Force Structure Goal

Ship type	Force Structure Objective
Ballistic missile submarines (SSBNs)	12
Cruise missile submarines (SSGNs)	0
Attack submarines (SSNs)	48
Aircraft carriers	11
Cruisers and destroyers	88
Littoral Combat Ships (LCSs)	52
Amphibious ships	33
Combat logistics (resupply) ships	29
Joint High Speed Vessels (JHSVs)	10
Other (includes support ships)	23
Total battle force ships	**306**

Sources: Department of the Navy, *Report to Congress [on] Navy Combatant Vessel Force Structure Requirement*, January 2013, 3 pp. The cover letters for the report were dated January 31, 2013.

Appendix D. Navy FY2014 Five-Year Shipbuilding Plan

Table D-1 presents the Navy's FY2014 five-year (FY2014-FY2018) shipbuilding plan.

Table D-1. Navy FY2014 Five-Year (FY2014-FY2018) Shipbuilding Plan

(Battle force ships—i.e., ships that count against 306-ship goal)

Ship type	FY14	FY15	FY16	FY17	FY18	Total
Ford (CVN-78) class aircraft carrier					1	1
Virginia (SSN-774) class attack submarine	2	2	2	2	2	10
Arleigh Burke (DDG-51) class destroyer	1	2	2	2	2	9
Littoral Combat Ship (LCS)	4	4	2	2	2	14
LHA(R) amphibious assault ship	0	0	0	1	0	1
Fleet tug (TATF)	0	0	0	2	1	3
Mobile Landing Platform (MLP)/Afloat Forward Staging Base (AFSB)	1	0	0	0	0	1
TAO(X) oiler	0	0	1	0	1	2
TOTAL	**8**	**8**	**7**	**9**	**9**	**41**

Source: FY2014 Navy budget submission.

Notes: The MLP/AFSB is a variant of the MLP with additional features permitting it to serve in the role of an AFSB.

Appendix E. Navy FY2014 30-Year Shipbuilding Plan

Table E-1 shows the Navy's proposed FY2014 30-year (FY2014-FY2043) shipbuilding plan.

Table E-1. Navy FY2014 30-Year (FY2014-FY2043) Shipbuilding Plan

FY	CVN	LSC	SSC	SSN	SSBN	AWS	CLF	Supt	Total
14		1	4	2				1	8
15		2	4	2					8
16		2	2	2			1		7
17		2	2	2		1		2	9
18	1	2	2	2			1	1	9
19		2	3	2		1	1	1	10
20		2	3	2			1	2	10
21		2	3	2	1	1	1		10
22		3	3	2			1	2	11
23	1	3	3	2		1	1	3	14
24		2	3	1	1	1	1	2	11
25		3	3	2		1	1	1	11
26		2	1	1	1		1		6
27		3		2	1	1	1		8
28	1	3		1	1	2	1	1	10
29		3		1	1	1	1	1	8
30		2	1	1	1	1	1	2	9
31		2		2	1	1	1	2	9
32		2	1	1	1	2	1	3	11
33	1	2		1	1	1	1	2	9
34		2	1	1	1			2	7
35		2	1	1	1				5
36		2		1		1			4
37		2	4	2					8
38	1	3	4	2					10
39		3	4	1					8
40		3	4	2		2			11
41		3	4	1					8
42		3	3	2		1			9
43	1	2	3	1			1		8

Source: FY2014 30-year (FY2014-FY2043) shipbuilding plan.

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; **SSGN** = cruise missile submarines; **SSBN** = ballistic missile submarines; **AWS** = amphibious warfare ships; **CLF** = combat logistics force (i.e., resupply) ships; **Supt** = support ships.

Table E-2 shows the Navy's projection of force levels for FY2014-FY2043 that would result from implementing the FY2014 30-year (FY2014-FY2043) shipbuilding plan shown in **Table E-1**.

Table E-2. Projected Force Levels Resulting from FY2014 30-Year (FY2014-FY2043) Shipbuilding Plan

	CVN	LSC	SSC	SSN	SSGN	SSBN	AWS	CLF	Supt	Total
306 ship plan	**11**	**88**	**52**	**48**	**0**	**12**	**33**	**29**	**33**	**306**
FY14	10	85	26	55	4	14	31	31	26	**282**
FY15	10	78	23	55	4	14	28	29	29	**270**
FY16	11	82	27	53	4	14	29	29	31	**280**
FY17	11	83	29	50	4	14	30	29	33	**283**
FY18	11	84	33	52	4	14	31	29	33	**291**
FY19	11	86	38	52	4	14	31	29	35	**300**
FY20	11	87	37	49	4	14	31	29	33	**295**
FY21	11	88	37	49	4	14	31	29	33	**296**
FY22	12	87	39	48	4	14	31	29	33	**297**
FY23	12	87	38	48	4	14	31	29	34	**297**
FY24	12	89	40	48	4	14	32	29	34	**302**
FY25	11	88	42	47	4	14	34	29	34	**303**
FY26	11	89	45	46	2	14	33	29	33	**302**
FY27	11	91	48	45	1	13	33	29	33	**304**
FY28	11	90	51	43	0	12	33	29	33	**302**
FY29	11	88	52	42	0	11	33	29	33	**299**
FY30	11	86	52	43	0	11	32	29	33	**297**
FY31	11	82	52	44	0	11	32	29	33	**294**
FY32	11	81	52	45	0	10	32	29	34	**294**
FY33	11	81	52	46	0	10	33	29	34	**296**
FY34	11	80	52	47	0	10	34	29	34	**297**
FY35	11	82	52	48	0	10	33	29	34	**299**
FY36	11	84	52	50	0	10	33	29	34	**303**
FY37	11	86	52	51	0	10	34	29	33	**306**
FY38	11	88	52	50	0	10	33	29	34	**307**
FY39	11	90	52	50	0	10	33	29	33	**308**
FY40	10	90	52	50	0	10	32	29	33	**308**
FY41	10	90	52	49	0	11	33	29	33	**307**
FY42	10	88	52	51	0	12	32	29	33	**307**
FY43	10	88	52	51	0	12	31	29	33	**306**

Source: FY2014 30-year (FY2014-FY2043) shipbuilding plan.

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.

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