



Testimony

Before the Subcommittee on Coast
Guard and Maritime Transportation,
Committee on Transportation and
Infrastructure, House of Representatives

For Release on Delivery
Expected at 10:00 a.m. ET
Wednesday, June 7, 2017

COAST GUARD RECAPITALIZATION

Matching Needs and Resources Continue to Strain Acquisition Efforts

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GAO Highlights

Highlights of [GAO-17-654T](#), a testimony before the Subcommittee on Coast Guard and Maritime Transportation, Committee on Transportation and Infrastructure, House of Representatives

Why GAO Did This Study

In order to meet its missions of maritime safety, security, and environmental stewardship, the Coast Guard, a component within the Department of Homeland Security (DHS), employs a variety of surface and air assets, several of which are approaching the end of their intended service lives. As part of its efforts to modernize its surface and air assets (an effort known as recapitalization), the Coast Guard has begun acquiring new vessels, such as the National Security Cutter, Fast Response Cutter, and a number of air assets, and developing the Offshore Patrol Cutter. Despite the addition of new assets, concerns surrounding capability and affordability gaps remain.

This statement addresses (1) the capabilities provided by the newer Coast Guard assets, (2) maintainability and equipment challenges for the new cutters, and (3) the overall affordability of the Coast Guard's acquisition portfolio. This statement is based on GAO's extensive body of work examining the Coast Guard's acquisition efforts spanning several years, including the March 2017 report on the NSC and FRC's maintainability.

What GAO Recommends

GAO is not making recommendations in this statement but has made recommendations to the Coast Guard and DHS in the past regarding recapitalization and the specific assets involved, including that the Coast Guard develop a 20-year fleet modernization plan that identifies all acquisitions needed to maintain the current level of service and the fiscal resources needed to acquire them. DHS agreed with this recommendation.

View [GAO-17-654T](#). For more information, contact Marie A. Mak at (202) 512-4841 or makm@gao.gov.

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What GAO Found

The Coast Guard is currently procuring three new cutter classes that are intended to have more capability than the legacy assets they are replacing. In particular, the National Security Cutter (NSC) and the Fast Response Cutter (FRC) are generally demonstrating improved mission performance (see figure). Both cutters have greater fuel capacity and efficiency and handling/sea-keeping than the legacy assets they replace, all of which increase endurance and effectiveness. Another new asset—the Offshore Patrol Cutter (OPC)—is also expected to provide increased capabilities compared to the Medium Endurance Cutter it is replacing, such as the ability to conduct longer patrols.

The Coast Guard's Fast Response Cutter and National Security Cutter



Source: U.S. Coast Guard. | GAO-17-654T

The Coast Guard, however, has not been able to take full advantage of the FRC's and NSC's capabilities because of maintenance and equipment issues limiting their time available for operations. GAO found in March 2017 that while both cutters met their minimum mission capable targets on average over the long-term, more recently—from October 2015 to September 2016—they fell below their minimum targets due to needed increased depot-level maintenance. Both cutters have also been plagued by problems with critical equipment, such as the diesel engines, which have contributed to lost operational days.

In June 2014, GAO found gaps between the funding amounts the Coast Guard estimates its major acquisitions need and what it has requested. This has continued. For example, senior Coast Guard officials peg acquisition needs at over \$2 billion per year, but the President's budget requested \$1.2 billion for fiscal year 2018. In an effort to address funding constraints, the Coast Guard delayed new acquisitions through the annual budget process, but lacks a long-term plan to set forth affordable priorities. As a result of these issues, it is facing a gap in the capability provided by its Medium Endurance Cutters, which are slated to reach the end of their service lives before all the OPCs are operational. GAO recommended in 2014 that the Coast Guard develop a 20-year fleet modernization plan that identifies all acquisitions needed to maintain the current level of service—aviation and surface—and the fiscal resources needed to buy the identified assets. DHS concurred with the recommendation, but it is unclear when the Coast Guard will complete this effort.

Chairman Hunter, Ranking Member Garamendi, and Members of the Subcommittee:

I am pleased to be here today to discuss key challenges the Coast Guard faces as it acquires new assets, a program referred to as Coast Guard recapitalization, as well as the overall affordability of the Coast Guard's acquisition portfolio. The U.S. Coast Guard, within the Department of Homeland Security (DHS), is the principal federal agency responsible for maritime safety, security, and environmental stewardship. In addition, the Coast Guard has assumed increasing responsibility for security related missions since the September 11, 2001, terrorist attacks. In order to meet these missions, the Coast Guard employs a variety of surface and air assets. As part of its efforts to modernize its aging fleet, the Coast Guard has begun acquiring new vessels, such as the Fast Response Cutter (FRC) and National Security Cutter (NSC), to replace the legacy Island Class Patrol Boat and High Endurance Cutter, respectively. The new cutters are designed to provide the Coast Guard with additional capabilities above those offered by the legacy vessels.

Despite the addition of these and other new assets, concerns surrounding capability and affordability gaps remain. For example, the expected service life for the Coast Guard's Medium Endurance Cutter will expire prior to delivery of the first Offshore Patrol Cutter (OPC), potentially leaving the Coast Guard unable to execute all of its missions. Additionally, the Coast Guard has one active heavy icebreaker, which is already past its initial expected service life, and at times has been unable to provide this capability due to equipment failures. As it seeks to manage these issues while building new assets, the Coast Guard will continue to be hampered by ongoing affordability concerns, forcing difficult trade-off decisions to be made. These decisions may become more difficult as the affordability of the Coast Guard's overall fleet also faces a significant challenge from the upcoming OPC procurement, which is planned to cost \$12.1 billion and will consume about two-thirds of the Coast Guard's planned acquisition budget between 2018 and 2032 based on its recent funding history. The Coast Guard's ability to accomplish all of these objectives within its planned budget is not known because the Coast Guard has yet to provide a long-term plan that matches its needs with its planned budget. In June 2014 we recommended that the Coast Guard develop a 20-year fleet modernization plan that identifies all acquisitions needed to maintain the current level of service and the fiscal resources

necessary to build the identified assets.¹ The Coast Guard concurred with the recommendation, but it is unclear when it plans to complete this effort.

My statement today will address (1) the capabilities provided by the newer Coast Guard assets, (2) maintainability and equipment challenges for the new Coast Guard cutters, and (3) the overall affordability of the Coast Guard's acquisition portfolio. This statement is based on our extensive body of work examining the Coast Guard's acquisition efforts spanning the past several years, including our March 2017 report on the NSC and FRC's maintainability.²

For the reports cited in this statement, among other methodologies, we analyzed Coast Guard guidance, data, and documentation, and interviewed Coast Guard officials at its headquarters and field units to determine how the Coast Guard allocated its assets, how data are used to make annual asset allocation decisions, and how the Coast Guard determines future resource needs. Each of the reports cited in this statement provide further detailed information on our scope and methodology. We also updated, through our ongoing work, information regarding acquisitions that will need to be funded concurrently with the OPC, and obtained updates on the Coast Guard's actions in response to our prior recommendations.

We conducted the work on which this statement is based in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

¹GAO, *Coast Guard Acquisitions: Better Information on Performance and Funding Needed to Address Shortfalls*, [GAO-14-450](#) (Washington, D.C.: June 5, 2014). The 20-year fleet modernization plan that we recommended is being called a 20-year Capital Investment Plan according to Coast Guard officials.

²For examples see: GAO, *Coast Guard Cutters: Depot Maintenance Is Affecting Operational Availability and Cost Estimates Should Reflect Actual Expenditures*, [GAO-17-218](#) (Washington, D.C.: Mar. 2, 2017); *National Security Cutter: Enhanced Oversight Needed to Ensure Problems Discovered during Testing and Operations Are Addressed*, [GAO-16-148](#) (Washington, D.C.: Jan. 12, 2016); *Coast Guard Aircraft: Transfer of Fixed-Wing C-27J Aircraft is Complex and Further Fleet Purchases Should Coincide with Study Results*, [GAO-15-325](#) (Washington, D.C.: Mar. 26, 2015); and [GAO-14-450](#).

Background

In the 1990s, the Coast Guard began an initial effort to modernize its aging assets that would allow it to successfully meet mission demands. After the September 11, 2001 terrorist attacks, the Coast Guard became a component of the newly established Department of Homeland Security (DHS), which resulted in an increase in mission demands.³ In order to meet this increase, the Coast Guard completed a Mission Needs Statement—the document that describes the mission(s) and needed capabilities to justify a given program—in 2005. The 2005 Mission Needs Statement compared the new assets for which the Coast Guard originally planned to procure—in 1996 prior to the creation of DHS—to replace its legacy assets to the demands of the new missions as laid out by the recently formed DHS. Based on the 2005 Mission Needs Statement, DHS approved a program of record in 2007—known as the Deepwater program—that provided the additional capability required. This effort was expected to last 25 years at a cost of \$24.2 billion resulting in either the rebuilding or replacing of vessels and aircraft that were reaching the end of their expected service lives and were in deteriorating condition. Figure 1 shows some of the Coast Guard's newer assets that are part of this broader modernization effort.

Figure 1: The Coast Guard's National Security Cutter, HC-144A Maritime Patrol Aircraft, and Fast Response Cutter



Source: U.S. Coast Guard. | GAO-17-654T

³The Coast Guard's increased mission demands following the terrorist attacks of September 11, 2001, included incorporating improved capabilities to operate in conditions of chemical, biological, and radiological contamination; greater antiterrorism weaponry; development of airborne use of force capabilities; improved communications systems; and enhanced flight decks.

In 2016, the Coast Guard revised its Mission Needs Statement in response to statutory requirements and committee report language, but this revision states it was not intended to provide details on the specific assets the Coast Guard needs to meet its mission requirements.⁴ Further, according to the Coast Guard, the 2016 update to the Mission Needs Statement is to provide a foundation for long-term investment planning that is to culminate with detailed modeling scenarios to evaluate the effectiveness of various fleet mixes, and inform the Coast Guard's Capital Investment Plan.⁵ The 2016 revision, however, does not identify specific assets or fiscal resources necessary to meet the Coast Guard's long-term mission requirements, as we had recommended in June 2014.

Unlike the 2005 Mission Needs Statement, the 2016 version did not result in a new program of record for the Coast Guard's recapitalization effort. However, since the original program of record in 2007, the Coast Guard's recapitalization program has undergone changes as major acquisition programs have been completed and/or modified in response to affordability concerns. Figure 2 depicts the Coast Guard's 2007 recapitalization program of record and the current 2017 program of record.

⁴See the Howard Coble Coast Guard and Maritime Transportation Act of 2014, Pub. L. No. 113-281, § 215, 128 Stat. 3022, 3034-35; H.R. Rep. No. 113-481 (2014); S. Rep. No. 113-198 (2014); and explanatory statement, 161 Cong. Rec. H275, 282 (daily ed., Jan. 13, 2015), on H.R. 240, the Department of Homeland Security Appropriations Act, 2015, which became Pub. L. No. 114-4.

⁵A fleet mix refers to the appropriate mixture of assets the Coast Guard will need to execute its mission set under varying constraints such as funding.

Figure 2: The Coast Guard's 2007 and 2017 Recapitalization Efforts

2007 Coast Guard Recapitalization (formerly Deepwater) program of record	2017 Coast Guard Recapitalization program of record
National Security Cutter	National Security Cutter
Offshore Patrol Cutter	Offshore Patrol Cutter
Fast Response Cutter	Fast Response Cutter
Medium Endurance Cutter Sustainment	
Patrol Boat Sustainment	
Cutter Small Boats	
HC-144A Maritime Patrol Aircraft	Medium Range Surveillance Aircraft (HC-144A/HC-27J)
HC-130J Long Range Surveillance Aircraft	Long Range Surveillance Aircraft (HC-130J)
HC-130H Long Range Surveillance Aircraft	
HH-65 Multi-mission Cutter Helicopter	HH-65 Helicopter
HH-60 Medium Range Recovery Helicopter	
Unmanned Aircraft Systems	Unmanned Aircraft System (Cutter-based only)
Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) System	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) System
	Icebreaker
	In-Service Vessel Sustainment

Source: GAO presentation of Coast Guard information. | GAO-17-654T

Note: Dashed lines represent new programs in the 2017 program of record that were modified or added to the recapitalization portfolio.

The Coast Guard's Newer Assets Offer Greater Capability than Its Legacy Fleet

The Coast Guard is currently procuring three new cutter classes that will have more capability than the legacy assets they are intended to replace. The FRC will replace the legacy Island Class Patrol Boat, the OPC will replace both classes of the legacy Medium Endurance Cutter (210-foot class and 270-foot class), and the NSC will replace the legacy High Endurance Cutter. As we reported in June 2014, several of the Coast Guard's newest asset classes are generally demonstrating improved mission performance compared to the assets they are replacing, according to Coast Guard officials who operate these assets.⁶

Specifically, the FRC and NSC have greater fuel capacity and efficiency, engine room and boat launch automation, handling/sea-keeping, and food capacity, all of which increase endurance and effectiveness. In addition, the FRC and NSC both have a stern ramp that allows them to launch and recover the cutters' small boats more safely and in a fraction of the time

⁶GAO-14-450.

that the Island Class Patrol Boats and High Endurance Cutters require, which allows the cutters to more efficiently and effectively conduct missions. The OPC is also expected to provide increased capabilities compared to the Medium Endurance Cutter it is replacing. Table 1 provides comparison information on selected Coast Guard legacy and new surface assets.

Table 1: Comparison of the Coast Guard's Legacy and New Surface Assets as of April 2017

Legacy Assets				
	High Endurance Cutter	Medium Endurance Cutters		Island Class Patrol Boat
		210-foot	270-foot	
Number in fleet	12 (4 still in service)	14	13	41 (24 still in service) ^c
Year first-in-class cutter commissioned	1967	1964	1983	1986
Length	378 feet	210 feet	270 feet	110 feet
Maximum time at sea without reprovisioning	45 days	21 days	21 days	5 days
Range	14,000 miles ^b	6,100 miles	9,900 miles	1,900 miles
Operational Tempo	185 days away from home port per year	185 days away from home port	185 days away from home port	1,800 operational hours per year
New Assets				
	National Security Cutter	Offshore Patrol Cutter		Fast Response Cutter
Number in fleet	9 planned (6 operational)	25 planned (not yet operational)		58 planned (22 operational)
Year first-in-class cutter commissioned	2008	Planned for fiscal year 2021		2012
Length	418 feet	To be determined		154 feet
Range	12,000 miles	8,500 to 9,500 miles		2,500 miles
Maximum time at sea without reprovisioning	60 days	45 days to 60 days		5 days to 7 days
Operational Tempo	230 days away from home port per year ^a	230 days away from home port		2,500 operational hours per year

Source: GAO presentation of Coast Guard data. | GAO-17-654T

^aTo achieve 230 days away from homeport, the Coast Guard plans to use a "crew rotational concept" in which four crews staff and operate three cutters on a rotating basis.

^bAccording to the Coast Guard, High Endurance Cutters can achieve a 14,000 nautical mile range only if they ballast their fuel tanks once the tanks are depleted, a procedure that is rarely undertaken. High Endurance Cutters have a range of 9,600 nautical miles under normal circumstances.

^cThe 110-foot Patrol Boat fleet originally included 49 vessels. The Coast Guard converted 8 of the 110-foot Patrol Boats to 123-foot Patrol Boats, but discontinued further conversions in 2005 and decommissioned the 123-foot Patrol Boats in 2007 because they were experiencing technical difficulties, such as hull buckling, and were not able to meet post-September 11, 2001 mission requirements.

The Coast Guard commissioned its first FRC in 2012 and, as of April 2017, has received 23 of these vessels. The Coast Guard exercised a contract option for detail design for the OPC in September 2016, and there are separate options for the production of each cutter currently under contract. The Coast Guard anticipates receiving the first vessel in fiscal year 2021, with deliveries each year through 2035 when the program is scheduled to achieve full operating capability. Additionally, since 2008, the Coast Guard has received a total of 6 NSCs, with 3 in various stages of construction.⁷ Due to its improved capabilities, the NSC has been able to complete longer deployments, which has in part resulted in more successful drug interdictions than the legacy asset it replaces.

The Coast Guard is also updating and acquiring new aviation assets that have increased capabilities compared to the legacy assets they are replacing. For example, the fleets of H-65 helicopters are being upgraded to allow for greater reliability, maneuverability, and interoperability between the H-65 and other government assets. In addition, the Coast Guard restructured its HC-144A acquisition program in 2014 to accommodate 14 C-27J aircraft it received from the U.S. Air Force. The Coast Guard plans to use these twin-engine propeller-driven aircraft to conduct all types of Coast Guard missions, including search and rescue and disaster response. As we reported in June 2014, officials at Air Station Miami stated that since they began regularly operating the HC-144A in fiscal year 2011, the aircraft has had a significant role in improving the effectiveness of the Coast Guard's counterdrug and alien migrant interdiction operations.⁸ However, the HC-144A only fully met three of its seven key performance parameters during initial operational testing, but the Coast Guard plans to conduct additional tests in fiscal year 2017 to demonstrate additional key performance parameters. As we reported in March 2015, the Coast Guard faces several challenges to making the C-27Js operational, including purchasing spare parts and a lack of access to the manufacturer's technical data that are required to make modifications to the aircraft's structure to incorporate, among other things, the radar.⁹ The Coast Guard is currently in the process of

⁷Although the Coast Guard has planned for 8 NSCs, the Consolidated Appropriations Act, 2016 stated that, of the funds provided by the Act, not less than \$640 million shall be immediately available and allotted to contract for the production of the ninth NSC, notwithstanding the availability of funds for post-production costs. Pub. L. No. 114-113 129 Stat. 2242, 2501 (2015).

⁸[GAO-14-450](#).

⁹[GAO-15-325](#).

transitioning to a new mission system on all of its fixed-wing aircraft, which is a system currently used by the U.S. Navy and DHS's Customs and Border Protection. The new mission system is intended to enhance operator interface and sensor management, as well as replace obsolete equipment, which is to enable more commonality between the fixed-wing fleet.

New Coast Guard Cutters Are Experiencing Maintenance and Equipment Issues

FRC and NSC Mission Capable Rates Are Lower than Expected

The Coast Guard has not been able to take full advantage of increased capabilities of the FRC and NSC due to maintenance issues that have limited their time available for operations. As we reported in March 2017, while over the past few years both the FRC and NSC met their minimum mission capable targets on average, which are 48 percent for the FRC and 49 percent for the NSC, our analysis of a more recent period—from October 2015 to September 2016—found that both cutters fell below their minimum targets due to needed increased depot-level maintenance.¹⁰ See table 2.

¹⁰[GAO-17-218](#).

Table 2: Fast Response Cutter's and National Security Cutter's Average Asset Status

Asset status	Fast Response Cutter percentage of time in asset status (target mission capable range, 48 – 60 percent)		National Security Cutter percentage of time in asset status (target mission capable range, 49 – 61 percent)	
	March 2012 – September 2016	October 2015 – September 2016	November 2013 – September 2016	October 2015 – September 2016
Fully mission capable	47.0	39.5	31.8	27.2
Partially mission capable	2.3	3.3	22.4	9.9
Total mission capable	49.3	42.8	54.2	37.2
Not mission capable due to maintenance (equipment failures)	9.9	4.1	2.1	2.8
Not mission capable due to supply	0.3	0.1	0.2	0.1
Not mission capable due to depot-level maintenance	40.5	53.0	43.4	60.0
Total not mission capable	50.7	57.2	45.8	62.8

Source: GAO analysis of Coast Guard data. | GAO-17-654T

Note: The Fast Response Cutter was equipped with the Electronic Asset Logbook system to track this data beginning in March 2012 while the National Security Cutter wasn't equipped with this system until November 2013.

According to Coast Guard officials, the FRC's decrease in monthly mission capable rates below its minimum target is primarily because of a phased warranty repair drydock period that was not initially anticipated. The average warranty repair drydock period will last approximately 15 weeks, with at least one FRC not mission capable due to depot-level maintenance at all times from January 2016 to November 2019. These drydocks were triggered by continuing structural concerns and problems with equipment that was installed during production, including continued failures with the main diesel engine. Given that only a few FRCs have completed the warranty drydock to date, it is difficult to determine whether the overall fleet's mission capable rate will meet its target range once the drydocks are completed.

As we noted in our March 2017 report, while the FRC's decrease is attributable to the unanticipated drydocks, the NSC's mission capable rates are influenced by a roughly 2-year anticipated post-delivery maintenance period called the post shakedown availability, which is

scheduled for each newly delivered NSC.¹¹ During this shakedown period, the NSC will be rendered not mission capable due to depot-level maintenance for a majority of its time. For example, from January 2015 until September 2016, the NSC Hamilton spent 70.9 percent of its time in depot-level maintenance, and the NSC James spent 82.6 percent of its time in depot-level maintenance from September 2015 to September 2016. With only five NSCs in operation as of September 2016, having two cutters spend the majority of their time not mission capable due to depot-level maintenance is negatively affecting the overall fleet's mission capable rates. This will continue as the Coast Guard introduces new NSCs into the fleet and the last cutter completes its 2-year post shakedown period—scheduled for 2022 as the ninth cutter is scheduled for delivery in 2020. While the first three NSCs achieved their mission capable rate targets on average from January 2014 to September 2016, it is uncertain if the overall fleet mission capable rate will increase once all NSCs complete their post shakedown availabilities.

New Assets Are Being Fielded with Known Problems

In addition to the negative effect that depot-level maintenance is having on both the FRC and NSC's mission capable rates, our March 2017 report found that both cutter classes have been plagued with equipment failures resulting in lost operational days or a partially mission capable status.¹² This means that the cutters are either not able to or are conducting operations in a limited capacity. The main diesel engines on both cutters, which were manufactured by the same vendor, were among the equipment systems that resulted in the most lost operational days from 2014 through 2016 and have been problematic since the cutters became operational.¹³ Problems with the FRC's engine resulted in roughly 355 days spent not mission capable due to maintenance. However, the FRC's warranty clause has covered several engine problems and, according to the FRC's contracting officer, has avoided about \$77 million in potential maintenance costs for the Coast Guard it

¹¹[GAO-17-218](#).

¹²[GAO-17-218](#).

¹³The Coast Guard classifies lost operational days as the number of days in which a cutter was either not mission capable due to an equipment failure or not mission capable due to a lack of spare parts. From 2014 to 2016 the FRC's top three equipment systems with the most problems resulted in about 827 combined lost operational days and partially mission capable days while the NSC's top three equipment systems with the most problems resulted in about 993 combined lost operational days and partially mission capable days.

otherwise would have needed to pay as of August 2016.¹⁴ Furthermore, the FRC's contracting officer stated that as of October 2016, all of the 18 operational FRCs have undergone various corrective repairs on their main diesel engines, including replacing engines on 6 of the cutters.

Similar to the FRC, the NSC's engines have experienced problems and, as we found in January 2016, the engines overheat in waters above 74 degrees Fahrenheit, which constitutes a portion of the NSC's operating area given that they are intended to be deployed worldwide.¹⁵ This can cause the cutters to operate 2 to 4 knots below their top speed of 28 knots. As a result, the Coast Guard has been forced to operate the NSCs at reduced speeds during some missions, such as counter drug missions, where reaching maximum speeds would be operationally useful. The NSC's inability to achieve top speed in warm waters has also inhibited the cutters' ability to complete their regularly scheduled full power trials, which are periodic tests of the propulsion plant operated at maximum rated power. The results of these tests advise operators and maintenance personnel of the cutter's full power performance characteristics and can provide the basis for maintenance activity. Without these tests, the Coast Guard lacks sufficient information that could be useful for assessing propulsion systems and planning maintenance.

Further, as we reported in March 2017, the Coast Guard is conducting design changes for some critical systems post-delivery for the NSC in order to minimize the cost increase of the extra work and to adhere to the cutters' production schedule. One such design change involves the NSC's gantry crane, which was not designed for a maritime environment and is inadequately sealed to prevent water intrusion.¹⁶ This has led to accelerated corrosion and the need for excessive repairs that are not considered suitable over the NSC's life cycle. The design change to replace the gantry crane was initiated in January 2010 and the new crane was approved for fleet-wide replacement. However, all of the remaining NSCs will be built with the original gantry crane installed and then replaced during their post-shakedown periods.

¹⁴For additional information on the FRC's warranty see GAO: *Navy and Coast Guard Shipbuilding: Navy Should Reconsider Approach to Warranties for Correcting Construction Defects*, [GAO-16-71](#) (Washington, D.C.: March 3, 2016).

¹⁵[GAO-16-148](#).

¹⁶The gantry crane is a crane on the rear of the cutter that aides in deploying the NSC's cutter boat.

During the work for our March 2017 report, Coast Guard officials stated that no formal analysis was developed or documented to determine whether a design change should be installed during production or post-delivery. Instead, they used the professional judgment of Coast Guard and shipyard officials to determine the most cost efficient timing of when to install design changes. Keeping the NSC delivery dates on schedule was one of the primary reasons officials gave for not installing some design changes during production. Given that the program has been aware of these design changes for many years, the Coast Guard had an opportunity to install the design changes during production instead of during the post-delivery period. We concluded that by not installing the design changes during production, the Coast Guard will need to maintain the original equipment installed during production for all NSCs, including the ninth NSC (the separate production contract for which was awarded in December 2016), and then later conduct retrofits after accepting delivery of the cutters. This will necessitate the installation of systems with known defects or deficiencies during production only to replace such systems later, requiring maintenance on some of these systems until the retrofits are complete. In our March 2017 report, we therefore recommended that the Coast Guard update the Joint Surface Engineering Change Process Guide to require a documented cost analysis to provide decision makers with adequate data to make informed decisions regarding the expected costs and when it is most cost effective to install design changes.¹⁷ The Coast Guard concurred with our recommendation and plans to incorporate a documented cost analysis requirement into an update to its guidance by December 31, 2017.

Affordability of the Coast Guard's Acquisition Portfolio Remains in Doubt

As we found in June 2014, there are gaps between what the Coast Guard estimates it needs to carry out its program of record for its major acquisitions and what it has traditionally requested and received.¹⁸ This issue has continued since we issued our report. For example, senior Coast Guard officials have stated a need for over \$2 billion per year, but the President's budget requested \$1.2 billion for fiscal year 2018, after asking for \$1.1 billion in fiscal year 2017. In an effort to address the funding constraints it has faced annually, the Coast Guard has been in a reactive mode, delaying and reducing its capability through the annual budget process by delaying new acquisitions, and does not have a plan to

¹⁷ [GAO-17-218](#).

¹⁸ [GAO-14-450](#).

realistically set forth affordable priorities. For instance, the Coast Guard has realized delays in many of its programs but, in particular, is facing a gap in the capability provided by its Medium Endurance Cutter fleet, which will likely begin reaching the end of their service lives before the OPCs are operational. In 2014, Coast Guard, DHS, and Office of Management and Budget officials acknowledged that the Coast Guard could not afford to recapitalize and modernize its assets in accordance with its current plan at current funding levels. While efforts have been underway to address this issue for several years, the Coast Guard has made little progress in improving the affordability of its acquisition portfolio. As a result, the Coast Guard faces significant capability gaps if funding increases do not materialize.

The Coast Guard Has Not Accomplished Long-Term Planning Actions that Would Help Ensure its Needs Match its Resources

Since 2011, we have recommended that DHS and the Coast Guard take several actions to gain an understanding of what the Coast Guard needs to meet its missions within its likely acquisition funding levels. These key actions included: 1) the Coast Guard conducting a comprehensive portfolio review across all its acquisitions to develop revised baselines that meet mission needs and reflect realistic funding scenarios and 2) the Coast Guard developing a 20-year plan that identifies all necessary recapitalization efforts and any fiscal resources likely necessary to complete these efforts.¹⁹

Following our September 2012 report, Congress asked the Coast Guard to examine its mission needs across its portfolio of assets.²⁰ In 2016, the Coast Guard revised its 2005 Mission Needs Statement, which provides a basic foundation for long-term investment planning that is to serve as the basis for evaluating the effectiveness of various fleet mixes, and inform the Coast Guard's Capital Investment Plan—its key portfolio planning tool. However, the 2016 Mission Needs Statement did not identify specific assets the Coast Guard needs to achieve its missions, nor did it update

¹⁹GAO, *Coast Guard: Portfolio Management Approach Needed to Improve Major Acquisition Outcomes*, [GAO-12-918](#) (Washington, D.C.: Sept. 20, 2012) and [GAO-14-450](#).

²⁰14 U.S.C. § 569. The legislation requires that on the date on which the President submits to Congress a budget for fiscal years 2016, 2019, and every 4 years thereafter, the Commandant submit to congressional committees an integrated major acquisition mission need statement which, among other things, is to identify current and projected gaps in Coast Guard capabilities using specific mission hour targets and explain how each major acquisition program addresses gaps if funded at the level provided for in the Coast Guard's Capital Investment Plan.

the annual hours it needs from each asset class to satisfactorily complete its missions. In line with our past recommendation from September 2012, the Coast Guard is currently in the process of updating its fleet mix analysis to detail the assets it needs to meet requirements, but this analysis is not planned to be finalized until the 2019 President's budget is submitted.²¹ Once completed, this analysis could serve as a foundation for understanding potential trade-offs that could be made across the Coast Guard's portfolio of acquisitions to better meet mission needs within realistic funding levels.

In June 2014, we also recommended that the Coast Guard develop a 20-year fleet modernization plan that identifies all acquisitions necessary for maintaining at least its current level of service and the fiscal resources necessary to build these assets.²² Such an analysis would facilitate a full understanding of the affordability challenges facing the Coast Guard while it builds the OPC. DHS concurred with the recommendation, but it is unclear when the Coast Guard plans to complete this effort.

Coast Guard Affordability Challenges Have Resulted in Delayed Acquisition Schedules and Potential Capability Gaps

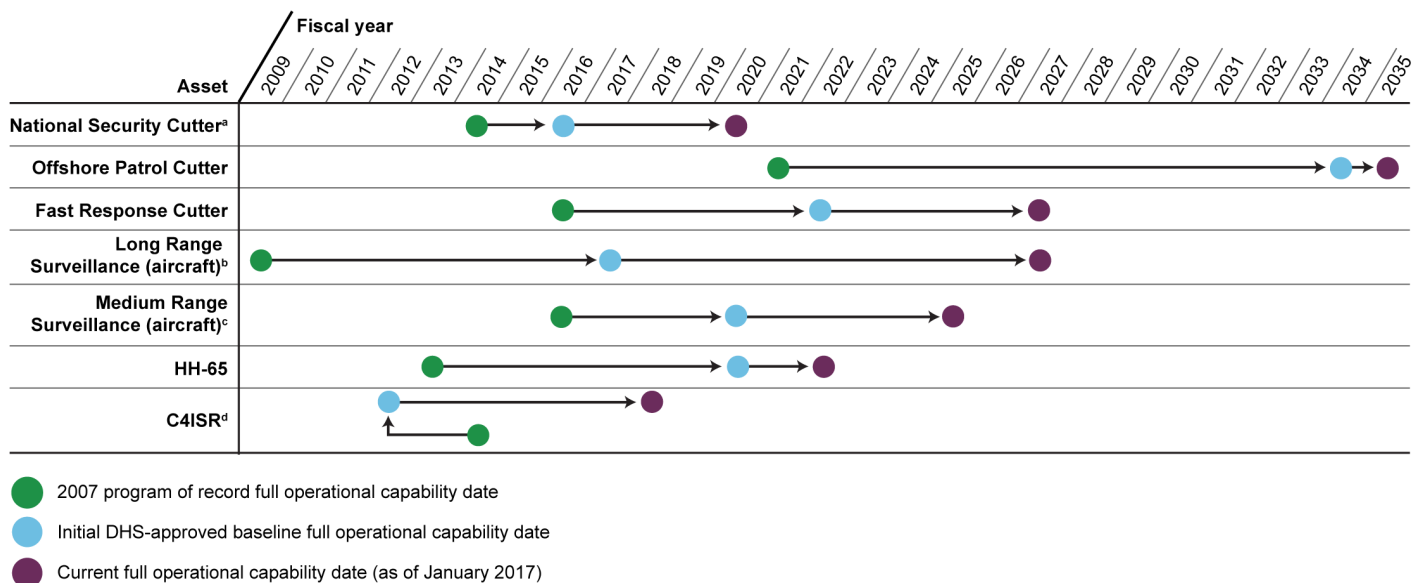
As we reported in April 2017, the full operational capability date has been delayed for several Coast Guard acquisition programs.²³ For example, the FRC program experienced a delay of more than 4 years because affordability constraints necessitated that it reduce the quantity of cutters procured annually from a proposed 6 cutters to 4 cutters per year. In addition, the Coast Guard delayed the OPC procurement by 14 years from the 2007 program of record to develop the requirements for this cutter and conduct a competition, while prioritizing acquisition of the NSC. Figure 3 shows the proposed full operational capability date as of the original 2007 program of record, the first DHS-approved baseline for each program, and the current baseline.

²¹[GAO-12-918](#).

²²[GAO-14-450](#).

²³GAO, *Homeland Security Acquisitions: Earlier Requirements Definition and Clear Documentation of Key Decisions Could Facilitate Ongoing Progress*, [GAO-17-346SP](#) (Washington, D.C.: Apr. 6, 2017).

Figure 3: Full Operational Capability Delays for New Assets as of January 2017



Source: GAO analysis of Coast Guard data. | GAO-17-654T

Note: The Polar Icebreaker and unmanned aircraft system programs have not yet reached the point in the acquisition life cycle where they are required to have a baseline, therefore they were not included.

^aThe current baseline includes cost and schedule estimates for eight NSCs. However, the Coast Guard is working on updating the baseline to reflect a ninth NSC.

^bFormerly two separate acquisition programs, the acquisition program baseline for this combined program was approved in July 2012.

^cThe 2007 baseline only included one aircraft type. The current baseline includes both the HC-144A and HC-27J programs.

^dC4ISR stands for Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance. C4ISR does not have an intended full operational capability date to signal the end of the acquisition phase, instead these dates reflect their planned transition from proprietary software and interoperability upgrades.

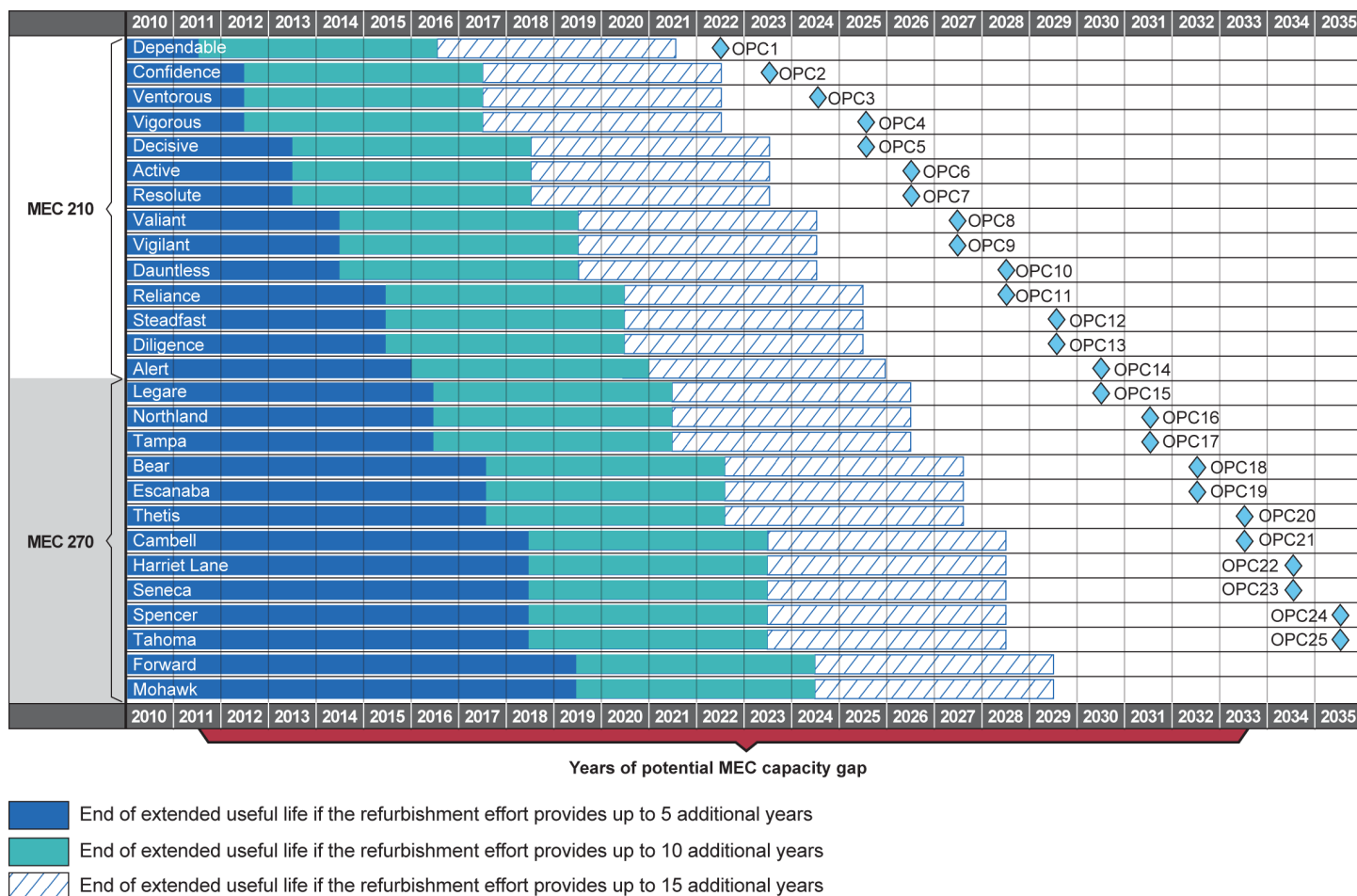
As we reported in July 2012, the Coast Guard's delay in the OPC acquisition has resulted in potential mission capability shortfalls as the condition of the legacy Medium Endurance Cutters further declines.²⁴ The 210-foot Medium Endurance Cutters—originally built in the 1960s—will be nearly 60 years old by the time they are replaced and have already

²⁴GAO, *Coast Guard: Legacy Vessels' Declining Conditions Reinforce Need for More Realistic Operational Targets*, [GAO-12-741](#) (Washington, D.C.: July 31, 2012).

exceeded their expected service lives.²⁵ In September 2014, the Coast Guard conducted refurbishment work for the Medium Endurance Cutters (both the 210-foot and 270-foot) that could provide an additional 5, 10, or 15 years of service. However, senior Coast Guard officials responsible for these efforts at the time indicated that the estimate of up to 15 years was optimistic and that the refurbishment provided needed upgrades to the Medium Endurance Cutters, but was not designed to further extend the cutters' useful lives. As depicted in figure 4, even with the most optimistic projection for the current extended useful life of the Medium Endurance Cutters, we found as of May 2017 that there would be a gap before the planned OPCs are operational, which the Coast Guard does not expect to begin until at least 2022.

²⁵In our July 2012 report we found that the 210-foot Medium Endurance Cutters had an estimated service life of 47 years, which included an additional 15 years that was added to the cutters through a Major Maintenance Availability that was conducted between 1987 and 1998. See [GAO-12-741](#).

Figure 4: Comparison of the Projected Extended Useful Lives for the Legacy Medium Endurance Cutter (MEC) Fleet with the Planned Offshore Patrol Cutter (OPC) Delivery Dates



Source: GAO analysis of Coast Guard documents. | GAO-17-654T

The Coast Guard May Need to Fund Several New Acquisitions Concurrent with OPC Procurement

As we reported in June 2014 and, more recently in our April 2017 assessment of DHS major acquisition programs, the Coast Guard faces affordability challenges that could result in additional capability gaps.²⁶ The upcoming OPC procurement, for which the planned acquisition costs are \$12.1 billion—making it the largest Coast Guard acquisition program to date—is going to create additional strain on the Coast Guard’s

²⁶ GAO-14-450 and GAO-17-346SP.

acquisition budget. According to the Coast Guard, the OPC is its top priority and, as such, it will be funded before other assets, such as the River Buoy Tenders and helicopters. However, if the Coast Guard's acquisition budget remains at its current levels, the funding remaining for other assets will be very limited. Beginning in September 2018, the OPC will absorb about two-thirds of the Coast Guard's annual acquisition funding until 2032 based on recent funding history. The Coast Guard initially plans to fund one OPC per year and eventually two OPCs per year until all 25 planned cutters are delivered. If the OPC experiences cost growth during development, the acquisition funding available for other programs could be reduced if the program attempts to meet its current delivery schedule, or the funding constraints could be prolonged if the delivery schedule for the OPC is extended.

Any remaining Coast Guard acquisition programs will have to compete for acquisition funds not used for the OPC. For instance, the Coast Guard must also recapitalize other assets such as the polar icebreakers—to alleviate a current capability gap—and refurbish other legacy vessels such as its fleet of river buoy tenders, as these assets continue to age beyond their expected service lives and, in some cases, have been removed from service without a replacement. The following are some examples that we identified in our June 2014 report of Coast Guard assets that will likely require some level of funding while the OPC is in development:²⁷

Icebreakers—The Coast Guard currently has a gap in its heavy icebreaking capability and has previously been without any heavy polar icebreakers when the legacy vessels were in disrepair from 2010 to 2013. In 2014, the Coast Guard returned one of these heavy icebreakers back to service, but still has one fewer heavy icebreaker than it has historically operated and two fewer than it needs, according to the Coast Guard's June 2013 heavy icebreaker mission need statement.²⁸ The 2017 President's budget requested \$147.6 million to begin funding the first heavy icebreaker—with preliminary estimates of about \$1 billion. The

²⁷ [GAO-14-450](#).

²⁸For recent GAO work regarding the Arctic and Coast Guard icebreakers see GAO, *Coast Guard: Arctic Strategy Is Underway, but Agency Could Better Assess How Its Actions Mitigate Known Arctic Capability Gaps*, [GAO-16-453](#) (Washington, D.C.: June 15, 2016) and *Arctic Planning: DOD Expects to Play a Supporting Role to Other Federal Agencies and Has Efforts Under Way to Address Capability Needs and Update Plans*, [GAO-15-566](#) (Washington, D.C.: June 19, 2015).

Coast Guard's preliminary estimates indicate that the first new heavy icebreaker could be available for operations in fiscal year 2023.

River Buoy Tenders—The Coast Guard fleet of river buoy tenders was mostly constructed between the 1950s and the 1970s and are in need of replacing. The Coast Guard plans to initiate a program to begin development and construction of new vessels to replace the legacy assets, however, no date has been provided as to when this effort will begin.

Service Life Extension for the 270-foot Medium Endurance Cutters—The Coast Guard plans to conduct a service life extension on the 270-foot Medium Endurance Cutters to help keep the cutters operational until the OPCs are delivered. Coast Guard officials said they have no plans to conduct service life extension work on the 210-foot Medium Endurance Cutters.

H-60 and H-65 Helicopter Fleets—The Coast Guard is planning to conduct a service life extension of both the H-60 and H-65 fleets. Extending these aircraft into the mid-2030s will enable the Coast Guard to potentially complete the OPC acquisition before starting a recapitalization effort for its rotary fleet. Regardless of the future path, significant acquisition dollars will be required to maintain annual flight hours for the next 20 years, according to Coast Guard program officials.

While the Coast Guard faces affordability challenges with these programs, it has also taken steps to mitigate affordability challenges in other programs. For example, the 2007 program of record planned to acquire 45 unmanned aircraft systems at a total cost of \$503 million. However, the Coast Guard truncated this program and now plans to outfit the NSC fleet with six unmanned aircraft systems for \$104 million. The Coast Guard is currently in the process of demonstrating a small unmanned aircraft system on the NSC and, according to officials, plans to issue a request for proposals from industry later this year to outfit the rest of the NSC fleet.

In conclusion, as the Coast Guard continues to field new or refurbish existing cutters and aircraft with improved capabilities, it is important that the Coast Guard plan for the affordability of its future portfolio so that it can minimize the capability gaps that can occur as legacy assets reach the end of their service lives before the new assets become operational. We have made several recommendations in recent years intended to help

the Coast Guard plan for these future acquisitions and the difficult trade-off decisions that it will likely face. If the Coast Guard fully implements these recommendations, it will likely position itself to provide decision makers with critical knowledge needed to prioritize its constrained acquisition funding. Without these efforts, the Coast Guard will continue, as it has in recent years, to plan its future acquisitions through the annual budgeting process, which has led to delayed and reduced capabilities. A thorough plan regarding the affordability of its future acquisitions would provide timely information to decision makers on how to spend scarce taxpayer dollars in support of a modern, capable Coast Guard fleet.

Chairman Hunter, Ranking Member Garamendi, and Members of the Subcommittee, this concludes my prepared statement. I would be pleased to respond to any questions.

GAO Contact and Staff Acknowledgments

If you or your staff have any questions about this statement, please contact Marie A. Mak, (202) 512-4841 or makm@gao.gov. In addition, contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals who made key contributions to this testimony include Richard A. Cederholm, Assistant Director; Peter W. Anderson; Erin Butkowski; John Crawford; Laurier Fish; and Roxanna T. Sun.

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