



April 2017

# HOMELAND SECURITY ACQUISITIONS

Earlier Requirements  
Definition and Clear  
Documentation of Key  
Decisions Could  
Facilitate Ongoing  
Progress

# GAO Highlights

Highlights of [GAO-17-346SP](#), a report to congressional committees

## Why GAO Did This Study

In fiscal year 2016, DHS planned to invest about \$7 billion in major acquisitions. DHS's acquisition activities are on GAO's High Risk List, in part due to program management, requirements, and funding issues.

The Explanatory Statement accompanying the DHS Appropriations Act, 2015 included a provision for GAO to review DHS's major acquisitions. This report, GAO's third annual review, addresses the extent to which (1) DHS's major acquisition programs are on track to meet schedule and cost goals, (2) these programs are meeting KPPs, and (3) DHS has strengthened implementation of its acquisition policy.

GAO assessed DHS's 15 largest acquisition programs that were in the process of obtaining new capabilities as of May 2016, and 11 additional programs that GAO or DHS identified were at risk of poor outcomes. For all 26 programs, GAO reviewed key documentation, assessed performance against baselines established since DHS's 2008 acquisition policy, and met with program officials. GAO also met with DHS acquisition officials and assessed DHS's policies and practices against GAO acquisition best practices and federal internal control standards.

## What GAO Recommends

DHS should ensure that programs define technical requirements before setting baselines; document rationale for key acquisition decisions; and clarify when not meeting KPPs constitutes a breach. DHS concurred with GAO's recommendations.

View [GAO-17-346SP](#). For more information, contact Michele Mackin at (202) 512-4841 or [mackinm@gao.gov](mailto:mackinm@gao.gov).

April 2017

## HOMELAND SECURITY ACQUISITIONS

### Earlier Requirements Definition and Clear Documentation of Key Decisions Could Facilitate Ongoing Progress

## What GAO Found

For the first time since GAO began its annual assessments of the Department of Homeland Security's (DHS) major acquisitions, all 26 programs that were reviewed had a department-approved baseline. During 2016, over half of the programs reviewed (17 of the 26) were on track to meet their initial or revised schedule and cost goals. However, 7 of these 17 programs only recently established baselines, 6 of which operated for several years and deployed capabilities without approved baselines. The remaining 9 programs experienced schedule slips, including 4 that also experienced cost growth. The table shows the schedule and cost changes across all 26 programs reviewed, much of which was driven by changes in a few programs.

**2016 Schedule and Cost Changes for the 26 Major DHS Acquisition Programs GAO Reviewed**

Average change in schedule (in months)	Acquisition cost change (in millions of dollars)	Life-cycle cost change (in millions of dollars)
6	988.3 (1.6 percent)	1,571.5 (0.8 percent)

Source: GAO analysis of Department of Homeland Security (DHS) data. | [GAO-17-346SP](#).

As of January 2017, 14 of the 26 programs deployed capabilities before meeting all key performance parameters (KPP)—the most important requirements that a system must meet. As a result, DHS may be deploying much-needed capabilities—such as border surveillance equipment and Coast Guard cutters—that do not work as intended. Programs did not meet KPPs for a variety of reasons, such as KPPs were not yet ready to be tested, systems failed to meet KPPs during testing, or KPPs were poorly defined. Contrary to acquisition best practices, DHS policy requires programs to establish schedule, cost, and performance baselines prior to gaining full knowledge about the program's technical requirements. As a result, DHS programs do not match their needs with available resources before starting product development, which increases programs' risk for cost growth, schedule slips, and inconsistent performance.

In 2016, DHS strengthened implementation of its acquisition policy by, for example, focusing on program staffing needs, requiring programs to obtain department-approval for key acquisition documents, and revising the process for when programs breach their cost goals, schedules, or KPPs. However, DHS could better document leadership's acquisition decisions to improve insight into cases that diverge from policy. For example, DHS approved six programs to proceed through the acquisition life cycle even though required documentation was not comprehensive or had not been approved, as required by DHS's policy. Senior DHS officials told GAO these decisions were also based on discussions held at the programs' formal acquisition reviews, but these considerations were not documented. Federal internal control standards require clear documentation of significant events. DHS leadership's decisions may be reasonable, but unless these decisions are documented, insight for internal and external stakeholders is limited. Furthermore, no programs reported a performance breach, even though some programs had not met KPPs. DHS's policy is not clear on how to determine whether a performance breach has occurred. As a result, DHS lacks insight into potential causes of performance issues that may contribute to poor outcomes.

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## Abbreviations

ADE	Acquisition Decision Event
APB	Acquisition Program Baseline
APHA	Acquisition Program Health Assessment
ARB	Acquisition Review Board
CFO	Chief Financial Officer
CIO	Chief Information Officer
DHS	Department of Homeland Security
DOT&E	Director, Office of Test and Evaluation
FOC	full operational capability
FYHSP	Future Years Homeland Security Program
INVEST	Investment Evaluation, Submission, and Tracking
IT	information technology
JRC	Joint Requirements Council
KPP	key performance parameter
LCCE	life-cycle cost estimate
MD	Management Directive
OTA	operational test agent
O&M	operations and maintenance
PARM	Office of Program Accountability and Risk Management
PPBE	planning, programming, budgeting, and execution
TEMP	Test and Evaluation Master Plan
USM	Under Secretary for Management

## Component Agencies

CBP	U.S. Customs and Border Protection
FEMA	Federal Emergency Management Agency
ICE	Immigration and Customs Enforcement
NPPD	National Protection and Programs Directorate
S&T	Science and Technology Directorate
TSA	Transportation Security Administration
USCG	U.S. Coast Guard
USCIS	U.S. Citizenship and Immigration Services

## Major Acquisition Programs

ACE	Automated Commercial Environment
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CDM	Continuous Diagnostics & Mitigation

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EBSP	Electronic Baggage Screening Program
FRC	Fast Response Cutter
HART	Homeland Advanced Recognition Technology
IFT	Integrated Fixed Towers
LBI	Land Border Integration
LSCMS	Logistics Supply Chain Management System
MEA	Multi-Role Enforcement Aircraft
MRS	Medium Range Surveillance Aircraft
NBAF	National Bio and Agro-Defense Facility
NCPS	National Cybersecurity Protection System
NGN-PS	Next Generation Networks Priority Services
NII	Non-Intrusive Inspection Systems Program
NSC	National Security Cutter
OPC	Offshore Patrol Cutter
PSP	Passenger Screening Program
TACCOM	Tactical Communications Modernization
TECS	(Not an acronym) Modernization
TIM	Technology Infrastructure Modernization
UH-60	Medium Lift Helicopter

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April 6, 2017

### Congressional Committees

Each year, the Department of Homeland Security (DHS) invests billions of dollars in its major acquisition programs to help execute its many critical missions. In fiscal year 2016 alone, DHS planned to spend approximately \$6.9 billion on these acquisition programs, and ultimately the department will likely invest more than \$210 billion in them. DHS and its underlying components are acquiring systems to help secure the border, increase marine safety, screen travelers, enhance cybersecurity, improve disaster response, and execute a wide variety of other operations. Each of DHS's major acquisition programs generally costs \$300 million or more and spans multiple years.<sup>1</sup>

To help manage these programs, DHS has established an acquisition management policy that we have reported is generally sound, in that it reflects key program management practices.<sup>2</sup> However, we have found shortfalls in executing the policy and have highlighted DHS acquisition management issues in our high-risk updates since 2005.<sup>3</sup> Over the past decade, we have reported that department leadership has dedicated additional resources to acquisition oversight and documented major acquisition decisions in a more transparent and consistent manner, but our work has also identified shortcomings in the department's ability to manage its portfolio of major acquisitions.<sup>4</sup> For example, in March 2016 we found that 6 of the 25 programs we reviewed lacked a department-approved Acquisition Program Baseline (APB), which establishes a

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<sup>1</sup>DHS defines major acquisition programs as those with life-cycle cost estimates of at least \$300 million or more. In some cases, DHS may define a program with a life-cycle cost estimate less than \$300 million a major acquisition if it has significant strategic or policy implications for homeland security.

<sup>2</sup>GAO, *Homeland Security: DHS Requires More Disciplined Investment Management to Help Meet Mission Needs*, [GAO-12-833](#) (Washington, D.C.: Sept. 18, 2012).

<sup>3</sup>GAO, *High-Risk Series: An Update*, [GAO-05-207](#) (Washington, D.C.: January 2005); *High-Risk Series: An Update*, [GAO-13-283](#) (Washington, D.C.: February 2013); *High-Risk Series: An Update*, [GAO-15-290](#) (Washington, D.C.: Feb. 11, 2015); and *High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, [GAO-17-317](#) (Washington, D.C.: Feb. 15, 2017).

<sup>4</sup>For examples of past GAO work, see a list of related GAO products at the end of this report.

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program's cost, schedule, and performance goals.<sup>5</sup> We also found that several of the acquisition programs faced staffing shortfalls and their requirements had changed, with many of these programs citing poorly defined requirements as a cause for changes. These challenges can contribute to poor acquisition outcomes, such as cost increases or the risk of end users—such as border patrol agents or first responders in a disaster—receiving technologies that do not work as originally intended.

We have made many recommendations over the past decade to help address these challenges. For example, we previously recommended that DHS leadership specifically assess whether adequate funding is available during all program reviews.<sup>6</sup> In response, DHS has taken several steps to improve acquisition management, such as dedicating additional resources to acquisition oversight and requiring components to certify that programs are affordable before they are approved to move through the acquisition life cycle. Nonetheless, DHS has not fully addressed several of our other recommendations. For example, we previously recommended that DHS leadership ensure all major programs fully comply with acquisition policy by obtaining department-level approval for acquisition documents before the programs are allowed to proceed and present any anticipated annual funding gaps for acquisition programs in the annual funding plan submitted to Congress.<sup>7</sup> DHS concurred with these recommendations and has taken steps to address them.

The Explanatory Statement accompanying a bill to the DHS Appropriations Act, 2015 contained a provision for GAO to develop a plan for ongoing reviews of major DHS acquisition programs, as directed in the Senate report.<sup>8</sup> This is our third annual review of major DHS acquisition programs. This report addresses the extent to which (1) DHS's major acquisition programs are on track to meet their schedule and cost goals,

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<sup>5</sup>GAO, *Homeland Security Acquisitions: DHS Has Strengthened Management, but Execution and Affordability Concerns Endure*, [GAO-16-338SP](#) (Washington, D.C.: Mar. 31, 2016). DHS approved APBs for 4 of the 6 programs between late December 2015 and January 2016, but these APBs were not approved in time for us to assess them.

<sup>6</sup>GAO, *Homeland Security Acquisitions: DHS Could Better Manage Its Portfolio to Address Funding Gaps and Improve Communications with Congress*, [GAO-14-332](#) (Washington, D.C.: Apr. 17, 2014).

<sup>7</sup>[GAO-14-332](#), [GAO-12-833](#).

<sup>8</sup>Explanatory Statement submitted by Mr. Rogers of Kentucky, Chairman of the House Committee on Appropriations, regarding H.R. 240, Department of Homeland Security Appropriations Act, 2015 (published in Cong. Record, Jan. 13, 2015, at p. H276).

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(2) major acquisition programs are making progress in meeting key performance parameters (KPP), and (3) DHS has taken actions to strengthen implementation of its acquisition policy and to improve major acquisition program outcomes.

We reviewed 26 of DHS's 71 major acquisition programs, including 24 that we reviewed in 2016. We reviewed all 15 of DHS's Level 1 acquisition programs—those with life-cycle cost estimates (LCCE) of \$1 billion or more—that were in the process of obtaining new capabilities at the initiation of our audit. To provide insight into some of the factors that can lead to poor acquisition outcomes, we also included 11 other major acquisition programs that we or DHS management identified were at risk of not meeting their schedules, cost estimates, or capability requirements. Six of these 11 programs were Level 1 acquisitions that had entered the deployment phase of the acquisition life cycle, while the other five programs were Level 2 acquisitions with LCCEs between \$300 million and \$1 billion. In total, the 26 programs we reviewed were sponsored by eight different DHS components.

For each of the 26 programs, we analyzed acquisition documentation, such as APBs, which contain information on programs' schedules, cost estimates, and KPPs—the requirements a system must meet to fulfill its fundamental purpose. Since the November 2008 update to DHS's overarching acquisition management directive, these documents have required DHS-level approval; therefore, we used November 2008 as the starting point for our analysis. We used these documents to construct a data collection instrument for each program, identifying any schedule slips, cost growth, and changes in KPP status. We subsequently shared this information with each of the 26 program offices and met with program officials to identify causes and effects associated with any schedule slips, cost growth, and KPP status changes since (1) their initial baselines and (2) January 2016—the data cut-off date of the report we issued last year. We also reviewed DHS's resource allocation policies and processes and key funding documents—including affordability certification memorandums and the Future Years Homeland Security Program (FYHSP) report to Congress for fiscal years 2017-2021, which presents 5-year funding plans for each of DHS's major acquisition programs—to assess the affordability of the 26 programs we reviewed.

In addition, we reviewed test reports and any letters of assessment from DHS's Director, Office of Test and Evaluation (formerly Director of Operational Test and Evaluation), which assess system performance during operational testing, to assess programs' progress in meeting

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KPPs. Furthermore, we reviewed DHS's acquisition policy and guidance; acquisition decision memorandums issued in calendar year 2016; and key acquisition documentation for major acquisition programs, including APBs, breach notifications for cost, schedule, or performance that exceeded baselines, and any remediation plans. We assessed DHS's acquisition management policies and processes against the *Standards for Internal Control in the Federal Government*, as well as GAO's best practices for managing acquisition programs.<sup>9</sup> Lastly, we interviewed acquisition management officials from DHS headquarters to obtain their perspectives on new and ongoing oversight initiatives intended to improve the department's management of major acquisition programs.

Appendix I presents individual assessments of each of the 26 programs we reviewed. These assessments include key information such as projected funding levels, staffing profiles, and progress against schedule and cost goals. Our objective for the 2-page assessments is to provide decision makers a means to quickly gauge the programs' progress and their potential cost, schedule, performance, or funding risks. Appendix II provides detailed information on our scope and methodology.

We conducted this performance audit from May 2016 to April 2017 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 that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

To help manage its multi-billion dollar acquisition investments, DHS has established policies and processes for acquisition management, test and evaluation, and resource allocation. The department uses these policies and processes to deliver systems that are intended to close critical capability gaps, helping enable DHS to execute its missions and achieve its goals.

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<sup>9</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014); *Best Practices: Using a Knowledge-based Approach to Improve Weapon Acquisition*, [GAO-04-386SP](#) (Washington, D.C.: January 2004).

## Acquisition Management Policy

DHS policies and processes for managing its major acquisition programs are primarily set forth in Acquisition Management Directive (MD) 102-01 and DHS Instruction Manual 102-01-001, Acquisition Management Instruction/Guidebook. DHS issued the initial version of this directive in November 2008 in an effort to establish an acquisition management system that effectively provides required capability to operators in support of the department’s missions.<sup>10</sup> DHS’s Under Secretary for Management (USM) is currently designated as the department’s Chief Acquisition Officer and, as such, is responsible for managing the implementation of the department’s acquisition policies.

DHS’s USM serves as the decision authority for the department’s largest acquisition programs: those with LCCEs of \$1 billion or greater. Component Acquisition Executives—the most senior acquisition management officials within each of DHS’s component agencies—may be delegated decision authority for programs with cost estimates between \$300 million and less than \$1 billion. Table 1 identifies how DHS has categorized the 26 major acquisition programs we review in this report, and table 7 in appendix II specifically identifies the programs within each level.

**Table 1: DHS Acquisition Levels for Major Acquisition Programs**

Level	Life-cycle cost estimates	Acquisition decision authority	Number of programs reviewed in this report
1	Greater than or equal to \$1 billion	Under Secretary for Management/Chief Acquisition Officer	21
2	\$300 million or more, but less than \$1 billion	Under Secretary for Management/Chief Acquisition Officer, or the Component Acquisition Executive	5

Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

DHS acquisition policy establishes that a major acquisition program’s decision authority shall review the program at a series of five predetermined Acquisition Decision Events (ADE) to assess whether the major program is ready to proceed through the acquisition life-cycle

<sup>10</sup>DHS has issued multiple updates to MD 102-01 and the instruction. DHS issued the current version of MD 102-01 on July 28, 2015, and the current version of the instruction on March 9, 2016. DHS also issued a separate Systems Engineering Life Cycle Guidebook (DHS Guidebook 102-01-103-01) on April 18, 2016 that outlines the technical framework underlying DHS’s acquisition management system.

phases. Depending on the program, these ADEs can occur within months of each other, or be spread over several years. Figure 1 depicts the acquisition life cycle established in DHS acquisition policy.

**Figure 1: DHS Acquisition Life Cycle for Major Acquisition Programs**

**Acquisition phases**



**Acquisition decision events (ADE)**



Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

An important aspect of an ADE event is the decision authority's review and approval of key acquisition documents. See table 2 for a description of the type of key acquisition documents requiring department-level approval before a program moves to the next acquisition phase.

**Table 2: Key DHS Acquisition Documents Requiring Department-level Approval**

Document	Description
Mission Need Statement	Provides a high-level description of the mission need, whether from a current or impending gap. Outlines only the concept of the solution to fill the gap and does not provide information on specific types of acquisitions that could provide that capability.
Capability Development Plan	Serves as the agreement between the component head, program manager and the acquisition decision authority on the activities, cost, and schedule for the work to be performed in the Analyze/Select phase.
Operational Requirements Document	Provides a number of performance parameters that must be met by a program to provide useful capability to the operator by closing the capability gaps identified in the Mission Need Statement.
Acquisition Plan	Provides a top-level plan for the overall acquisition approach. Describes why the solution is in the government's best interest and why it is the most likely to succeed in delivering capabilities to operators.
Integrated Logistics Support Plan	Defines the strategy for ensuring the supportability and sustainment of a future capability. Provides critical insight into the approach, schedule, and funding requirements for integrating supportability requirements into the systems engineering process.
Life-Cycle Cost Estimate	Provides an exhaustive and structured accounting of all resources and associated cost elements required to develop, produce, deploy, and sustain a particular program.
Acquisition Program Baseline	Establishes a program's critical baseline cost, schedule, and performance parameters. Expresses the parameters in measurable, quantitative terms, which must be met in order to accomplish the investment's goals.
Test and Evaluation Master Plan	Documents the overarching test and evaluation approach for the acquisition program. Describes the Developmental and Operational Test and Evaluation needed to determine a system's technical performance, operational effectiveness/suitability, and limitations.

Source: Department of Homeland Security (DHS). | GAO-17-346SP

DHS acquisition policy establishes that the APB is the agreement between program, component, and department-level officials establishing how systems will perform, when they will be delivered, and what they will cost. Specifically, the APB establishes a program's schedule, costs, and KPPs. DHS defines KPPs as a program's most important and non-negotiable requirements that a system must meet to fulfill its fundamental purpose. For example, a KPP for an aircraft may be airspeed and a KPP for a surveillance system may be detection range.

The APB schedule, costs, and KPPs are defined in terms of an objective and minimum threshold value. According to DHS policy, if a program fails to meet any schedule, cost, or performance threshold approved in the APB, it is considered to be in breach. Programs in breach are required to notify their acquisition decision authority and develop a remediation plan that outlines a time frame for the program to return to its APB parameters, re-baseline—that is, establish new schedule, cost, or performance

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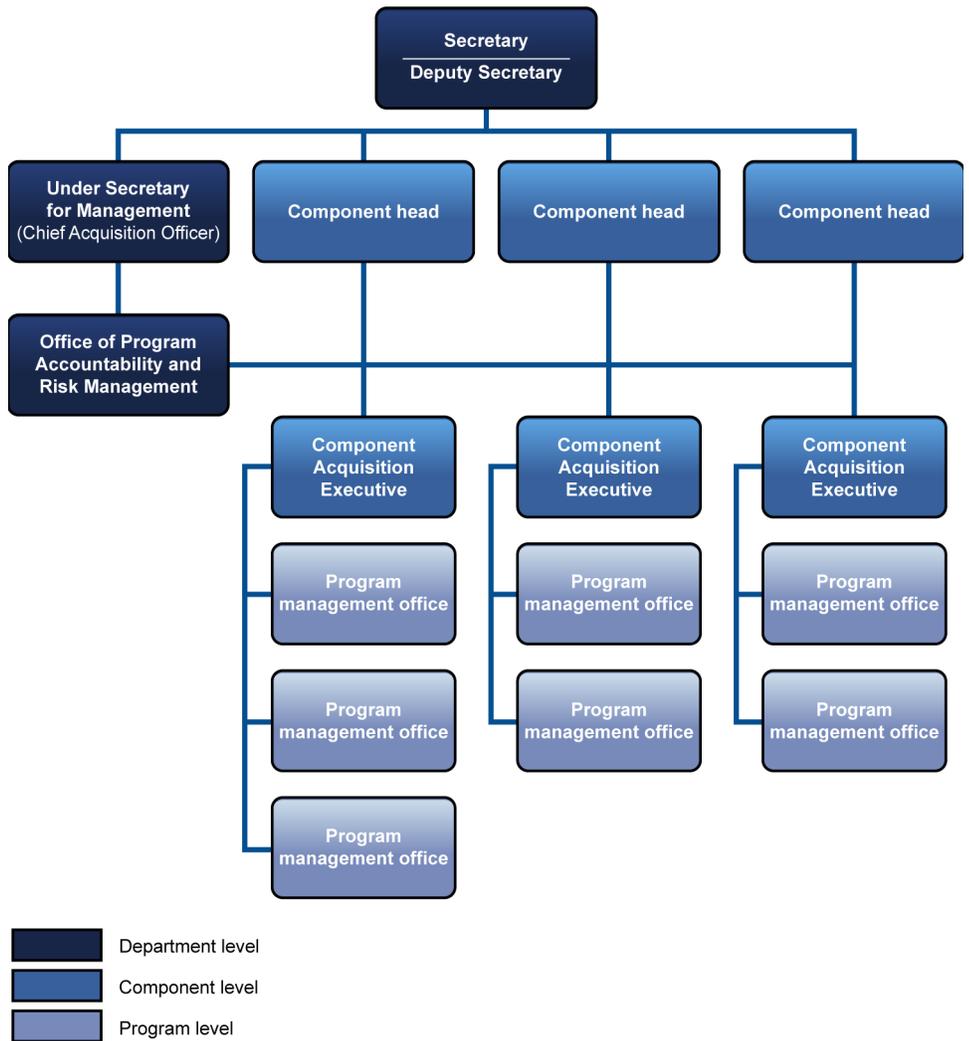
goals—or have a DHS-led program review that results in recommendations for a revised baseline.

In addition to the acquisition decision authority, other bodies and senior officials support DHS's acquisition management function:

- **The Acquisition Review Board (ARB)** reviews major acquisition programs for proper management, oversight, accountability, and alignment with the department's strategic functions at ADEs and other meetings as needed. The ARB is chaired by the acquisition decision authority or a designee and consists of individuals who manage DHS's mission objectives, resources, and contracts.
- **The Office of Program Accountability and Risk Management (PARM)** is responsible for DHS's overall acquisition governance process, supports the ARB, and reports directly to the USM. PARM develops and updates program management policies and practices, reviews major programs, provides guidance for workforce planning activities, provides support to program managers, and collects program performance data.
- **Component agencies**, such as U.S. Customs and Border Protection (CBP), the Transportation Security Administration (TSA), and the U.S. Coast Guard (USCG) sponsor specific acquisition programs. The 26 programs we review in this report are sponsored by eight component agencies.
  - **Component Acquisition Executives** within the components are responsible for overseeing the execution of their respective portfolios.
  - **Program management offices**, also within the components, are responsible for planning and executing DHS's individual programs. They are expected to do so within the cost, schedule, and performance parameters established in their APBs. If they cannot do so, programs are considered to be in breach and must take specific steps, as noted above.

Figure 2 depicts the relationship between acquisition managers at the department, component, and program level.

**Figure 2: DHS's Acquisition Management Structure**



Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

## Test and Evaluation Policy

In May 2009, DHS established policies and processes for testing the capabilities delivered by the department's major acquisition programs.<sup>11</sup> The primary purpose of test and evaluation is to provide timely, accurate

<sup>11</sup>Department of Homeland Security, Directive No. 026-06, Test and Evaluation, May 22, 2009. DHS is in the process of revising this directive and an accompanying instruction (DHS Instruction 026-06-001), but the revisions had not been approved at the time our report was issued.

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information to managers, decision makers, and other stakeholders to reduce programmatic, financial, schedule, and performance risk. We provide an overview of each of the 26 programs' test activities in the individual program assessments, presented in appendix I.

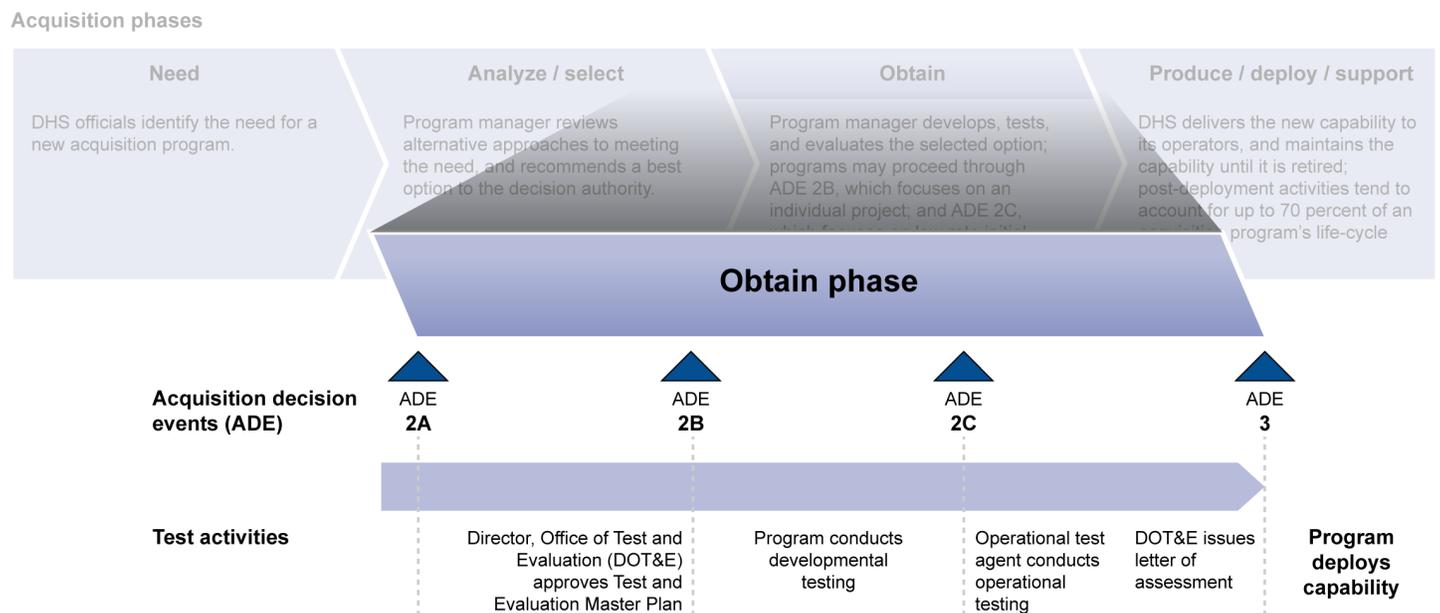
DHS testing policy assigns specific responsibilities to particular individuals and entities throughout the department:

- **Program managers** have overall responsibility for planning and executing their programs' testing strategies. They are responsible for scheduling and funding test activities and delivering systems for testing. They are also responsible for controlling developmental testing. Programs use developmental testing to assist in the development and maturation of products, product elements, or manufacturing or support processes. Developmental testing includes engineering-type tests used to verify that design risks are minimized, substantiate achievement of contract technical performance, and certify readiness for operational testing.
- **Operational test agents (OTA)** are responsible for planning, conducting, and reporting on operational testing, which is intended to identify whether a system can meet its KPPs and provide the acquisition decision authority with an evaluation of the operational effectiveness and suitability of a system in a realistic environment. Operational effectiveness refers to the overall ability of a system to provide desired capability when used by representative personnel. Operational suitability refers to the degree to which a system can be placed in field use and sustained satisfactorily. The OTAs may be organic to the component, another government agency, or a contractor, but must be independent of the developer in order to present credible, objective, and unbiased conclusions. For example, the U.S. Navy Commander, Operational Test and Evaluation Force is the OTA for the USCG National Security Cutter (NSC) program.
- **The Director, Office of Test and Evaluation (DOT&E)** is responsible for approving major acquisition programs' OTAs, operational test plans, and Test and Evaluation Master Plans (TEMP). A program's TEMP must describe the developmental and operational testing needed to determine technical performance, and operational effectiveness and suitability. As appropriate, DOT&E is also responsible for participating in operational test readiness reviews, observing operational tests, reviewing OTAs' reports, and assessing the reports. Prior to a program's ADE 3, DOT&E provides the program's acquisition decision authority a letter of assessment that includes an appraisal of the program's operational test, a concurrence

or non-concurrence with the OTA's evaluation, and any further independent analysis.

As an acquisition program proceeds through its life cycle, the testing emphasis moves gradually from developmental testing to operational testing. See figure 3.

**Figure 3: Test Activities Established by DHS Policy**



Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

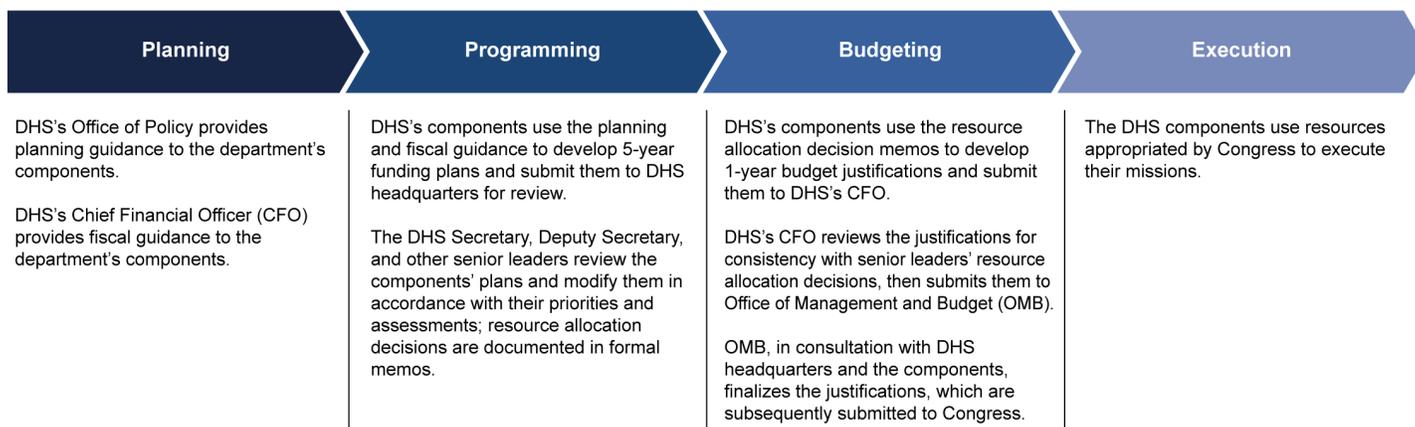
## Resource Allocation Process

DHS has established a planning, programming, budgeting, and execution (PPBE) process to allocate resources to acquisition programs and other entities throughout the department.<sup>12</sup> DHS's PPBE process produces the multi-year funding plans presented in the FYHSP, a database that contains, among other things, 5-year funding plans for DHS's major acquisition programs. DHS guidance states that the 5-year plans in the FYHSP should allow the department to achieve its goals more efficiently than an incremental approach based on 1-year plans. DHS guidance also states that the FYHSP articulates how the department will achieve its strategic goals within fiscal constraints.

<sup>12</sup>Department of Homeland Security, Planning, Programming, Budgeting, and Execution System Operating Handbook, Rev. July 2015.

According to DHS guidance, at the outset of the annual PPBE process, the department’s Office of Policy and Chief Financial Officer (CFO) should provide planning and fiscal guidance, respectively, to the department’s component agencies. In accordance with this guidance, the components should submit 5-year funding plans to the CFO; these plans are subsequently reviewed by DHS’s senior leaders, including the DHS Secretary and Deputy Secretary. DHS’s senior leaders are expected to modify the plans in accordance with their priorities and assessments, and they document their decisions in formal resource allocation decision memorandums. DHS submits the revised funding plans to the Office of Management and Budget, which uses them to inform the President’s annual budget request—a document sent to Congress requesting new budget authority for federal programs, among other things. In some cases, the funding appropriated to certain accounts in a given fiscal year can be carried over to subsequent fiscal years. Figure 4 depicts DHS’s annual PPBE process.

**Figure 4: DHS’s Annual Planning, Programming, Budgeting, and Execution Process**



Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

Federal law requires DHS to submit an annual FYHSP report to Congress at or about the same time as the President’s budget request.<sup>13</sup> This report presents the 5-year funding plans in the FYHSP database at that time.

<sup>13</sup>DHS is required to include the same type of information, organizational structure, and level of detail in the FYHSP as the Department of Defense is required to include in its Future Years Defense Program. 6 U.S.C. § 454.

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Within DHS's Office of the CFO, the Office of Program Analysis and Evaluation is responsible for establishing policies for the PPBE process and overseeing the development of the FYHSP. In this role, the Office of Program Analysis and Evaluation reviews the components' 5-year funding plans, advises DHS's senior leaders on resource allocation issues, maintains the FYHSP database, and submits the annual FYHSP report to Congress.

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## During 2016, More than Half of 26 Programs Were on Track to Meet Their Schedules and Cost Goals

For the first time since we began our annual assessments of DHS's major acquisition programs, all of the programs included in our review had a department-approved baseline. This allowed us to analyze schedule and cost changes across the portfolio of the 26 programs we assessed, which provides a foundation for measuring DHS's acquisition performance going forward. From January 2016 to January 2017, 17 of the 26 programs we assessed were on track to meet their schedule and cost goals, including 2 that experienced either a schedule acceleration or cost decrease. However, 7 of these 17 programs established their goals for the first time since our last review and 9 others had previously revised their goals. The remaining 9 of the 26 programs experienced schedule slips, including 4 that also experienced cost growth. The change in schedule for a key program acquisition milestone in 2016 ranged from a 21-month acceleration to a 75-month delay, which resulted in an average increase of 6 months across the portfolio. Additionally, although 1 program had a drop in costs, overall the total acquisition cost across the portfolio increased by \$988 million—or 1.6 percent—and the total LCCE across the portfolio increased by nearly \$1.6 billion—or 0.8 percent. The overall schedule and cost changes were largely driven by increases experienced by a few programs. For example, the full operational capability (FOC) date for TSA's Technology Infrastructure Modernization (TIM) program slipped by more than 6 years when the program revised its acquisition strategy—significantly delaying the delivery of some services to end users.

Table 3 summarizes our findings and highlights those programs with schedule or cost increases. We present more detailed information after the table and in the individual assessments in appendix I.

**Table 3: Major DHS Acquisition Programs' Schedule and Cost Changes During 2016**

Component	Program	Schedule change (in months)	Acquisition cost change (dollars in millions)	Life-cycle cost change (dollars in millions)
Customs and Border Protection (CBP)	Automated Commercial Environment (ACE)	10	71.3	419.3
	Integrated Fixed Towers (IFT)	0	0.0	0.0
	Land Border Integration (LBI) <sup>a</sup>	0	0.0	0.0
	Medium Lift Helicopter (UH-60) <sup>a</sup>	0	0.0	0.0
	Multi-Role Enforcement Aircraft (MEA) <sup>a</sup>	0	0.0	0.0
	Non-Intrusive Inspection (NII) Systems Program <sup>a</sup>	0	-190.1	-315.0
	Tactical Communications (TACCOM) Modernization <sup>a</sup>	0	0.0	0.0
	TECS (not an acronym) Modernization	9	0.0	0.0
Federal Emergency Management Agency (FEMA)	Logistics Supply Chain Management System (LSCMS) <sup>a</sup>	0	0.0	0.0
Immigration and Customs Enforcement (ICE)	TECS (not an acronym) Modernization	3	3.8	0.5
National Protection and Programs Directorate (NPPD)	Continuous Diagnostics & Mitigation (CDM)	0	0.0	0.0
	National Cybersecurity Protection System (NCPS)	9	0.0	0.0
	Homeland Advanced Recognition Technology (HART) <sup>a</sup>	0	0.0	0.0
	Next Generation Networks Priority Services (NGN-PS)	0	0.0	0.0
Science and Technology Directorate (S&T)	National Bio and Agro-Defense Facility (NBAF) <sup>a</sup>	0	0.0	0.0
Transportation Security Administration (TSA)	Electronic Baggage Screening Program (EBSP)	24	975.1	1,350.6
	Passenger Screening Program (PSP)	21	0.0	0.0
	Technology Infrastructure Modernization (TIM)	75	128.1	116.1
U.S. Coast Guard (USCG)	C4ISR <sup>b</sup>	-21	0.0	0.0
	Fast Response Cutter (FRC)	0	0.0	0.0
	H-65 Conversion/Sustainment Projects (H-65)	21	0.0	0.0
	Long Range Surveillance Aircraft (HC-130H/J)	0	0.0	0.0
	Medium Range Surveillance Aircraft (HC-144A & C-27J) <sup>c</sup>	0	0.0	0.0
	National Security Cutter (NSC)	0	0.0	0.0
	Offshore Patrol Cutter (OPC)	0	0.0	0.0
U.S. Citizenship and Immigration Services (USCIS)	Transformation	5	0.0	0.0
<b>Total</b>		<b>156</b>	<b>988.3</b>	<b>1,571.5</b>
<b>Average change in schedule</b>		<b>6</b>	<b>—</b>	<b>—</b>
<b>Cost percentage change</b>		<b>—</b>	<b>1.6</b>	<b>0.8</b>

Legend: — = not applicable.

Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

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Note: Shaded rows identify programs that experienced schedule slips, cost growth, or both.

<sup>a</sup>Program is also on track against initial schedules and cost estimates.

<sup>b</sup>C4ISR is an acronym for Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance.

<sup>c</sup>Calculations are based on the Medium Range Surveillance Aircraft's August 2016 Acquisition Program Baseline, which established initial schedule and cost goals for the restructured program.

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## During 2016, 17 Programs Were on Track

From January 2016 to January 2017, 17 programs were on track to meet their schedules or cost goals. Eight of the 17 programs were on track against their initial schedule and cost goals; that is, the schedules and cost estimates in the baseline DHS leadership initially approved after the department's acquisition policy went into effect in November 2008. The other 9 programs had re-baselined prior to January 2016 and were on track against revised schedules and cost estimates that reflected past schedule slips, cost growth, or both. However, most of the programs on track in 2016 identified risks that may lead to schedule slips or cost growth in the future.

## On Track against Initial Baselines

Of the 8 programs on track against the schedules and cost goals in their initial baselines, only 1 program received DHS approval of its initial baseline prior to December 2015. Six of the remaining programs had operated for several years without a DHS-approved baseline, which, in addition to decreasing oversight, also increased the risk of end users not getting required capabilities on time or at cost. For example, DHS leadership approved the initial APB for CBP's Non-Intrusive Inspection (NII) Systems Program in January 2016, which was more than 13 years after the program deployed initial capabilities to end users. This means that, even though capabilities were delivered to end users, the program had not followed the department's November 2008 acquisition policy. Since the NII Systems Program's initial APB was approved, the program's acquisition cost estimate decreased by \$190 million and its LCCE decreased by \$315 million. Program officials attributed these decreases to achieving a reduction in NII system purchase and maintenance costs and the replacement of some NII systems that were costly to maintain. DHS leadership also recently approved the initial APB for a newer program—the National Protection and Programs Directorate's (NPPD) Homeland Advanced Recognition Technology (HART)—in April 2016 when it entered the Obtain phase. Only 1 program—the Science and Technology Directorate's (S&T) National Bio and Agro-Defense Facility

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## On Track against Revised Baselines

(NBAF)—that we found was on track against its initial baselines in 2015 remained on track against its initial baselines in 2016.<sup>14</sup>

For context, because many baselines had been approved only recently, we also assessed the extent to which programs that were on track in 2016 had previously experienced problems. We found that 9 of these programs had previously experienced schedule slips, cost growth, or both. Specifically, all 9 of these programs had milestones that slipped an average of 4.5 years, for a variety of reasons.

In addition, 6 of these 9 programs also experienced cost growth prior to 2016; in total, acquisition costs increased by \$5 billion and LCCEs increased by nearly \$17 billion. Examples of programs with no changes during 2016, but that had experienced past schedule slips and cost growth, follow.

- CBP's Integrated Fixed Towers (IFT) program's FOC date previously slipped 5 years, which officials attributed to delays in awarding contracts and to funding shortfalls.
- From September 2010 to September 2014, NPPD's Next Generation Networks Priority Services (NGN-PS) program's acquisition cost increased by \$447 million and LCCE increased by \$386 million when officials accounted for capabilities delivered under the voice phase's second increment. From September 2014 to August 2015, the program's acquisition costs subsequently decreased by \$153 million based on a refinement of the estimate, but the LCCE increased by an additional \$100 million when officials included all sustainment costs funded by a separate program—NPPD's Priority Telecommunications Services program, which assumes responsibility for sustaining NGN-PS capabilities once they become operational—at the direction of DHS headquarters.

On the other hand, 2 USCG programs—the Medium Range Surveillance (MRS) Aircraft and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR)—that experienced past problems reported positive changes in 2016.

- In August 2016, DHS approved a revised APB for the MRS program that establishes initial schedule and cost goals for the restructured program. Specifically, the department paused the number of HC-144A

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<sup>14</sup>[GAO-16-338SP](#).

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Risks That May Cause  
Schedule Slips, Cost Growth,  
or Both in the Future

aircraft at the 18 already procured and accounted for the transfer of 14 C-27J aircraft from the U.S. Air Force as directed by Congress in fiscal year 2014.<sup>15</sup> Prior to this restructuring, the MRS program's FOC date slipped from September 2020 to September 2025 when the USCG reduced the number of HC-144A aircraft it planned to procure annually in response to funding constraints. In addition, the program's LCCE increased by \$16.4 billion when the USCG accounted for costs over this additional 5-year period, among other things.

- For C4ISR, USCG officials stated they now plan to complete the transition away from using contractor-owned proprietary software by the end of calendar year 2017, which is 21 months earlier than the program's revised APB. However, if completed by the new date, this transition would still occur more than 5 years later than the C4ISR program initially planned.

Officials from most of the 17 programs on track in 2016 identified risks that could cause schedule slips, cost growth, or both in the future. These risks include testing issues, funding gaps, and technical challenges, among other factors. For example, NPPD's Continuous Diagnostics & Mitigation (CDM) program is in the process of re-baselining to address implementation challenges discovered in 2016, which officials anticipate will increase the program's cost and lead to potential schedule slips for future capabilities. In addition, the USCG Long Range Surveillance Aircraft is currently on track to meet schedule and cost goals, but experienced significant cost increases and schedule slips from 2009 to 2012, which USCG officials primarily attributed to the decision to procure additional HC-130J aircraft. Officials have said that the USCG would need to acquire one to two HC-130J aircraft per year in order to meet the program's FOC date of March 2027. If the remaining aircraft are not delivered at this rate, the program's schedule could slip further. USCG officials said the delivery rate is dependent on the amount of funding the program receives, as the USCG has historically received HC-130Js without including them in their budget requests.

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<sup>15</sup>For more information, see GAO, *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).

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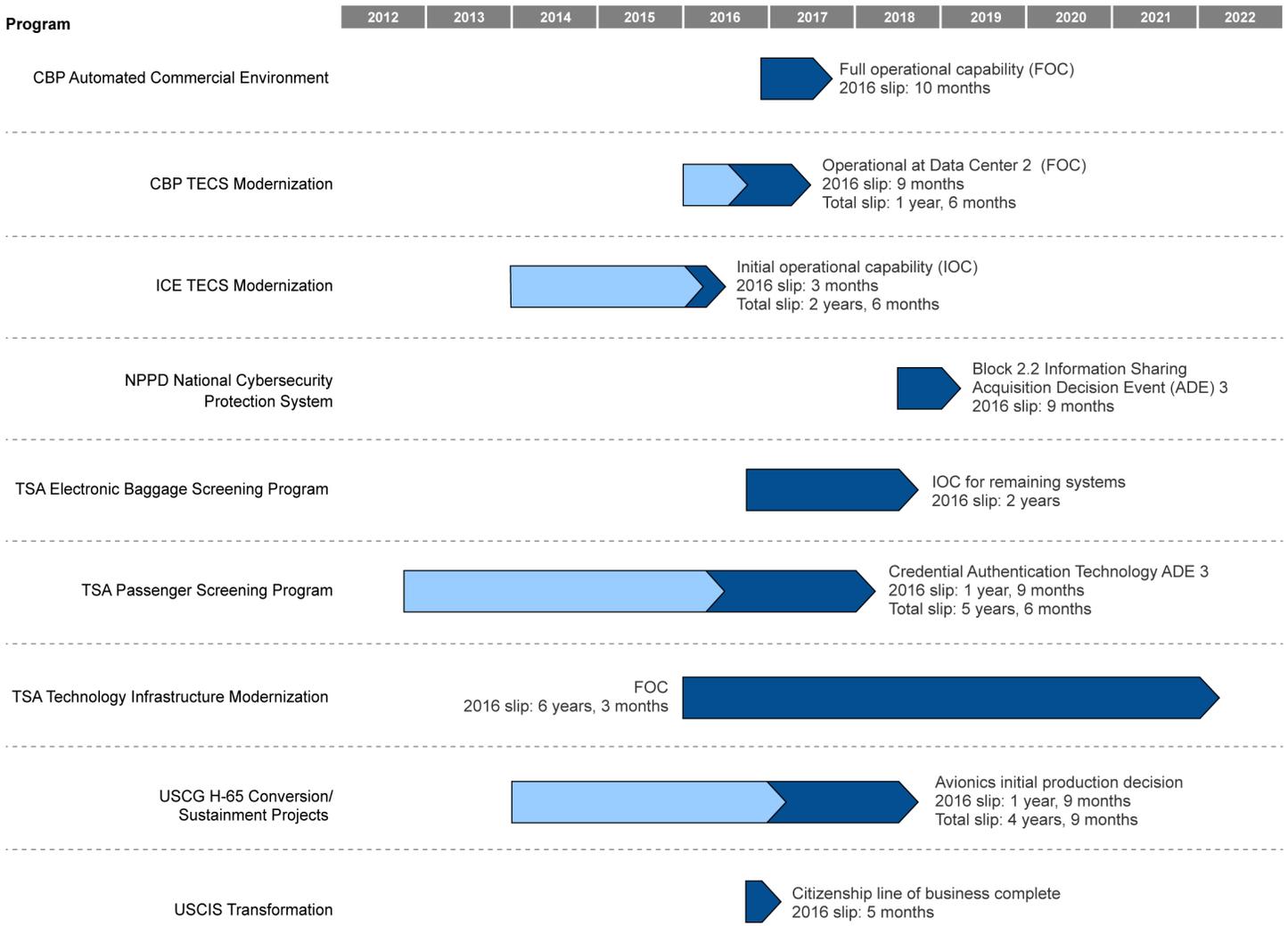
## Programs Not on Track During 2016

From January 2016 to January 2017, 9 of the 26 programs we assessed experienced schedule slips, 4 of which also experienced cost growth. The extent of these changes constituted breaches of schedules, cost goals, or both, for 6 of the 9 programs. For these 9 programs, the average schedule slip of 1.6 years was largely driven by changes in TSA's TIM program. As far as cost growth, increases of \$1.2 billion and \$1.9 billion for acquisition and life-cycle costs, respectively, were also essentially driven by one program, TSA's Electronic Baggage Screening Program (EBSP). More details follow.

## Programs with Schedule Slips during 2016

During 2016, 9 of the 26 programs in our review had at least one major acquisition milestone that slipped for various reasons. Across these programs, the average schedule slip was 1.6 years, but that average was significantly driven by a more than 6-year delay in the TSA's TIM program, which revised its acquisition strategy. Figure 5 identifies the 9 programs that experienced schedule slips and the extent to which their major milestones slipped in 2016, as well as—for additional context—in prior years. While there are various reasons for the schedule delays, the effect is that end users may not have gotten needed capabilities when they originally anticipated.

**Figure 5: Major DHS Acquisition Programs' Schedule Slips during 2016**



 Schedule slip prior to January 2016  
 Schedule slip from January 2016 to January 2017

**CBP** U.S. Customs and Border Protection  
**ICE** Immigration and Customs Enforcement  
**NPPD** National Protection and Programs Directorate  
**TSA** Transportation Security Administration  
**USCG** U.S. Coast Guard  
**USCIS** U.S. Citizenship and Immigration Services

Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

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We identified several reasons why these key milestones slipped, including the following:

- **New strategies or requirements:** For example, TSA's TIM program re-baselined in September 2016 to reflect a new acquisition strategy that is intended to address past program execution challenges that led to the program breaching its initial APB in 2014. TIM's new strategy also includes integration with the Transportation Vetting System and support for additional programs, such as TSA's Pre-Check. Additionally, TSA's Passenger Screening Program (PSP) declared an APB schedule breach in January 2016 because of delays in incorporating new cybersecurity requirements in the Credential Authentication Technology system prior to completing operational testing.
- **Technical challenges:** For example, the USCG's H-65 conversion/sustainment program declared a schedule breach in November 2016 after experiencing significant delays in developing a portion of the avionics upgrades for the H-65, which officials primarily attributed to an underestimation of the technical effort necessary to meet requirements. As a result, the avionics initial production decision has been delayed until September 2018, nearly 5 years later than initially planned.

We elaborate on the reasons for all 9 programs' schedule slips in the individual assessments in appendix I.

#### Programs with Cost Growth during 2016

During 2016, 4 of the 26 programs in our review experienced growth in both their acquisition cost estimates and LCCEs. In total, acquisition cost estimates increased by a total of \$1.2 billion and LCCEs increased by a total of \$1.9 billion, which reflects an approximately 8 percent increase in both estimates when calculated across these 4 programs. The cost growth is almost entirely driven by increases to TSA's EBSP cost thresholds to account for risk in its new estimate that reflects anticipated funding shortfalls and planning for program succession. Table 4 identifies the 4 programs with cost growth and the extent to which their estimates increased in 2016.

**Table 4: Growth in Acquisition Cost and Life-Cycle Cost Estimates (LCCE) During 2016 (in millions)**

Program	Acquisition cost estimate				LCCE			
	As of January 2016	As of January 2017 <sup>a</sup>	2016 growth <sup>a</sup>	2016 percent change	As of January 2016 <sup>a</sup>	As of January 2017	2016 growth <sup>a</sup>	2016 percent change
CBP Automated Commercial Environment	2038.8	2,110.1	71.3	3.5	4,451.1	4,870.4	419.3	9.4
ICE TECS (Not an acronym) Modernization	235.4	239.2	3.8	1.6	399.1	399.5	0.5	0.1
TSA Electronic Baggage Screening Program	12,944.9	13,920.0	975.1	7.5	17,619.4	18,970.0	1,350.6	7.7
TSA Technology Infrastructure Modernization	343.7	471.8	128.1	37.3	1,344.2	1,460.3	116.1	8.6
<b>Total</b>	<b>15,562.8</b>	<b>16,741.2</b>	<b>1,178.4</b>	<b>7.6</b>	<b>23,813.8</b>	<b>25,700.2</b>	<b>1,886.4</b>	<b>7.9</b>

Legend: CBP = Customs and Border Protection, ICE = Immigration and Customs Enforcement, TSA = Transportation Security Administration  
 Source: GAO analysis of Department of Homeland Security data. | GAO-17-346SP

<sup>a</sup>Total may not add due to rounding.

We identified a number of reasons why cost estimates increased in 2016, including the following:

- Revised acquisition strategy:** For example, DHS leadership approved new APBs for TSA’s EBSP and TIM programs in May 2016 and September 2016, respectively, which increased the programs’ cost thresholds over their previous estimates to better account for potential programmatic risks. EBSP updated its cost estimate in July 2015 in response to funding constraints and plans for a new acquisition program to succeed EBSP in fiscal year 2028. In addition, the TIM program’s cost estimates changed from its September 2015 estimate when it adopted its new acquisition strategy, as noted above. Specifically, TIM’s acquisition cost estimate increased and LCCE decreased. However, the establishment of new APB cost thresholds in September 2016 that accounted for implementation risks associated with the program’s new strategy resulted in an overall increase in both estimates.
- More realistic cost estimates:** For example, officials from CBP’s Automated Commercial Environment (ACE) program said the program’s initial cost estimate underestimated the number and size of the required development teams and included expected savings from moving to a cloud environment. In addition, officials from the Immigration and Customs Enforcement’s (ICE) TECS Modernization

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program attributed their program's acquisition increase to including actuals for a contract awarded in 2016.

We elaborate on the reasons for all 4 programs' cost growth in the individual assessments in appendix I.

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## Funding Gaps Remain a Risk for Some Programs as DHS Continues to Address Affordability Issues

Some DHS programs continue to face funding challenges, which increases the likelihood that they will cost more and take longer to deliver capabilities to end users than expected. We found that 18 of the 26 programs we assessed in this review are projected to experience life-cycle funding gaps exceeding 10 percent through fiscal year 2021.<sup>16</sup> While DHS has continued to take steps to improve the affordability of its major acquisition programs, this is 8 more programs than we found in our prior review. In March 2016, we found that 10 of the 25 programs had a projected 6-year funding gap.<sup>17</sup> Similar to last year, we compared the programs' funding plans—documented in the FYHSP report to Congress—to the programs' yearly LCCEs in order to identify any projected funding gaps for fiscal year 2016 through fiscal year 2021. We also identified the funding from previous years that programs brought into fiscal year 2016—known as carryover funding—to determine the extent to which that carryover could offset any funding gaps.

Based on this analysis, we found various reasons for programs' projected funding gaps, such as unfunded activities, new requirements, or that a sub-set of programs' annual costs were funded by organizations outside the program. In addition, the USCG's cost estimates include operations and maintenance (O&M) costs—which usually represent a majority of program costs—but their funding plans do not. We first identified this FYHSP reporting inconsistency in April 2015 and recommended that DHS account for the O&M funding the USCG plans to allocate to each of its acquisition programs in its future report.<sup>18</sup> DHS concurred with the recommendation, but the USCG has yet to take action. USCG officials said they cannot resolve this issue until the USCG updates its financial

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<sup>16</sup>DHS considers programs to be fully resourced if the latest DHS-approved funding is within 5 percent of their DHS-approved estimated costs in a given year. In March 2016, we identified programs with projected funding gaps exceeding 10 percent based on our assessment of funding and cost data across 6 years and continued that practice in this review to be consistent ([GAO-16-338SP](#)).

<sup>17</sup>[GAO-16-338SP](#).

<sup>18</sup>GAO, *Homeland Security Acquisitions: Major Program Assessments Reveal Actions Needed to Improve Accountability*, [GAO-15-171SP](#) (Washington, D.C.: Apr. 22, 2015).

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management system and transitions to DHS's common appropriations account structure, which they anticipate will occur in fiscal year 2020. Similarly, DHS officials told us that the next FYSHR report, which will be the first to include CBP's Multi-Role Enforcement Aircraft (MEA) and Medium Lift Helicopter (UH-60) as distinct programs, will also not include funding allocated to cover these programs' O&M costs because these costs are funded through a separate, central account for all of CBP's air and marine assets. As a result of these reporting issues, any calculated projected funding gap would likely be overstated for 9 USCG and CBP programs we assessed.

Aside from these specific O&M issues, program officials identified strategies to mitigate projected funding gaps, such as the following:

- **Using alternative funding sources:** For example, TSA's TIM program anticipates receiving fees from vetting programs that will cover the program's anticipated funding shortfall;
- **Program tradeoffs:** For example, officials from three CBP programs noted that they planned to address their projected funding gaps with actions such as performing only minimum maintenance, prioritizing upgrades against operational needs, and service life extension efforts; and
- **Increased funding allocation:** For example, NPPD identified that DHS plans to program additional funding to the HART program from fiscal year 2017 through 2021.

However, officials from 7 programs said that projected funding gaps could cause future program execution challenges, such as schedule slips or cost growth. For example, officials from S&T's NBAF program said that although they were working with the component to mitigate a \$38 million funding gap, affordability challenges could cause delays in the operational stand-up of the facility. We elaborate on programs' projected funding gaps in the individual program assessments in appendix I.

DHS officials recognize the need to address program affordability and, since our last review, have continued to take actions through the department's acquisition management and annual budget development processes to do so. For example, in March 2016, we found that DHS had initiated a process to assess and address affordability trade-offs based on a June 2014 requirement that components certify programs' affordability

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prior to ADEs.<sup>19</sup> We also made several recommendations at that time to enhance DHS leadership's efforts to improve the affordability of the department's major acquisition portfolio. For example, we recommended that components ensure their affordability certifications include details such as cost estimates, funding streams, and the monetary value of proposed tradeoffs. We also recommended that DHS review the affordability of 11 programs that had not had an ADE since DHS's new funding certification requirements went into effect, and consider holding ARBs to discuss the affordability of these programs, as necessary. DHS concurred with both recommendations and now requires components to provide explicit details on affordability prior to ARBs, as necessary, as well as to submit more detailed information as a part of the annual budget process. For example, to develop the President's fiscal year 2018 budget request, DHS required major acquisition programs to submit detailed data on program affordability, such as identifying all funding sources, a comparison to the program's most recent cost estimate, and the impact of any funding gaps on program schedule, cost, or performance. As a result, officials said that they were able to address any potential funding gaps for major acquisition programs through this process and determined that no programs required an ARB specifically to discuss affordability in response to our March 2016 recommendation.

In the near term, DHS officials said that they plan to publish programs' annual acquisition cost estimates and any projected acquisition funding gap in the FYHSP report for fiscal years 2018-2022, which had not yet been submitted to Congress at the time of our review. They do not, however, plan at this point to present annual LCCE gaps as we previously recommended due to a lack of reliable information.<sup>20</sup> While presenting acquisition cost estimates and any projected funding gaps are important, we continue to believe that DHS should also reflect annual LCCEs and any overall funding gaps—including O&M data, not just acquisition—in its future FYHSP reports. Adding this information would provide Congress valuable insights into DHS's total funding needs and clarify the potential funding gaps for major acquisition programs. DHS officials acknowledged the importance of communicating overall program funding gaps in the FYHSP, including O&M data. They said that DHS's efforts to implement a common appropriations account structure across the department should

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<sup>19</sup>[GAO-16-338SP](#). In June 2014, the DHS CFO established that, prior to most ADEs, components must certify programs' funding levels and identify tradeoffs necessary to address the programs' funding gaps, if any exist.

<sup>20</sup>[GAO-14-332](#).

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help them present this information in the future. We continue to monitor DHS's actions to address program affordability and, at the request of Congress, have initiated a review to assess the extent to which DHS has accounted for program's O&M costs and funding.

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## Programs Generally Did Not Meet All KPPs before Deploying Capabilities and Late Requirements Definition May Affect Program Execution

Fourteen of the 26 programs we reviewed deployed capabilities prior to meeting all of their department-approved KPPs—the most important requirements that a system must meet to fulfill its purpose. As a result, DHS faces increased risk of fielding capabilities that do not work as intended. In some cases, it may be appropriate for programs to deploy capabilities prior to meeting their KPPs, such as systems that develop and test their capabilities incrementally. However, DHS's acquisition policy requires programs to conduct operational testing, which is intended to demonstrate program performance, prior to receiving approval to pursue full-rate production or to transition into sustainment. Program officials identified multiple reasons that KPPs have not been met, such as programs had not yet tested the KPPs or KPPs were poorly defined. We found that DHS's acquisition policy requires programs to establish an initial baseline—including defined KPPs—prior to gaining full knowledge about the program's technical requirements. This timing is counter to acquisition best practices, and may potentially cause programs to experience cost growth, schedule slips, and inconsistent performance if requirements are not firmly established at the time the baseline is set.

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## More than Half of 26 Programs Have Deployed Capabilities without Meeting All KPPs

Fourteen of the 26 programs we reviewed have deployed capabilities prior to meeting all of their department-approved KPPs. All but 3 of these 14 programs have conducted some type of operational testing.<sup>21</sup> Programs evaluate KPPs during operational testing, which is intended to help DHS determine how well a system will provide the desired capability before the system is fully deployed. DHS's acquisition policy requires programs to conduct operational testing prior to receiving ADE 3 approval—the point where programs are authorized to pursue full-rate production or to transition into sustainment—but the policy also allows

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<sup>21</sup>For the purposes of this review, our definition of operational testing includes operational test and evaluation, including initial and follow-on operational test and evaluation; operational assessments; and limited user tests. While operational assessments focus on developmental efforts, they are intended to assess the adequacy of requirements and the ability to support operational testing, among other things. We chose to define operational testing in this manner to develop a more comprehensive account of how DHS is testing its major acquisition programs.

programs to initiate limited deployments of capabilities to support operational testing under certain circumstances. In some cases, programs deploy and test capabilities incrementally—an approach commonly used by information technology (IT) programs. For example, NPPD’s CDM program plans to provide sensors and tools for strengthening the cybersecurity of the federal government’s computer networks through a series of phases, which have their own KPPs that will be deployed and tested separately. Of the 26 programs we assessed, 9 have met all of their KPPs and 3 are still relatively early in the acquisition life cycle and have not yet deployed or operationally tested any capabilities.

Table 5 identifies all 26 programs we assessed, whether they have deployed or operationally assessed or tested capabilities, and their progress in meeting department-approved KPPs as of January 2017.

**Table 5: DHS Major Acquisition Programs’ Progress against Key Performance Parameters (KPP) as of January 2017**

Component	Program	Program deployed capabilities	Program conducted operational assessment or testing	Progress Against KPPs	
				Number of KPPs met	Total Number of KPPs
Customs and Border Protection (CBP)	Automated Commercial Environment (ACE) <sup>a</sup>	X	X	2	4
	Integrated Fixed Towers (IFT)	X	X	2	3
	Land Border Integration (LBI)	X	X	10	10
	Medium Lift Helicopter (UH-60)	X	X	5	5
	Multi-Role Enforcement Aircraft (MEA)	X	X	5	5
	Non-Intrusive Inspection (NII) Systems Program <sup>a</sup>	X	—	18	18
	Tactical Communications (TACCOM) Modernization	X	X	2	2
	TECS (not an acronym) Modernization <sup>a</sup>	X	X	6	6
Federal Emergency Management Agency (FEMA)	Logistics Supply Chain Management System (LSCMS)	X	X	2	7
Immigration and Customs Enforcement (ICE)	TECS (not an acronym) Modernization	X	X	2	3
National Protection and Programs Directorate (NPPD)	Continuous Diagnostics & Mitigation (CDM)	X	—	0	12
	National Cybersecurity Protection System (NCPS)	X	X	5	12
	Homeland Advanced Recognition Technology (HART)	—	—	n/a	8

Component	Program	Program deployed capabilities	Program conducted operational assessment or testing	Progress Against KPPs	
				Number of KPPs met	Total Number of KPPs
	Next Generation Networks Priority Services (NGN-PS) <sup>a</sup>	X	—	6	6
Science and Technology Directorate (S&T)	National Bio and Agro-Defense Facility (NBAF)	—	—	n/a	1
Transportation Security Administration (TSA)	Electronic Baggage Screening Program (EBSP)	X	X	3	3
	Passenger Screening Program (PSP)	X	X	16	19
	Technology Infrastructure Modernization (TIM)	X	X	2	4
U.S. Coast Guard (USCG)	C4ISR <sup>b</sup>	X	—	0	12
	Fast Response Cutter (FRC) <sup>a</sup>	X	X	6	6
	H-65 Conversion/Sustainment Projects (H-65)	X	X	16	18
	Long Range Surveillance Aircraft (HC-130H/J) <sup>a</sup>	X	—	11	13
	Medium Range Surveillance Aircraft (HC-144A & C-27J)	X	X	3	14
	National Security Cutter (NSC)	X	X	12	19
	Offshore Patrol Cutter (OPC)	—	—	n/a	6
U.S. Citizenship and Immigration Services (USCIS)	Transformation	X	X	6	8

Legend: X = yes, — = no

n/a = not applicable; program is still relatively early in the acquisition life cycle and have not yet deployed or operationally tested any capabilities.

Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

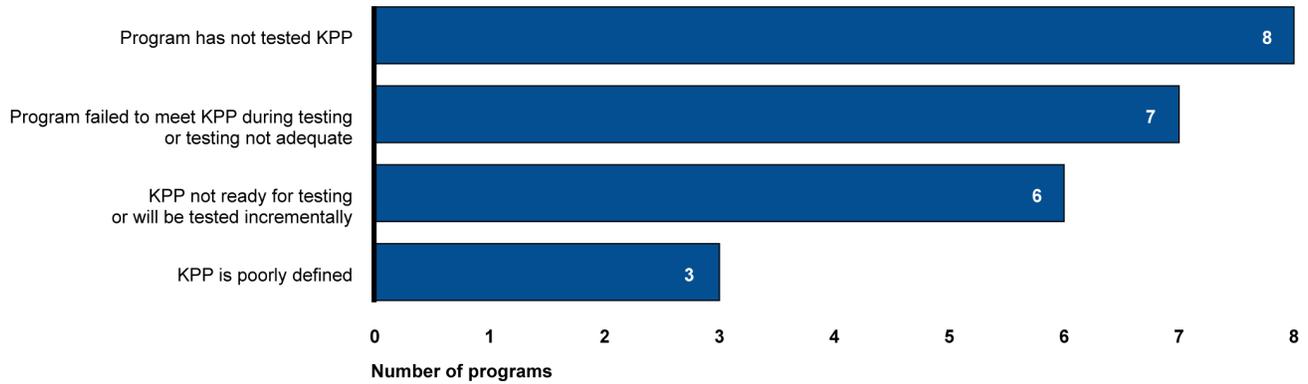
Note: Shaded rows identify programs that have deployed capabilities and not yet met all KPPs. Some programs are developing, testing, and deploying capabilities incrementally, or may have met all KPPs for certain increment(s) but not for the full system. We elaborate on the status of programs' KPPs in the individual program assessments in appendix I.

<sup>a</sup>Program status is based only on information provided by program officials because operational test results evaluating programs' KPPs were unavailable at the time of our review.

<sup>b</sup>C4ISR is an acronym for Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance.

DHS officials identified several reasons why programs have deployed capabilities, but not met all of their department-approved KPPs. For example, programs had not yet tested the KPPs or failed to meet the KPPs when they were tested. Programs identified multiple reasons that KPPs hadn't been met, which are presented in figure 6 along with the number of programs that identified them.

**Figure 6: Reasons DHS Major Acquisition Programs Have Not Met All KPPs**



KPP = Key performance parameter

Source: GAO analysis of Department of Homeland Security (DHS) data and information provided by program officials. | GAO-17-346SP

Note: Some programs identified more than one reason why KPPs had not been met.

Examples for each of the categories of reasons that programs have not met KPPs are presented below:

- **The program has not yet tested the KPP.** For example, the USCG’s C4ISR program no longer plans to independently conduct operational testing against its KPPs and will instead test C4ISR systems in conjunction with other USCG planes and vessels for which they are installed. However, the C4ISR system’s KPPs were not specifically assessed during prior HC-144, Fast Response Cutter (FRC), and NSC tests. Future testing will focus only on the ability of the C4ISR system to meet the NSC’s KPPs during the NSC’s follow-on operational testing in fiscal years 2017 and 2018. This follow-on testing, however, will only test one of the C4ISR system’s six KPPs.
- **The program failed to meet KPPs during testing, or testing was not adequate to determine KPP status.** For example, the U.S. Citizenship and Immigration Services’ (USCIS) Transformation program conducted an operational assessment on a sub-set of deployed capabilities from March 2015 to August 2015. This assessment evaluated seven of the program’s KPPs, and the program failed to meet one of them—the reliability KPP—because of the frequency of system failures. In another example, the Federal Emergency Management Agency’s (FEMA) Logistics Supply Chain Management System (LSCMS) program conducted operational testing throughout calendar year 2013, but DOT&E concluded that this testing was not adequate to determine whether the program had met its KPPs. This program subsequently met two of its seven KPPs

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through a performance test of a software release, and plans to conduct additional operational testing in March 2018 once it completes development of additional capabilities.

- **The KPPs are not ready to be tested because the required technology or system capabilities are not yet available, or because capabilities are being deployed and tested incrementally.** For example, the USCG's MRS program cannot demonstrate the C-27J's seven KPPs until it installs an entire mission system on the aircraft. Additionally, the program will not be able to demonstrate two of these KPPs—the detection and interoperability KPPs—identified in the joint operational requirements document (joint with CBP) for the C-27J aircraft because the mission system technology needed is not yet commercially available for this aircraft. In April 2016, the USCG received approval to defer these capabilities until the technology required to meet the detection KPP becomes commercially available. DHS has also directed the program to revisit requirements and, if appropriate, to initiate updating them prior to the program's next acquisition milestone. In another example, NPPD National Cybersecurity Protection System (NCPS) officials told us that the program has not yet met the five KPPs related to its Block 2.2 capabilities because these capabilities are still early in the development phase and are not yet ready to be tested. The NCPS program has met a majority of its KPPs for capabilities that have previously been deployed and tested.
- **The KPP is poorly defined.** For example, the USCG's NSC program indicated challenges in meeting three of its KPPs related to cutter-boat deployment in rough seas because the USCG and its OTA have different interpretations of the cutter-boat requirements. In January 2016, we recommended the NSC program office clarify the KPPs for the cutter boats, with which the USCG concurred.<sup>22</sup> As of January 2017, the USCG was working on a resolution.

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<sup>22</sup>GAO, *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).

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## Setting Baselines before Establishing Technical Solution May Contribute to Program Execution Challenges

While we have previously found that DHS's acquisition policy is sound, at a more granular level we found an area for improvement.<sup>23</sup> The policy requires programs to obtain department-level approval for initial APBs—including KPPs, schedules, and cost goals—at ADE 2A, that is, prior to gaining full knowledge about the program's technical requirements. This sequence is not consistent with acquisition best practices. GAO's acquisition best practices state that programs should pursue a knowledge-based acquisition approach that ensures program's needs are matched with available resources—such as technical and engineering knowledge, time, and funding—prior to starting product development.<sup>24</sup> While these initial APBs include KPPs that identify operational requirements defined by the user prior to ADE 2A, programs have not yet decomposed those KPPs into specific technical requirements or conducted key engineering reviews to develop critical knowledge about whether the proposed solution meets the user's needs. This happens after the baseline is approved and programs are officially initiated. Key engineering reviews that should be conducted prior to establishing program baselines include the following:

- **System definition review:** establishes a functional baseline, which identifies what the system is to perform.
- **Preliminary design review:** assesses the preliminary design of the system and determines whether the program is prepared to start detailed design and test development.

A third review, called the critical design review, is appropriately conducted after program initiation, which is consistent with acquisition best practices. This is a key engineering review that demonstrates whether the system's final design is sufficiently complete to begin production.

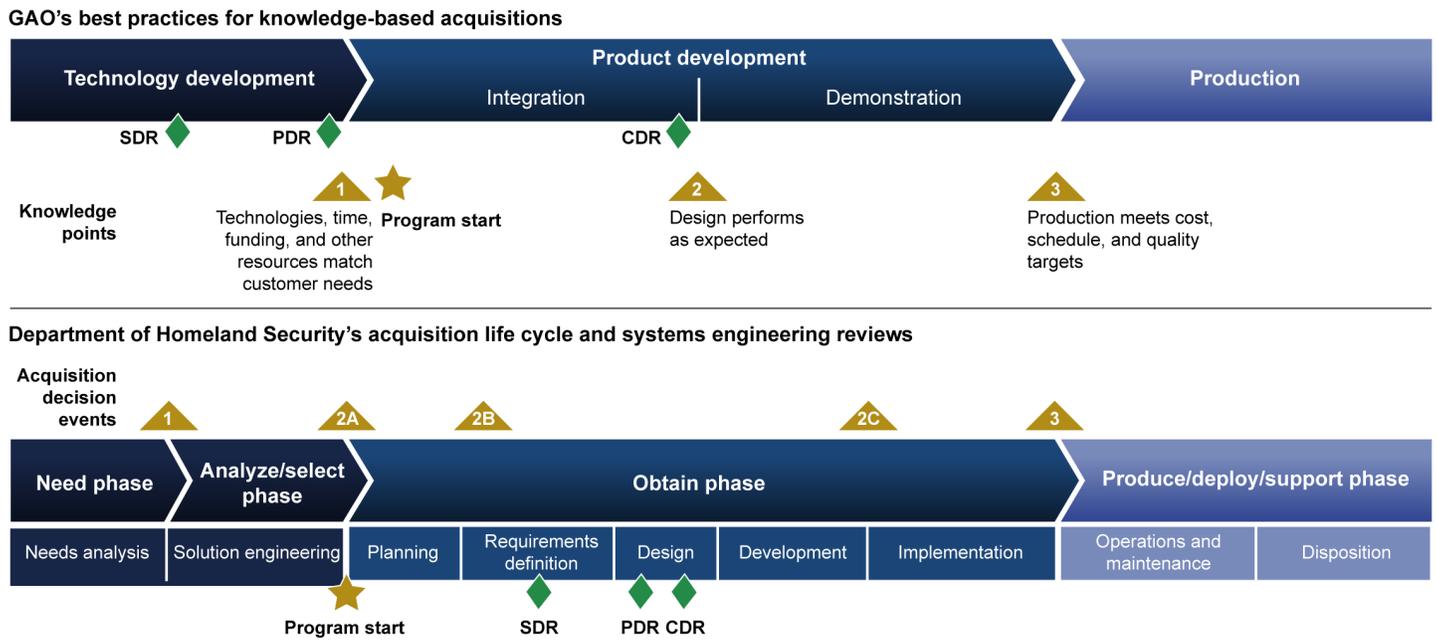
Figure 7 compares GAO's acquisition best practices to DHS's acquisition and systems engineering life-cycle phases. As shown, the system definition and preliminary design reviews are to the left of program initiation according to best practices, but are to the right of program initiation within DHS's acquisition life cycle.

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<sup>23</sup>[GAO-12-833](#).

<sup>24</sup>GAO, *Best Practices Using a Knowledge-Based Approach to Improve Weapon Acquisition*, [GAO-04-386SP](#) (Washington, D.C.: January 2004).

**Figure 7: GAO’s Knowledge-Based Acquisition Life Cycle Compared to DHS’s Acquisition Life Cycle**



SDR = System definition review  
PDR = Preliminary design review  
CDR = Critical design review

Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

Note: Figure depicts DHS’s standard systems engineering life cycle, which may be tailored depending on a program’s development needs or methodology.

By initiating programs without a well-developed understanding of system needs, DHS increases the likelihood that programs will change their user-defined KPPs, costs, or schedules after establishing their baselines. Changes such as this can be viewed as a natural occurrence as requirements are better defined. For example, officials from NPPD’s HART program told us that the cost and schedule goals in the program’s approved APB may change once they award the initial contract and receive the contractor’s technical solution for meeting the program’s already-established KPPs. In addition, we found in March 2016 that several programs had changed KPPs at least once since DHS’s current acquisition policy went into effect in 2008, and that KPP changes were associated with schedule slips and cost growth.<sup>25</sup> We also found that 9 of

<sup>25</sup> [GAO-16-338SP](#). We found that 11 of the 12 programs with KPP changes since 2008 had experienced schedule slips, and 9 of the 11 programs had also experienced cost growth.

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the 12 programs that changed KPPs attributed those changes to poorly defined or unattainable requirements, and officials from 12 programs said that they may change KPPs in the future. Since March 2016, at least one additional program—TSA’s TIM program—made changes to its KPPs and we anticipate that more programs will need to make changes to KPPs in the future to better reflect system requirements. For example, officials from ICE’s TECS Modernization program said that they will not be able to demonstrate the program’s concurrent user KPP because the minimum goal far exceeds the current number of system users.

DHS leadership previously acknowledged that the department has had difficulty defining KPPs, and senior DHS officials told us in December 2016 that they are continuing efforts to help programs define KPPs more effectively. However, officials also noted that there is a lack of systems engineering capability within the agency, which is an ongoing challenge. Officials further agreed there is room to refine the acquisition processes and told us that they are working with S&T to better align systems engineering efforts with the acquisition life cycle. For example, DHS officials said that they are working to adapt the acquisition processes for agile development—the department’s preferred development approach for IT programs—which is currently being piloted by some DHS major acquisition programs. While DHS’s efforts may allow for increased S&T involvement in the acquisition process, placement of the requirements definition and key engineering reviews earlier in the acquisition life cycle could yield better outcomes regardless of the development approach pursued by programs. Without also matching the program’s technical requirements and resources at the time KPPs are defined, DHS increases the risk that programs will continue to experience execution challenges, including cost growth, schedule slips, and inconsistent performance as requirements change after programs are initiated. By accumulating more knowledge before programs establish baselines and begin development, per acquisition best practices, DHS can place major programs in a better position to succeed, which ultimately means an increased likelihood of end users obtaining the capabilities they need within expected costs and time frames.

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## DHS Has Taken Steps to Strengthen Management of Its Major Acquisition Programs, but Leadership Decisions Not Always Fully Documented

In 2016, DHS made positive strides to strengthen its management of major acquisition programs. For example, DHS established new processes for assessing programs' staffing needs and monitoring major acquisition program progress. While promising, it is too soon to tell if these processes will contribute to positive outcomes because DHS is still working on how to implement them and use them to support more forward-looking planning decisions. In addition, DHS revised the instruction for implementing the department's acquisition policy to reflect changes made since the previous version was issued—some of which reflect past GAO recommendations. In addition, the new instruction includes changes to the documentation approvals needed before programs advance through the acquisition life cycle and to DHS's breach policy.

Our analysis indicates that DHS made progress in implementing these documentation requirements more consistently in 2016 than we have found in the past. For example, DHS leadership generally approved all the required key acquisition documentation prior to approving programs to proceed through the acquisition process. However, DHS leadership could better document its rationale for decisions made at ADEs to increase insight the department and external stakeholders have into acquisition management decisions. Further, we also found that no programs in our review had reported performance breaches and that DHS's policy does not clearly define at what point not meeting KPPs constitutes a performance breach. Without insight into potential performance issues identified through breaches, DHS is at risk of fielding capabilities that do not work as intended.

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## New DHS Processes Intended to Improve Acquisition Management

DHS has established new processes that could improve acquisition management by addressing longstanding issues related to acquisition workforce shortfalls and program execution challenges we have identified in the past.<sup>26</sup> Specifically, DHS revised its process for assessing major acquisition program staffing needs and established a process to monitor major acquisition program progress across a variety of factors and categories DHS deemed were important for successful program execution. However, it is too early to tell what impact these efforts will have on program outcomes because DHS is still developing implementation plans for these new processes.

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<sup>26</sup>For example, see [GAO-16-338SP](#), [GAO-15-171SP](#), [GAO-15-290](#), and [GAO-12-833](#).

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## Acquisition Program Staffing Assessments

We have highlighted DHS acquisition management issues in our high-risk updates since 2005—most recently in February 2017—and identified five outcomes that could strengthen DHS’s management of its acquisitions.<sup>27</sup> One of these outcomes is that DHS assess and address whether sufficient numbers of trained acquisition personnel are in place at the department and component levels. In addition, we previously found that staffing shortfalls can impact a program’s ability to execute and may introduce risks leading to schedule slips, cost growth, or both in the future. For example, in March 2016, we found that staffing shortfalls limited NPPD NCPS’s ability to perform testing, oversee contractors, and manage finances.<sup>28</sup> In response, DHS’s PARM initiated a process for assessing the staffing needs of its major acquisition programs in fiscal year 2014 and conducted a second assessment in fiscal year 2015. PARM collected key information such as the total staffing needed—including positions identified as critical—actual staffing levels, and mitigation strategies to fill any vacancies, among other items. However, these assessments collected retrospective information on whether programs were sufficiently staffed in those fiscal years and did not collect current or future program staffing need data. In addition, some of the fiscal year 2015 staffing assessments were not approved until January 2017, limiting the usefulness of the assessments given that the data was over a year old.

In June 2016, the department began tracking only critical position vacancies rather than assessing all acquisition-related positions.<sup>29</sup> PARM officials said they made this change to capture staffing data in a timely manner, document progress in filling key staffing gaps, and help the department mitigate remaining gaps. Consequently, some programs were assessed as being sufficiently staffed because they had few or no critical position vacancies, despite these programs identifying shortfalls in the programs’ total staffing need. For example, NPPD’s CDM program reported a total staffing need of 51 full-time positions, 19 of which were considered critical. NPPD also reported that CDM had only 1 vacancy out of its 19 critical positions. However, CDM officials told us they had only 31 of the 51 staff they needed in total, which represents a 39 percent

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<sup>27</sup>[GAO-17-317](#).

<sup>28</sup>[GAO-16-338SP](#).

<sup>29</sup>DHS considers critical acquisition program management positions to be those in which the primary duties are supervision, leadership, or oversight performed by experienced acquisition program management personnel. These positions typically include inherently government duties or functions.

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shortfall overall. We present more information on programs' staffing profiles in the individual program assessments in appendix I.

After we raised questions about whether this approach would limit department insight into programs' total staffing needs in October 2016, PARM revisited its decision to track only critical position vacancies and revised its approach for future staffing assessments. In December 2016, DHS approved a new staffing instruction that will require major acquisition programs to submit and annually update staffing plans identifying total staffing needs, but also track critical position vacancies quarterly, among other things. According to PARM officials, the agency is developing guidance and templates intended to bring clarity to the new policy and limit potential inconsistencies in interpretation across the programs, such as what positions programs determine to be critical.

In addition, the new staffing instruction requires programs to develop a multi-year staffing plan that identifies future staffing needs. PARM officials told us that they plan to pilot the new staffing assessment process in 2017 and hope to complete the first assessment in time to inform the department's fiscal year 2019 budget request. If implemented as intended, the new staffing assessment process would improve PARM's insight into major acquisition program staffing needs and assist the department in developing mitigation strategies to address current staffing gaps and planning for future staffing needs.

## Acquisition Program Health Assessment

In October 2016, DHS established the Acquisition Program Health Assessment (APHA), a process intended to monitor major acquisition programs' progress. PARM initiated efforts to develop the APHA in February 2015 after DHS's Deputy USM directed it to lead development of a holistic, objective, repeatable process for evaluating the department's major acquisition programs and reducing duplicative reports. PARM established a working group with representatives from all ARB stakeholder organizations—such as the CFO, Chief Information Officer (CIO), Chief Procurement Officer, DOT&E, and the Joint Requirements Council (JRC)—and each of DHS's operational components, which developed a weighted assessment methodology. The APHA assessment methodology consists of a number of factors within several categories, such as program management, financial management, contract management, performance, and human capital, which DHS deemed were important for successful program execution. Each factor was defined and is rated by the stakeholder with primary responsibility for that area within the department. For example, DOT&E defines and rates programs on the factor related to operational testing, whereas the CFO defines and rates

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programs on the factor related to LCCEs. The factor ratings are then used to develop category ratings, which in turn, feed into a program's single overall APHA score.

DHS is still working on its implementation and it will take time to determine whether it will be an effective acquisition management tool. According to PARM officials, they plan to utilize the APHA results to inform DHS leadership about major acquisition programs through monthly briefings and quarterly reports, as well as reports to external stakeholders. For example, the APHA will inform a section of the department's annual Comprehensive Acquisition Status Report to the Senate and House appropriations committees starting in fiscal year 2017 and will provide the score that the DHS CIO reports for each major acquisition program on the Office of Management and Budget's IT Dashboard.

However, senior DHS officials noted that while the department has made progress in developing APHA, they still have work to do to refine and strengthen the process, such as determining what constitutes a good APHA score and turning it into a leading indicator of program health versus a lagging indicator. DHS officials have shared information on the department's efforts to establish the APHA process with us, and we will continue to review DHS's efforts to evolve and implement the APHA process moving forward.

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### DHS Revised Its Acquisition Policy Instruction to Be More Effective, but Has Not Fully Documented Decisions

In March 2016, DHS revised the acquisition policy instruction for implementing MD-102 to provide guidance for successful program planning, management, and execution. Some of the revisions reflect changes DHS previously made in response to past GAO recommendations, and the new instruction also includes changes to the documentation that programs are required to get approved before advancing through the acquisition life cycle. The revisions also set forth the process programs must follow if they experience a breach. DHS has made progress in implementing these documentation requirements more consistently than we have found in the past, but DHS leadership could better document its rationale for key acquisition decisions to increase department and external stakeholder insight into acquisition management decisions.

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DHS Better Defines Responsibilities and Strengthens Oversight of Requirements

Over the past 3 years, DHS has made changes that reflect prior GAO recommendations to clarify roles and responsibilities and provide better oversight, which are now included in its revised acquisition policy instruction. For example:

- **Clarifying roles and responsibilities.** In March 2015, we found that DHS's acquisition policy did not clearly differentiate the roles and responsibilities of DHS's PARM and the Enterprise Business Management Office in the Office of the CIO, which has the primary responsibility for ensuring IT investments align with DHS's missions and objectives.<sup>30</sup> We recommended that DHS clarify the roles and responsibilities of PARM and other DHS oversight organizations to improve coordination, limit overlap of responsibilities, and reduce duplicative efforts at the component level. In April 2015, DHS's Acting Deputy USM issued an acquisition decision memorandum to clarify the respective acquisition responsibilities of PARM, the Office of the CIO, and other members of DHS's ARB, and in March 2016, DHS revised its policy instruction to reflect these changes.
- **Re-establishing the JRC.** In November 2008, we found that DHS had not effectively implemented or adhered to its review process for major acquisitions and recommended that DHS reinstate the JRC to review and approve acquisition requirements and assess potential duplication of effort.<sup>31</sup> In June 2014, the Secretary of Homeland Security directed the creation of a joint requirements process, led by a component-composed and chaired JRC, and in March 2016, DHS revised its policy instruction to reflect the addition of the JRC as an acquisition oversight body. Among other responsibilities, the JRC is to provide requirements-related advice and validate key acquisition documentation to prioritize requirements and inform DHS investment decisions, such as the joint-operational requirements document between USCG and CBP for a common aircraft mission system. In October 2016, we found that the re-establishment of the JRC after many years without such an active body is a positive demonstration of senior-level commitment to improving the DHS-wide capabilities and requirements processes and has the potential to help DHS reduce duplication and make cost-effective investments across its portfolio

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<sup>30</sup>GAO, *Homeland Security Acquisitions: DHS Should Better Define Oversight Roles and Improve Program Reporting to Congress*, [GAO-15-292](#) (Washington, D.C.: Mar. 12, 2015).

<sup>31</sup>GAO, *Department of Homeland Security: Billions Invested in Major Programs Lack Appropriate Oversight*, [GAO-09-29](#) (Washington, D.C.: Nov. 18, 2008).

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DHS Updates Acquisition Documentation Requirements, But Leadership Decisions Not Always Fully Documented

over time.<sup>32</sup> However, the JRC is still developing a process to prioritize requirements to inform budget decisions.

DHS's March 2016 revision to the acquisition policy instruction also included changes to the acquisition documentation required to inform ADEs, but DHS leadership did not always document its rationale for key acquisition decisions. In September 2012, we found that, in most instances, DHS leadership had allowed programs to proceed with acquisition activities without obtaining department-level approval of key acquisition documentation—such as APBs, LCCEs, and operational requirements documents—as required by its acquisition policy.<sup>33</sup> As a result, we recommended DHS ensure all programs obtain department-level approval for key acquisition documentation before approving their movement through the acquisition life cycle to mitigate risks of execution challenges, such as cost growth and schedule slips. DHS concurred with this recommendation and we have continued to monitor the agency's progress in addressing this recommendation through our annual assessments and high-risk updates.<sup>34</sup> Key changes to the acquisition documentation required to inform ADEs include:

- **ADE 2A:** DHS now requires programs to obtain department-level approval for program study plans for performing analysis of alternatives and receive technical assessments conducted by S&T and the CIO at this decision point.<sup>35</sup>
- **ADE 2C:** DHS now requires programs to update and obtain department-level approval for several documents at ADE 2C, including, but not limited to current APBs, LCCEs, and TEMPs. The

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<sup>32</sup>GAO, *Homeland Security Acquisitions: Joint Requirements Council's Initial Approach Is Generally Sound and It Is Developing a Process to Inform Investment Priorities*, [GAO-17-171](#) (Washington, D.C.: Oct. 24, 2016).

<sup>33</sup>[GAO-12-833](#). We found that of the 66 DHS programs we reviewed that were required to obtain department-level approval of key documents since MD-102 went into effect in November 2008, only 4 programs obtained department-level approval for all required key acquisition documents; 30 programs received department-level approval for some of the required key acquisition documents; and 32 programs did not obtain department-level approval for any of the required key acquisition documents.

<sup>34</sup>For example, see [GAO-17-317](#), [GAO-16-338SP](#), [GAO-15-290](#), and [GAO-15-171SP](#).

<sup>35</sup>In January 2017, DHS issued a directive that S&T conduct the technical assessments for major acquisition programs. For IT programs, DHS's CIO will co-lead these assessments with S&T.

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previous instruction had no formal documentation requirements for this decision point.

We reviewed acquisition decision memorandums—the department’s official repository for key acquisition management decisions—issued in calendar year 2016 and identified that 14 major acquisition programs received ADE approval in 2016. Half of these programs had ADEs before DHS revised the acquisition policy instruction in March 2016, while the other half had ADEs after March 2016. We reviewed the documentation for each program compared to the requirements in place at the time of its ADE and found that DHS leadership had generally approved the required key acquisition documentation—including APBs, LCCEs, and operational requirements documents—for all 14 programs according to the requirements in place at the time. However, DHS had not approved some of the required documentation for 4 programs—CBP’s Tactical Communications (TACCOM) Modernization and UH-60, NPPD’s HART, and TSA’s TIM.

- CBP’s TACCOM program did not have a department-approved Acquisition Plan when leadership granted it ADE 3 approval in January 2016. CBP officials told us that the Acquisition Plan did not complete the approval process prior to its ADE 3 because of conflicting guidance delivered to the program regarding the content of the plan. However, these officials stated that the program subsequently updated the Acquisition Plan and submitted it for department approval, which they expect to receive by early calendar year 2017.
- CBP’s UH-60 program did not have a department-approved Integrated Logistics Support Plan, TEMP, or Systems Engineering Life Cycle Tailoring Plan when DHS leadership granted it ADE 2B approval in January 2016. DHS leadership required the program to update its Integrated Logistics Support Plan and, as of December 2016, program officials said they had submitted a draft for signature. Program officials also told us that DOT&E said that a TEMP was unnecessary because the program completed operational testing in 2012 and DHS leadership only required that the program conduct minimal flight checks on future aircraft. Program officials acknowledged they had no Systems Engineering Life Cycle Tailoring Plan for the UH-60 program, and noted that the systems engineering reviews for the reconfigured aircraft are being performed by the U.S. Army.
- NPPD’s HART program received ADE 2A approval in May 2016, but did not receive DHS approval for all of the new documentation

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requirements under the March 2016 acquisition policy instruction revision. Specifically, the program received a technical assessment from S&T but not from DHS's CIO, as was required. Program officials noted that they were not aware of the requirement for a CIO technical assessment, but that DHS's CIO did review HART's documentation and is a part of the program's source selection evaluation team.

- TSA's TIM program received a combined ADE 2A/2B approval in October 2016, but did not receive approval for the Analysis of Alternatives Study Plan, as required. However, TIM did receive DHS approval of its new technical approach that was developed in close collaboration with DHS's CIO and subject matter experts from S&T, among other organizations, prior to its ADE approval. A senior DHS official stated that TIM's new technical approach satisfied the Analysis of Alternatives Study Plan requirement based on the activities completed.

In all four cases, there is no acquisition decision memorandum granting these programs approval to deviate from the documentation requirements, as outlined in DHS policy.

While DHS made progress implementing its documentation requirements in 2016, DHS leadership made some decisions that were inconsistent with DHS's acquisition policy for programs that did have all the required documentation approved. For example, DHS leadership granted CBP's Land Border Integration (LBI) and NII programs ADE 3 approval while simultaneously requiring CBP to identify a final year for each program. As a result, DHS approved the programs to transition into sustainment based on approved LCCEs that did not account for each programs' full costs, which is inconsistent with both the current and past versions of DHS's acquisition policy instruction. Senior DHS officials said that they had the knowledge to support ADE 3 approval for the programs because the approved LCCEs for both LBI and NII covered at least one cycle of technology replacement past each program's FOC dates and that they had discussed plans for follow-on capabilities at each programs' ADE. Officials from both programs said they will update their programs' LCCEs in 2017 to reflect all costs through each programs' identified end year. Senior DHS officials acknowledged that the department could better document these decisions and leadership's rationale in acquisition decision memorandums.

In other cases, we found that DHS leadership took steps to ensure programs complied with its acquisition policy. For example, CBP's ACE program requested permission to waive the requirement to complete all

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operational testing prior to FOC, but DHS leadership denied that request. In addition, DHS leadership withheld ADE 1 approval for the USCG's Motor Lifeboat program until it received JRC validation of its mission needs documentation and submitted it to DHS for approval, as required.

Federal internal control standards state that to achieve objectives and respond to risks, agencies should clearly document and communicate significant events in a manner that allows for effective oversight and examination.<sup>36</sup> DHS's acquisition policy instruction indicates that acquisition decision memorandums document acquisition decisions, direction, guidance, and any assigned actions. However, the policy instruction does not specify that leadership's rationale for those actions be included in the memorandums. DHS leadership's decisions to approve programs to proceed through the acquisition process without meeting all acquisition policy instruction requirements may be reasonable in any given case. For example, it can take months to obtain department-level approval for key acquisition documentation, and it may take time for DHS to build the capacity to conduct the new S&T and CIO assessments and implement the policy across the department. However, unless the rationale for these decisions is documented and communicated through acquisition decision memorandums, effective oversight and insight into approval decisions for internal and external stakeholders is limited.

Updated DHS Breach Policy  
Not Clear on Timing for  
Reporting Performance  
Breaches

DHS's March 2016 revised acquisition policy instruction also includes changes to the department's breach policy, which applies to programs that fail to meet any cost, schedule, or performance threshold in a program's approved APB. However, the policy instruction does not specifically discuss how to determine whether a performance breach has occurred, and we found that no programs had reported a performance breach. Among other changes, DHS's revision requires programs to notify department- and component-level leadership via formal memorandum within 30 calendar days of an identified breach (cost, schedule, or performance). The revision also removed the requirement that programs submit breach remediation plans to DHS leadership within 30 days of this notification and take certain corrective actions—such as returning to its APB parameters, re-baselining, or having a DHS-led program review that results in recommendations for a revised baseline—within 90 days of the breach occurrence. Under the revised instruction, programs are now directed to work with the Component Acquisition Executive to determine an appropriate timeframe in which to complete remediation planning after

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<sup>36</sup>[GAO-14-704G](#).

submitting a breach notification, and to take corrective actions within the timeframe established by DHS as documented in an acquisition decision memorandum approving the program’s remediation plan. In general, programs continue to execute planned activities while conducting breach remediation planning efforts, unless otherwise directed by DHS leadership.

In calendar year 2016, 10 major acquisition programs—including 6 that we reviewed in more depth—submitted schedule or cost breach notification memorandums to component and DHS leadership. Three of the programs declared the breaches before DHS revised the acquisition policy instruction, while the rest declared breaches afterwards. These programs took varying lengths of time to submit remediation plans, and DHS approved the remediation plans for all programs. Table 6 depicts the status (as of February 2017) of the 10 programs that had reported a cost or schedule breach in 2016.

**Table 6: Status of DHS Major Acquisition Programs that Reported Breaches during Calendar Year 2016**

Program	Type of breach (Schedule or Cost)	Date breach was reported	Number of days until remediation plan submitted	DHS approved remediation plan (as of February 2017)
TSA Passenger Screening Program	Schedule	January 2016	126	Yes <sup>b</sup>
TSA Security Technology Integrated Program	Schedule	February 2016	96	
ICE TECS Modernization	Schedule	February 2016	0 <sup>a</sup>	Yes
USCG Nationwide Automatic Identification System	Schedule	March 2016	0 <sup>a</sup>	Yes
CBP TECS Modernization	Schedule	April 2016	0 <sup>a</sup>	Yes
TSA Financial Systems Replacement Program	Cost and Schedule	April 2016	75	Yes
DNDO Financial, Acquisition and Asset Management Solution	Schedule	April 2016	54	Yes
CBP Automated Commercial Environment	Cost and Schedule	June 2016	0 <sup>a</sup>	Yes
USCIS Transformation	Schedule	October 2016	30	Yes
USCG H-65 Conversion/Sustainment Projects	Schedule	November 2016	0 <sup>a</sup>	Yes

Legend: TSA = Transportation Security Administration, ICE = Immigration and Customs Enforcement, USCG = U.S. Coast Guard, CBP = Customs and Border Protection, DNDO = Domestic Nuclear Detection Office, USCIS = U.S. Citizenship and Immigration Services

Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

Note: Shaded rows identify programs that reported breaches under the October 2011 version of the acquisition policy instruction, which required programs to submit breach remediation plans within 30 days of notifying DHS of a breach. Under the March 2016 acquisition policy instruction revision, there is no standard timeframe in which programs must submit breach remediation plans.

<sup>a</sup>0 indicates a program submitted its remediation plan at the same time as its breach notification.

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<sup>b</sup>TSA submitted a combined breach remediation plan for both the Passenger Screening Program and Security Technology Integrated Program because the cause of their breaches were interdependent.

As a part of its review process, DHS requested that at least two programs make revisions to their remediation plans before they were approved. For example, DHS issued an acquisition decision memorandum in December 2016 disapproving the USCIS Transformation program's remediation plan, and directing that USCIS stop planning and development of new capabilities and update its breach remediation plan, among other things. DHS subsequently approved a revised breach remediation plan for the Transformation program in February 2017. In addition, TSA submitted three versions of its combined breach remediation plan for both PSP and the Security Technology Integrated Program over the span of about 5 months, before DHS leadership ultimately approved the final plan in January 2017. DHS issued an acquisition decision memorandum in July 2016 directing TSA to make significant changes to its initial breach remediation plan submitted in May 2016. PARM officials confirmed they received TSA's revised breach remediation plan for these programs in August 2016, but requested additional changes, which were reflected in a final version submitted in October 2016. According to these officials, the requested changes were made during a meeting with the program managers and not documented in an acquisition decision memorandum. They added that PARM is in communication with the component and program as they develop their remediation plans, and also updates DHS leadership on programs' breach status on a monthly basis; however, officials noted that the communication between DHS and the program is informal and not always documented through acquisition decision memorandums unless DHS leadership has significant concerns about the breach. We will continue to monitor DHS's implementation of its updated breach policy, including documentation of the department's communication with programs during their breach remediation planning efforts.

We also found that the revised acquisition policy instruction is not clear as to how programs are to determine when a performance breach has occurred. No program in our review had reported a performance breach despite 14 programs not meeting KPPs, including 3 programs that DHS had granted ADE 3 approval. Some program officials we spoke to said that they did not report a performance breach to DHS headquarters because the programs planned to meet all KPPs during future test events. Senior DHS officials told us programs typically experience a cost or schedule breach prior to a performance breach, and that they consider the performance breach policy to apply towards the end of a program's

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acquisition life cycle, such as after it begins operational testing. In addition, senior DHS officials said they frequently discuss program performance at ARBs and prior to granting programs ADE 3 approval. However, DHS's acquisition policy instruction revision states that the breach policy applies once a program's initial APB is approved at ADE 2A through FOC, and does not specify at what point during this timeframe programs should have met KPPs.

Moreover, while some programs may experience schedule or cost breaches earlier in the acquisition life cycle, these breaches or actions programs take to remediate these breaches may not be related to performance issues. For example, CBP's IFT program experienced a schedule breach in November 2012 due to delays in the initial contract award process and anticipated funding shortfalls. DHS leadership removed IFT from breach status in December 2015—one month after the program's OTA conducted a limited user test on equipment deployed on the Arizona border. Based on the test data, the OTA was unable to determine if the system met its identification range KPP. The program has not declared a performance breach because the IFT program manager did not concur with several of the test results due to testing limitations. DHS granted the program ADE 3 approval in 2013 prior to this testing, which means the program has the authority to continue fielding equipment that may not work as intended.

In June 2014, we found that the USCG's acquisition guidance did not clearly specify the conditions—particularly the timing—that would constitute a performance breach and that DHS approved two USCG programs—FRC and MRS's HC-144A—to enter full-rate production without having demonstrated all of their KPPs.<sup>37</sup> We recommended the USCG revise its acquisition guidance to specify when performance standards should be met and to clarify the performance data used to determine whether a performance breach has occurred. The USCG concurred with our recommendations and updated its component-level policy in May 2015 to define a performance breach occurrence, specify when performance standards should be met (such as in formal follow-on operational testing), and to outline the actions a program must take following a breach to resolve the performance shortfall. However, DHS's department-level policy does not contain similar guidance.

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<sup>37</sup>GAO, *Coast Guard Acquisitions: Better Information on Performance and Funding Needed to Address Shortfalls*, [GAO-14-450](#) (Washington, D.C.: June 5, 2014).

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Until DHS clarifies its acquisition policy instruction, it may be difficult for programs to determine when, or by what measure, a breach of its KPPs has occurred and, therefore, when to notify DHS of the occurrence. By allowing programs to continue re-testing capabilities that have failed to meet KPPs without submitting performance breach notifications and remediation plans, DHS lacks insight into the root causes of system failures to address performance issues that may also impact a program's schedule and cost estimates moving forward. In addition, programs could potentially continue to field capabilities that do not fully meet KPPs or test and re-test indefinitely in an attempt to meet a KPP—scenarios in which end users do not get the capabilities they need or in the timeframes that they need them.

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## Conclusions

Since we began reviewing DHS's portfolio of major acquisitions in 2015, the agency has strengthened its ability to track the progress of its major acquisitions. Significantly, this year, for the first time, all programs in our review had approved baselines against which DHS can measure program performance—an effort that has taken almost 8 years since DHS first established this requirement. Nevertheless, DHS continues to face challenges in managing its portfolio, and progress does not negate the fact that many programs continue to cost more, take longer than expected, or struggle to meet moving performance targets. Improving information for DHS leadership that ensures a program's needs are matched with available resources—performance and technical requirements, time, and funding—prior to approving programs to begin development could reduce the risk that programs will continue to face execution challenges, put programs in a better position to succeed, and ensure the department is making wise investment decisions with its limited resources.

DHS has made a concerted effort to refine its policies to reflect a more disciplined management approach and adhere more closely to this acquisition policy. This policy also affords acquisition decision makers a certain amount of flexibility. As DHS leadership exercises this flexibility in its oversight of acquisition programs, however, it is important that visibility is maintained into whether programs are meeting established requirements, that reasonable deviations are well documented, and that feedback directly affecting a program's ability to be successful—such as remediating a breach of its goals—is consistently communicated to programs through formal channels. Doing so will enable better management of DHS's major acquisition portfolio as a whole by retaining organizational knowledge and providing useful insight for DHS decision

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makers and external stakeholders. Additionally, as mature programs continue to fall short of performance goals, it is not clear at what point programs need to acknowledge to DHS that performance problems constitute a breach. As a result, DHS may be missing opportunities for oversight and correction of performance issues, and is at risk of fielding systems that may not work as intended.

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## Recommendations

To mitigate the risk of poor acquisition outcomes and strengthen the department's investment decisions, we recommend the Secretary of Homeland Security direct the Undersecretary for Management to take the following three actions:

Update the acquisition policy to:

- Require that major acquisition programs' technical requirements are well defined and key technical reviews are conducted prior to approving programs to initiate product development and establishing APBs, in accordance with acquisition best practices.
- Specify that acquisition decision memorandums clearly document the rationale of decisions made by DHS leadership, such as, but not limited to, the reasons for allowing programs to deviate from the requirement to obtain department approval for certain documents at ADEs and the results of considerations or trade-offs.
- Specify at what point minimum standards for KPPs should be met, and clarify the performance data that should be used to assess whether or not a performance breach has occurred.

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## Agency Comments and Our Evaluation

We provided a draft of this product to DHS for review and comment. In its written comments, reproduced in appendix III, DHS concurred with all three of our recommendations. In response to our first recommendation, DHS provided an estimated completion date for a study on how to better align the department's systems engineering and acquisition life cycles with GAO's acquisition best practices. In response to our other two recommendations, DHS requested that we consider them closed based on recent actions taken. Specifically, the department stated that it has begun expanding the information documented in programs' acquisition decision memorandums to include enhanced background information and plans to include the status of acquisition documentation in the future. In addition, the department has updated the handbook for PARM's component leads to include guidance on (1) including the information

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noted above when writing acquisition decision memorandums and (2) determining programs to be in performance breach if they have not met a KPP prior to ADE 3. While these are positive steps for addressing the intent of our recommendations, we continue to believe that DHS should update its acquisition policy to ensure that these changes are clearly communicated and implemented consistently throughout the department. DHS also provided technical comments, which we incorporated as appropriate.

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We are sending copies of this report to the appropriate congressional committees and the Secretary of Homeland Security. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-4841 or [mackinm@gao.gov](mailto:mackinm@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.



Michele Mackin  
Managing Director, Acquisition and Sourcing Management

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*List of Committees*

The Honorable Ron Johnson  
Chairman  
The Honorable Claire McCaskill  
Ranking Member  
Committee on Homeland Security and Governmental Affairs  
United States Senate

The Honorable Thomas R. Carper  
Ranking Member  
Permanent Subcommittee on Investigations  
Committee on Homeland Security and Governmental Affairs  
United States Senate

The Honorable John Boozman  
Chairman  
The Honorable Jon Tester  
Ranking Member  
Subcommittee on Homeland Security  
Committee on Appropriations  
United States Senate

The Honorable Michael T. McCaul  
Chairman  
The Honorable Bennie Thompson  
Ranking Member  
Committee on Homeland Security  
House of Representatives

The Honorable John Carter  
Chairman  
The Honorable Lucille Roybal-Allard  
Ranking Member  
Subcommittee on Homeland Security  
Committee on Appropriations  
House of Representatives

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# Appendix I: Program Assessments

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This appendix presents individual assessments for each of the 26 programs we reviewed. Each of these assessments is two pages and presents information current as of January 2017. They include several standard elements, including an image provided by the program office, a brief program description, and a summary of the program's progress in meeting its key performance parameters. Each assessment also includes the following four figures:

- **Projected Funding vs. Estimated Costs.** This figure generally compares the funding plan presented in the Future Years Homeland Security Program report to Congress for fiscal years 2017-2021 to the program's current annual total cost estimate based on its department-approved life-cycle cost estimate. We use this funding plan because the data are approved by the Department of Homeland Security (DHS) and Office of Management and Budget, and was submitted to Congress to inform the fiscal year 2017 budget process. As a result, the data does not account for other potential funding sources, such as carryover, cost-sharing agreements with other organizations, or fees. In addition, the program's current annual cost estimate accounts for total costs attributable to the program, regardless of funding source.
- **Program Office Staffing Profile.** This figure is generally based on the staffing assessments conducted by the Office of Program Accountability and Risk Management, which identify the number of staff a program needs (measured in full time equivalents) including how many are considered critical positions (measured in the number of people) and how many staff the program actually has. This figure and any discussion of programs' efforts to address identified staffing gaps or critical vacancies do not reflect the January 2017 presidential order to freeze the hiring of federal civilian employees.
- **Schedule Changes over Time.** This figure consists of two timelines. The first timeline is generally based on the initial Acquisition Program Baseline (APB) DHS leadership approved after the department's current acquisition policy went into effect in November 2008. Because these APBs were approved at different times, the first as-of date varies across programs. The second timeline identifies when that program expected to reach its major milestones as of January 2017. The second timeline also identifies any new major milestones that were introduced after the initial APB was approved, such as the date a new increment was scheduled to achieve initial operational capability, or the date the program was re-baselined.
- **Cost Estimate Changes over Time.** This figure generally compares the program's cost estimate in the initial APB approved after DHS's

current acquisition policy went into effect to the program's expected costs as of January 2017. This figure also identifies how much funding had been appropriated to the program through fiscal year 2016 and how it compares to future funding needs.

These four figures are generally based on DHS headquarters-approved documentation and data, as identified above. However, in some cases, the figures are based on data the program office provided when it commented on a draft of the assessment if, for example, the data were more accurate or current.

Each program assessment also consists of a number of other sections depending on issues specific to each program. These sections may include: Program Governance, Acquisition Strategy, Program Execution, Test Activities, and Other Issues. Lastly, each program's assessment also presents comments provided by the program office and identifies whether the program provided technical comments, and presents GAO's response to these comments, as necessary.

# Automated Commercial Environment (ACE)

## Customs and Border Protection (CBP)

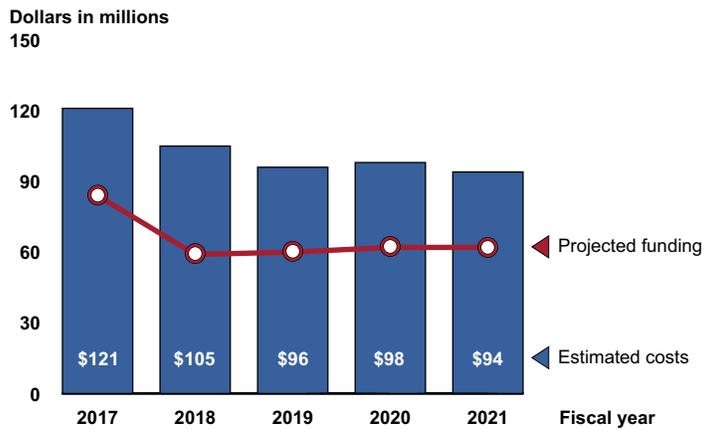


Source: Customs and Border Protection.

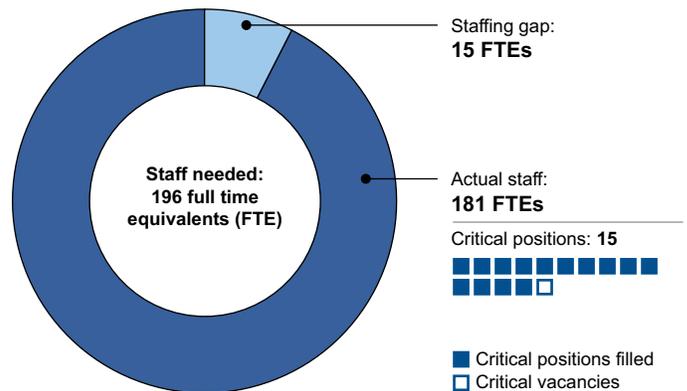
### Program Description

The ACE program is developing software that will electronically collect and process information submitted by the international trade community. ACE is intended to provide private and public sector stakeholders access to this information, and enhance the government's ability to determine whether cargo should be admitted into the United States. The ACE program aims to increase the efficiency of operations at U.S. ports by eliminating manual and duplicative trade processes, and enabling faster decision making. CBP deployed ACE's initial release in February 2003, but struggled to develop capability for several years. Department of Homeland Security (DHS) leadership directed CBP to halt new development in August 2010, and did not authorize CBP to restart development until it re-baselined the program in August 2013. GAO previously reported on CBP's ACE program in March 2016 ([GAO-16-338SP](#)) and has an ongoing review to assess ACE's implementation.

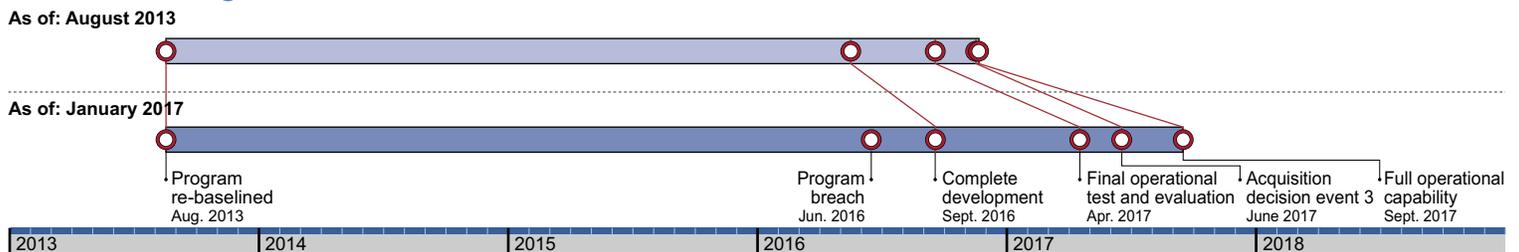
### Projected Funding vs. Estimated Costs



### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

CBP officials previously told GAO that three of ACE's four key performance parameters (KPP) were tested and successfully demonstrated for deployed functionality in May 2015, including the KPP for system availability. However, CBP officials subsequently reported that the ACE program did not meet its availability KPP in June 2016 when ACE became mandatory for all manifest processing and system traffic increased. Officials expect the availability KPP to temporarily decline again in January 2017 when ACE is fully deployed. ACE will not be able to demonstrate that it can meet its final KPP for full system performance in an operational environment until the program completes testing, which is now planned for April 2017.

## Acquisition Strategy

When DHS leadership re-baselined ACE's cost, schedule, and performance parameters in August 2013, the program adopted an agile software development methodology to accelerate software creation and increase flexibility in the development process. ACE's agile method is defined by a series of 2-week "sprints," during which software is designed, developed, integrated, and tested. Six ACE sprints constitute a program increment. The program currently consists of 13 increments, which are to be completed over a 3-year period. At the end of each sprint, software developers demonstrate new capabilities to ACE end users to obtain feedback and confirm that the new capabilities meet requirements. The ACE program office serves as the system integrator, overseeing 15 agile development teams. Because the agile teams demonstrate capabilities after each sprint, ACE program officials said they have opportunities to closely monitor contractor performance and mitigate risks through real-time management decisions.

## Program Execution

In November 2016, DHS's Under Secretary for Management (USM) re-baselined the ACE program, removing it from breach status after the program experienced schedule slips and cost growth. In June 2016, CBP officials notified DHS leadership that the program would not complete several key events as planned, and that its costs would increase beyond its approved thresholds. The program reported that its external stakeholders raised concerns about meeting the mandatory transition date to ACE. In response, the program delayed completion of two key milestones: (1) decommissioning of the legacy entry system slipped from March 2016 to July 2016 and (2) development of ACE functionality slipped from May 2016 to September 2016. According to CBP officials, ACE functionality will be fully developed and in use by January 2017. The delays affected subsequent milestones including completion of operational test and evaluation, which slipped from September 2016 to April 2017, and full operational capability (FOC), which slipped from November 2016 to September 2017. Despite these delays, CBP's initial re-baseline draft did not delay the program's Acquisition Decision Event (ADE) 3 from its initial date of November 2016, which could have allowed the program to transition into sustainment without test and evaluation results that confirmed successful performance of ACE's full capabilities, as required by DHS's acquisition policy. However, the revised baseline approved by DHS's USM ultimately delayed ADE 3 to June 2017 until after operational testing is scheduled to be complete.

From January 2016 to January 2017, the ACE program's acquisition cost estimate increased by over \$70 million, and its life-cycle cost estimate (LCCE) increased by \$419 million. According to program officials, the new estimate reflects more realistic development and sustainment costs. For example, since the development of the initial estimate, program leadership determined that both the number and size of the required development teams had been underestimated. In addition, officials reported that the new LCCE improves sustainment cost estimates by removing unrealized savings expected from moving to a cloud environment, among other things. As a result of these increases, ACE's yearly cost estimates are projected to exceed the program's funding plan by almost \$188 million from fiscal years 2017 through 2021. According to officials, the projected funding gap partially stemmed from disaster recovery requirements that were added to the program but not funded, and costs related to

decommissioning the legacy program that ACE is replacing. In December 2016, CBP reported that the program is able to offset the projected gap in fiscal year 2017 with carryover funds and that both CBP and DHS had realigned additional funding to address the projected gap in the remaining years. In August 2016, CBP officials told GAO that the ACE program is developing a fee-for-service concept that could potentially be used for system enhancements, among other things.

## Test Activities

In April 2016, DHS's Director, Office of Test and Evaluation (DOT&E) approved a new Test Evaluation Master Plan (TEMP) that reflected a more flexible testing approach. CBP officials previously told GAO that they determined it would be more feasible to test ACE's KPPs in batches as capabilities were deployed, rather than all at once as directed in its initial TEMP. The program conducted its first operational test in June 2015, but delayed a subsequent operational test from April 2016 to July 2016 to allow all stakeholders more time to transition to ACE prior to testing. In December 2016, program officials said they plan to conduct follow-on testing for this event in February and March 2017—after ACE's final deployment in January 2017—and do not anticipate receiving final test results until May 2017.

The program's final operational test event, which is the first time the program will be able to test the functionality and performance of the entire ACE system, was delayed from September 2016 to April 2017. CBP officials said they requested permission to waive the requirement to complete all operational testing prior to FOC. DHS leadership denied the request and, as reflected in the program's new baseline, ACE will complete operational testing prior to FOC.

## Other Issues

The ACE program reported one critical vacancy for a Director of Testing and Evaluation. In August 2016, CBP officials told GAO that existing staff have covered the workload for this critical vacancy and the position will no longer be required in the near future.

## Program Office Comments

The availability KPP is measured over any continuous 365-day period for a fully deployed system and reported to DHS monthly. Although this KPP dipped slightly below its threshold in June 2016, which is typical after a deployment or mandatory use date, there is no indication that the availability KPP will not be met once the system is fully deployed. Program officials noted that they would declare breach for performance prior to full system deployment if they determine there is no chance of achieving a KPP. Program officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Integrated Fixed Towers (IFT)

## Customs and Border Protection (CBP)

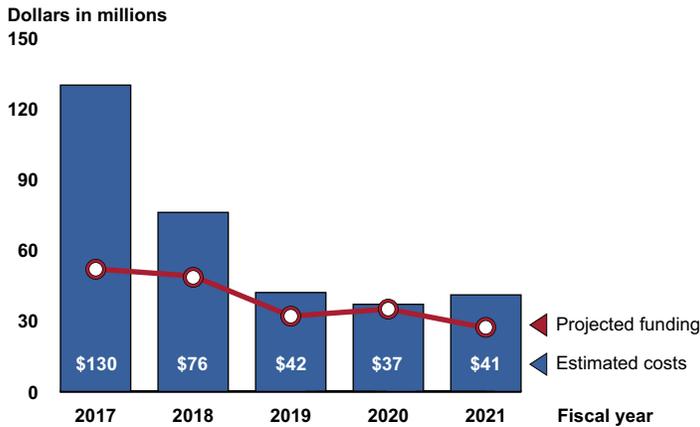


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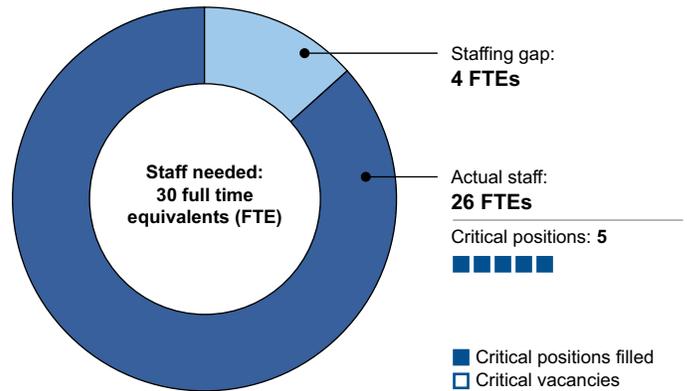
### Program Description

The Department of Homeland Security (DHS) established the IFT program in March 2012 to address the capability gap left when the Secretary of Homeland Security canceled the Secure Border Initiative Network (SBInet) program. CBP plans to deliver approximately 53 fixed surveillance tower units equipped with ground surveillance radar, infrared cameras, and communications systems linking the towers to command and control centers. CBP plans to deploy these units across six areas of responsibility (AoR) in Arizona to help the Border Patrol detect and track illegal entries in remote areas. DHS leadership re-baselined the program in December 2015, approximately 3 years after CBP determined the program could not meet its initial schedule goals. GAO previously reported on CBP's IFT program in March 2016 ([GAO-16-338SP](#)) and has an ongoing review to assess IFT's deployment along the Arizona border.

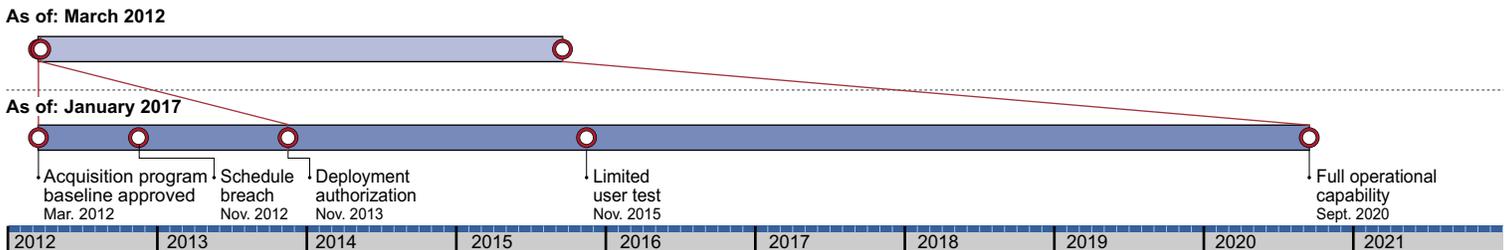
### Projected Funding vs. Estimated Costs



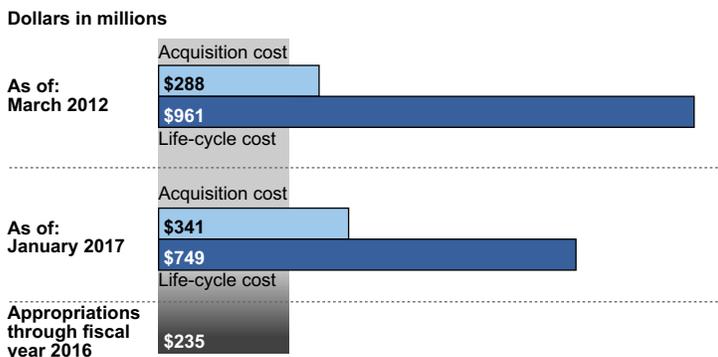
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

CBP officials previously told GAO that IFT met all 3 of its key performance parameters (KPP) during a July 2015 systems acceptance test in the Nogales AoR. These KPPs establish a minimum acceptable range for detection and identification, and the percentage of time the system must operate as intended. In April 2016, however, testers found that IFT only met 2 of its 3 KPPs and experienced 5 operational deficiencies during a November 2015 limited user test conducted in the same AoR. IFT did not meet its KPP for identification range. IFT and Border Patrol leadership did not concur with several of the test results and reported deficiencies, but DHS's Director, Office of Test and Evaluation (DOT&E) did not formally assess the test results.

## Acquisition Strategy

In January 2011, the Secretary of Homeland Security canceled CBP's SBlNet program in response to cost, schedule, and performance problems involving the acquisition of new surveillance technologies. When CBP initiated the IFT program, it decided to purchase a non-developmental system, and it required that prospective contractors demonstrate their systems prior to CBP awarding a contract. The program awarded the contract to EFW, Inc. in February 2014, but this award was protested. GAO sustained the protest, and CBP had to re-evaluate the offerors' proposals before it again decided to award the contract to EFW, Inc. As a result, EFW, Inc. did not initiate work at the deployment sites until fiscal year 2015. The contract is valued at \$145 million and covers the entire system acquisition cost for the six AoRs, as well as 7 years of operations and maintenance.

According to CBP officials, the number of IFT units deployed to a single AoR is subject to change based on assessments by the Border Patrol. In April 2013, Border Patrol directed CBP to reduce the number of planned IFT units from 50 to 38 and reduce the AoRs from six to five. In January 2015, Border Patrol directed CBP to increase the AoRs back to six, but instructed CBP to replace 15 existing fixed tower systems deployed under the SBlNet program, rather than expanding IFT capabilities to a new AoR as originally planned. In March 2016, Border Patrol certified to the congressional appropriations committees that 7 of the 53 IFT units deployed to the first AoR in Nogales met the program's operational requirements—a prerequisite for CBP's deployment of additional IFT units. As of January 2017, CBP officials said they had initiated the deployment of 15 additional IFT units to two other AoRs, and planned to deliver the remaining 31 IFT units across the other three AoRs.

## Program Governance

In March 2012, DHS's Under Secretary for Management (USM) approved the IFT Acquisition Program Baseline (APB), which established the program's cost, schedule, and performance parameters. The USM also authorized the program to deploy all planned IFT units, but later clarified in June 2012 that this authorization was contingent on DHS's DOT&E approving the IFT Test and Evaluation Master Plan (TEMP). In November 2012, CBP reported that IFT would breach its schedule because of delays in releasing the request for proposals and the source selection process, as well as anticipated funding shortfalls. Nonetheless, after DOT&E approved IFT's TEMP, CBP deployed IFT units to the Nogales AoR in November 2014. Thirteen months later, in December 2015, the USM approved an updated APB that reflected the program's schedule slips.

## Program Execution

According to CBP officials, the IFT program is on track to meet the cost and schedule parameters in its December 2015 APB. However, from March 2012 to December 2015, IFT's APB acquisition cost threshold increased by more than \$50 million when CBP included the cost of contractor personnel supporting the program office, the cost of replacing SBlNet systems and actual costs through fiscal year 2014, rather than estimates. Additionally, the program's full operational capability (FOC) date slipped 5 years. CBP officials primarily attributed the FOC delay to funding shortfalls, and it appears that the program is projected to face a \$130 million funding gap from fiscal year 2017 to fiscal year 2021. Program officials told GAO that the program's costs include some items that are not funded by IFT. For example, operator costs are funded by Border Patrol and account for more than \$61 million of the program's estimated

costs over the next 5 years. These officials added that they are in the process of updating IFT's cost estimate to account for changes in the order of AoR deployments, but that the program will carry over nearly \$34 million in funding from fiscal year 2016 to help address any remaining gap.

## Test Activities

The DOT&E-approved TEMP established that CBP would conduct a limited user test to validate operational requirements and determine how the IFT system contributes to CBP's mission. The program's operational test agent (OTA) completed a limited user test at the Nogales AoR in November 2015. This test was delayed 2 months because, according to program officials, CBP delayed systems acceptance so the contractor could address problems identified with IFT's cameras and operator interfaces during a July 2015 test. In April 2016, the OTA identified 5 operational deficiencies and recommended the program take 11 actions to improve IFT system operations. For example, the OTA found that the camera did not provide sufficient video quality and the IFT system did not enable the operator to consistently identify possible entries. In June 2016, IFT's program manager issued a memorandum identifying his concerns with the OTA's report and non-concurrence with 4 of the 5 deficiencies and 1 of the 11 actions. Border Patrol leadership subsequently concurred with the IFT program manager's position.

DOT&E reviewed the OTA's test results, but decided not to conduct a formal assessment because DHS leadership had already authorized full deployment. In November 2016, a DOT&E official who observed the limited user test told GAO that he had concerns with how the test data were collected and did not believe the test results were useful in assessing IFT's operational effectiveness, suitability, cybersecurity, or contribution to CBP's mission. Program officials told GAO that Border Patrol is responsible for 5 of the 11 actions, and that they are working with the contractor to address the remaining 6 actions identified during the limited user test, such as updating the cameras to improve video quality. In January 2017, the IFT program manager said the program plans to conduct further testing and is working closely with DOT&E to determine the scope and timing of future test events.

## Other Issues

In January 2016, CBP reported that the IFT program had a staffing gap of four full time equivalents. In August 2016, program officials said they did not have problems executing current IFT installations, but said they will encounter challenges if CBP initiates subsequent AoR deployments simultaneously.

## Program Office Comments

CBP officials non-concurred with GAO's assessment that the IFT system failed a KPP in any phase of the program testing. There is no evidence in the limited user test report or other documentation showing IFT did not meet a KPP, specifically the KPP for identification range. CBP officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

## GAO Response

Based on the limited user test data, the OTA was unable to determine if the system met the identification range KPP.

# Land Border Integration (LBI)

## Customs and Border Protection (CBP)

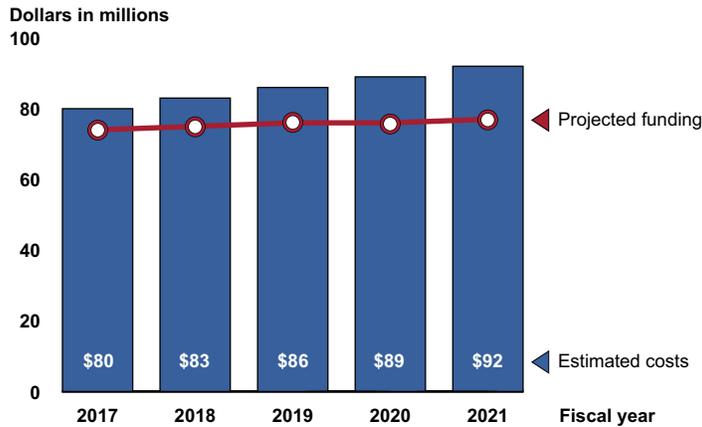


Source: Customs and Border Protection.

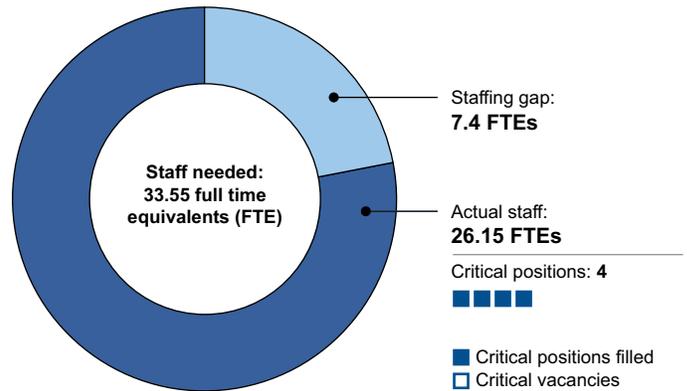
### Program Description

The LBI program delivers license plate readers (LPR), radio frequency identification readers, and other technologies to 122 land border locations. The program's goal is to facilitate legitimate trade and travel while enhancing border security. LBI systems are intended to enhance the processing of pedestrians, inbound and outbound vehicles at land border crossings, as well as Border Patrol checkpoints. LBI leverages technology delivered through a previous CBP acquisition program designated the Western Hemisphere Travel Initiative (WHTI), which sought to enhance inbound vehicle processing. GAO previously reported on CBP's LBI program in March 2016 (GAO-16-338SP).

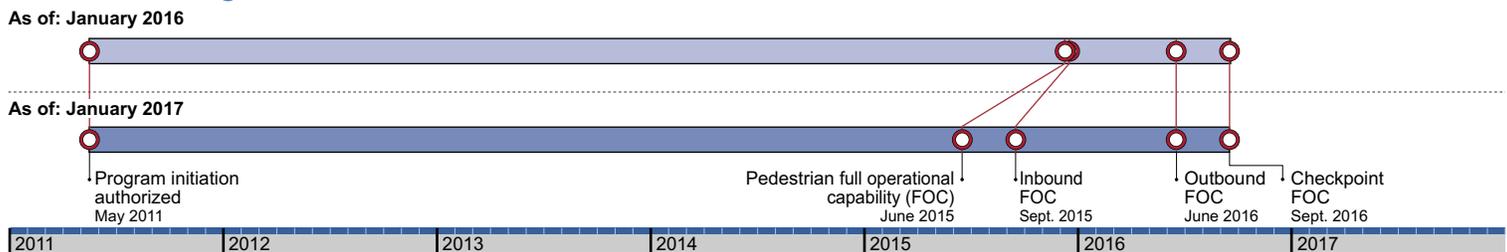
### Projected Funding vs. Estimated Costs



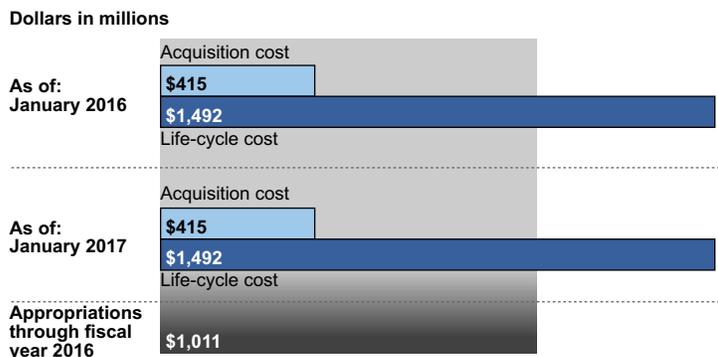
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

In September 2016, CBP officials reported that the program had met its key performance parameter (KPP) for the checkpoint LPR system. LBI previously relaxed the KPP threshold for the checkpoint LPR system in November 2015 after determining the original requirement was unrealistic and did not account for challenges in the checkpoint operating environment. To achieve the revised KPP, the program also replaced underperforming LPR technology at 28 locations. Program officials previously told GAO that the other LBI systems met their respective KPPs during testing conducted in 2009, 2012, and 2015.

## Program Governance

DHS's Under Secretary for Management (USM) authorized CBP to transition from WHTI to LBI in May 2011. At that time, the USM transferred the inbound capabilities of WHTI to LBI, authorized a limited deployment of LBI's outbound, pedestrian, and checkpoint capabilities, and informed CBP that he planned to delegate acquisition decision authority for future LBI deployments to CBP's Component Acquisition Executive. However, according to CBP officials, the USM never delegated this authority. Nonetheless, program officials reported that CBP expanded the deployment of LBI's outbound, pedestrian, and checkpoint capabilities without requesting formal authorization from DHS leadership. CBP proceeded with these deployments even though the USM had not approved an LBI Acquisition Program Baseline (APB) establishing the program's cost, schedule, and performance parameters.

In January 2016, the USM approved the program's APB. Later that month, DHS leadership granted the program Acquisition Decision Event 3 approval, and simultaneously required that CBP identify a final year for the program. CBP officials subsequently identified fiscal year 2027 as the program's end date. However, LBI's approved life-cycle cost estimate (LCCE) includes planned costs only through fiscal year 2021—6 years short of the program's final year. Nevertheless, DHS approved the program to transition into sustainment without an understanding of the program's full costs, as required by its acquisition policy.

## Program Execution

LBI achieved full operational capability (FOC) for its remaining systems in 2016—more than 3 years later than officials originally reported. Program officials previously told GAO that all of LBI's systems had achieved FOC by the end of August 2013. However, in August 2016, program officials reported that none of the systems had achieved FOC until June 2015, when the pedestrian systems reached this milestone. According to program officials, the remaining systems reached FOC over the next 15 months, with the inbound, outbound, and checkpoint systems achieving this milestone in September 2015, June 2016, and September 2016, respectively. LBI's approved APB of January 2016 reflects these changes to the program's FOC dates.

From January 2016 to January 2017, LBI's cost estimates remained stable. However, as noted above, the program's LCCE only reflects costs through fiscal year 2021 and does not account for additional quantities, operations and maintenance, or upgrade costs through the program's end date of fiscal year 2027. In August 2016, CBP officials told GAO they plan to update the program's LCCE in fiscal year 2017, at which point they will extend the estimate through the program's end date of fiscal year 2027.

From fiscal years 2017 to 2021, LBI's yearly cost estimates appear to exceed the program's funding plan by \$52 million. LBI officials reported this funding gap is largely driven by the need to refresh deployed technology. The program plans to mitigate the funding gap by prioritizing upgrades against operational needs, conducting preventive maintenance, and remotely monitoring and correcting system issues, among other things. Program officials stated that upgrades to LBI's inbound systems are most likely to be affected by future funding constraints, as the program has already updated checkpoint and outbound systems.

The program previously deferred some planned deployments due to funding constraints. In December 2014, program officials told GAO that LBI's cost estimates had decreased significantly from the nearly \$2 billion estimated in August 2014. CBP officials said they originally planned to execute the program through three phases, which would allow CBP to enhance LBI systems over time, and expand the deployment of certain technologies to additional land border crossings. However, program officials stated that subsequent funding constraints forced CBP to defer some planned LBI deployments. CBP prioritized subsequent deployments by identifying land border crossings that would benefit the most from new technologies. LBI officials also explained they no longer planned to deploy Border Patrol checkpoint systems along the northern border, and have purchased less expensive, less efficient equipment to reduce costs.

## Test Activities

In 2016, CBP continued to monitor the performance of the checkpoint LPR system against its KPP, as directed by DHS's USM. In September 2016, CBP reported this system had met its KPP. The program concluded formal testing prior to January 2016. DHS's Director, Office of Test and Evaluation (DOT&E) approved LBI's Test and Evaluation Master Plan in November 2011, and the program conducted operational testing in January 2012. CBP officials reported that LBI systems met all of their KPPs during the 2012 operational test with the exception of the checkpoint LPR system. However, DOT&E did not validate the test results because, as discussed above, the program did not request formal authorization from DHS leadership to expand LBI's deployment. From July to September 2015, CBP conducted an operational assessment of LBI's deployed outbound systems and declared them operationally effective and suitable. In November 2015, DOT&E validated these results.

## Other Issues

In January 2016, CBP reported the program needed 7.4 more full time equivalents. In August 2016, CBP officials said the program recently hired three new staff, and the remaining staffing gap has had minimal effect on operations.

## Program Office Comments

The LBI program formally achieved Produce/Deploy/Support Phase in January 2016. The program satisfied the outstanding checkpoint KPP with the refresh of underperforming LPR technology. In September 2016 the program awarded a new primary technology support contract with one base and four option years, without protest. LBI will coordinate future activities with the CBP Component Acquisition Executive to ensure compliance with acquisition requirements. CBP officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Medium Lift Helicopter (UH-60)

## Customs and Border Protection (CBP)

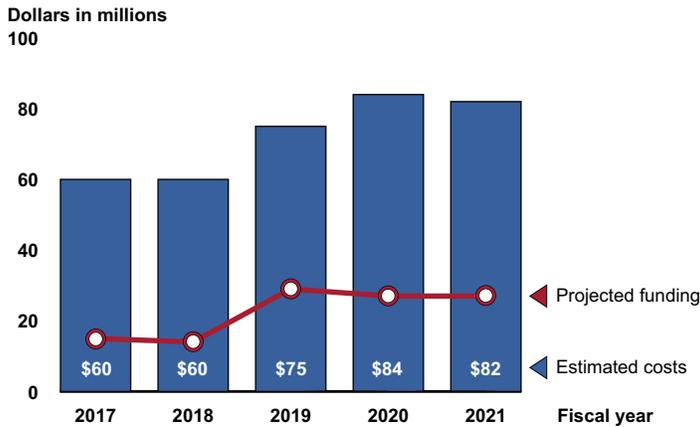


Source: Customs and Border Protection.

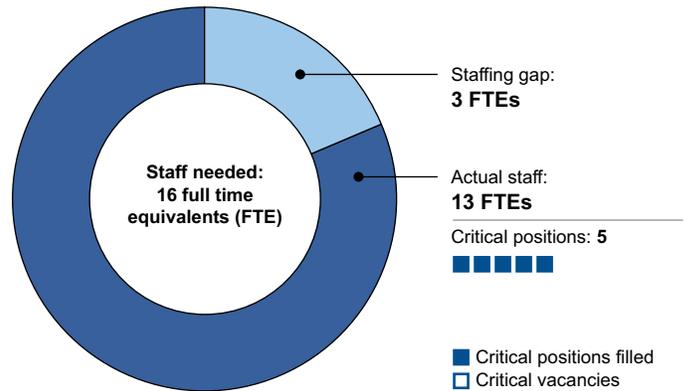
### Program Description

The UH-60 is a medium lift helicopter that CBP uses for law enforcement and border security operations, air and mobility support and transport, search and rescue operations, and other missions. CBP's UH-60 fleet consists of 20 aircraft acquired from the U.S. Army in three different models. CBP previously acquired 4 aircraft in the modern UH-60M model and converted 6 of its 16 older UH-60A aircraft into more capable UH-60L models as a part of its Strategic Air and Marine Program (StAMP). In July 2016, Department of Homeland Security (DHS) leadership designated the UH-60 as a separate and distinct level 1 acquisition program. The UH-60 program is currently focused on converting the remaining 10 UH-60A aircraft. GAO previously reported on the UH-60 aircraft as a part of StAMP in March 2016 (GAO-16-338SP).

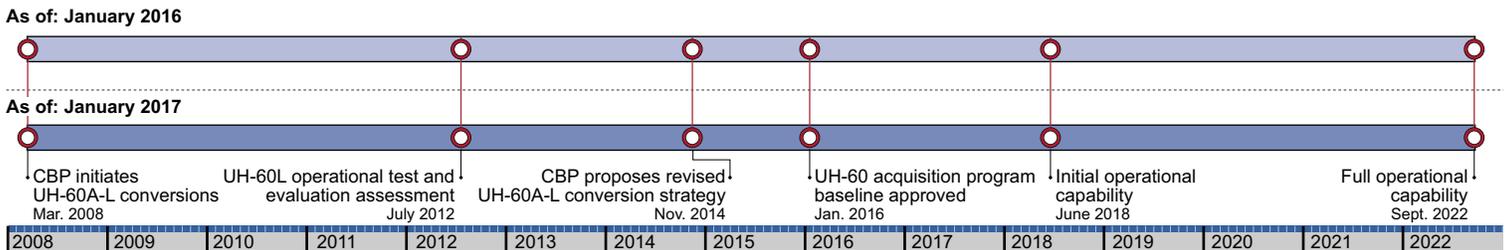
### Projected Funding vs. Estimated Costs



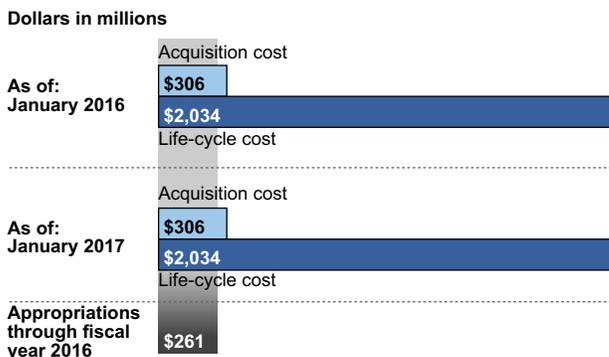
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

CBP determined that the converted UH-60L and UH-60M aircraft met all five of their key performance parameters (KPP) through operational testing conducted in fiscal years 2012 and 2014. These KPPs establish requirements for communications and specific mission capabilities, including interdiction, air mobility, special operations, and search and rescue. However, DHS's Director, Office of Test and Evaluation (DOT&E) did not validate these results because the UH-60 was not considered a major acquisition when the tests were conducted.

## Acquisition Strategy

CBP has obtained all 20 UH-60 aircraft through agreements with the U.S. Army. CBP received the 16 UH-60A aircraft through a loan agreement in January 2004. In March 2008, CBP entered into an inter-agency agreement with the Army to convert the UH-60A into UH-60L models to extend the aircraft's service life by an estimated 20 years, as well as to purchase and modify the 4 new UH-60M aircraft. CBP completed acceptance of the UH-60M aircraft in 2012.

In November 2014, CBP proposed changing its acquisition strategy for converting its UH-60A aircraft when it learned the Army planned to divest several HH-60L aircraft, which could more easily be reconfigured into UH-60L aircraft for CBP missions. Specifically, CBP proposed concluding its UH-60A conversions of the 6 aircraft it had initiated and trading the remaining 10 aircraft for the Army's newer HH-60L. Although the Army would still have to reconfigure the HH-60L aircraft to meet CBP's needs, CBP officials anticipated this effort could reduce the program's costs by an estimated \$70 million, accelerate its schedule, and result in newer aircraft since the Army's HH-60L airframes had fewer operating hours than CBP's existing UH-60A aircraft. At that time, DHS's Under Secretary for Management (USM) directed CBP to further study its proposed approach in consultation with DHS's Aviation Governance Board, and authorized CBP to initiate the transfer of a single HH-60L aircraft for developing a prototype to validate and verify its reconfiguration. In January 2016, DHS's USM approved CBP's revised acquisition strategy based on the Aviation Governance Board's determination that the proposed plan carries less risk and will result in overall cost savings. The USM also approved the UH-60 program's initial Acquisition Program Baseline (APB) at that time, which established schedule, cost, and performance parameters for the program's revised acquisition strategy.

## Program Execution

CBP officials said the program is on track to meet the schedule and cost goals in its current APB. CBP accepted the sixth and final converted UH-60L—from the A model—in June 2016. The program plans to achieve initial operational capability by June 2018 upon acceptance and deployment of the reconfigured HH-60L prototype, and full operational capability by September 2022 once all remaining 10 reconfigured UH-60L aircraft are accepted and deployed. In April 2015, DHS headquarters completed an independent cost estimate for the UH-60, which CBP adopted as the program's life-cycle cost estimate (LCCE). Prior to 2015, the program never had a comprehensive cost estimate. For example, a draft 2007 APB—which was never department approved—reported acquisition costs of about \$1 billion, but did not include any costs for operations and maintenance (O&M). The UH-60's current LCCE is approximately \$2 billion for all 20 aircraft, including both acquisition and O&M costs.

From fiscal year 2017 to 2021, the UH-60 program's cost estimates appear to exceed the program's funding by approximately \$250 million. However, the projected funding gap may not be this large. In October 2016, program officials said that the funding data they provided to GAO did not include funding for UH-60 O&M because these costs are funded through a separate, central funding account for all of CBP's air and marine assets. Officials anticipate that UH-60's acquisition funding will be reflected in the next Future Years Homeland

Security Program report to Congress—the first report to include UH-60 as a distinct major acquisition program—but said the O&M funding will not be reflected for the reason stated. This issue limits insight into the program's funding needs and may obscure the size of future funding gaps.

## Test Activities

CBP conducted operational testing of the UH-60L and UH-60M aircraft in fiscal year 2012. CBP testers assessed the UH-60L as operationally effective and suitable in July 2012, but assessed the UH-60M as operationally suitable and marginally effective in April 2012 because it could not meet endurance requirements, among other things. CBP completed modifications on the UH-60M to address identified issues and conducted additional operational testing in March 2014. In April 2014, CBP testers assessed the UH-60M retrofits as operationally effective and suitable. However, DOT&E did not validate CBP's test results for either aircraft variant because the UH-60 was not considered a major acquisition when the tests were conducted.

In January 2016, DHS's USM directed the program to conduct acceptance functional flight checks on at least one reconfigured HH-60L aircraft prior to receiving approval to proceed with the remaining transfer and conversions. The program plans to flight check the reconfigured HH-60L prototype in July 2017, but officials said they do not plan to conduct further operational testing because the HH-60L has minimal differences from the UH-60L aircraft previously tested. However, not demonstrating the reconfigured HH-60L in an operational environment may increase the risk that the aircraft will not perform as intended or be reliable once fielded.

## Other Issues

In September 2016, officials told GAO that CBP designated a program manager to lead each former StAMP acquisition program—including the UH-60—but that it maintained a consolidated program office where the same staff from StAMP continue to support all remaining acquisitions. Officials explained that this matrixed approach works well because they are able to leverage each team member's particular subject matter expertise. Officials added that the program's prior staffing challenges decreased significantly once they completed UH-60's required acquisition documentation, and officials did not anticipate future staffing issues.

## Program Office Comments

CBP is committed to accurate reporting of all of its programs and would like to clarify any misunderstanding in terms of program affordability. O&M of the UH-60 is funded separately, thus is not reflected in the acquisition funding. This assessment reflects only the acquisition funding plan. Additionally, CBP disagrees with GAO's use of a 2007 draft APB. The program should be assessed according to the APB signed in January 2016 that was provided. CBP officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

## GAO Response

The draft 2007 APB provides perspective on the history of the program; however, GAO did assess UH-60 against its January 2016 APB as shown in the figures above.

# Multi-Role Enforcement Aircraft (MEA)

## Customs and Border Protection (CBP)

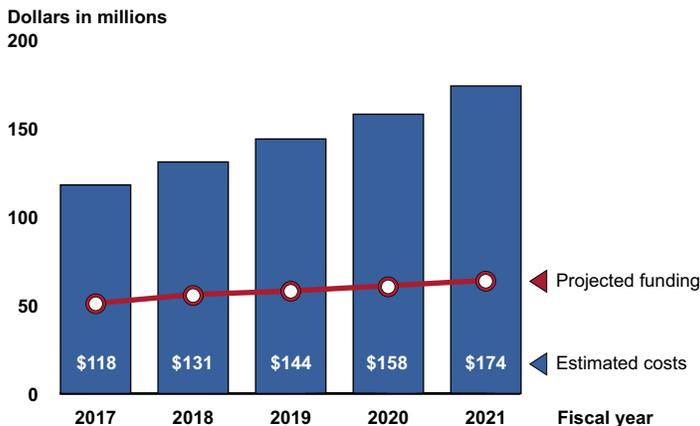


Source: Customs and Border Protection.

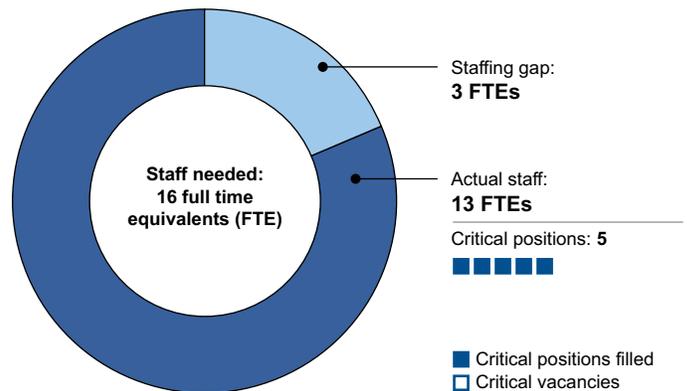
### Program Description

The MEA is a fixed-wing, multi-engine aircraft that replaces CBP's aging fleets of C-12, PA-42, and BE-20 aircraft. The MEA can be configured to perform multiple missions, including marine, air, and land interdiction; logistical support; and law enforcement technical collection (LETC). The current MEA configuration is equipped with marine search radar and an electro-optical/infrared sensor to support maritime and land surveillance and airborne tracking missions. CBP previously acquired MEA aircraft as a part of its Strategic Air and Marine Program (StAMP). In July 2016, Department of Homeland Security (DHS) leadership designated the MEA as a separate and distinct level 1 acquisition program. CBP plans to acquire 16 MEA aircraft in the current configuration and, as of January 2017, 12 had been delivered. GAO previously reported on the MEA aircraft as a part of StAMP in March 2016 (GAO-16-338SP).

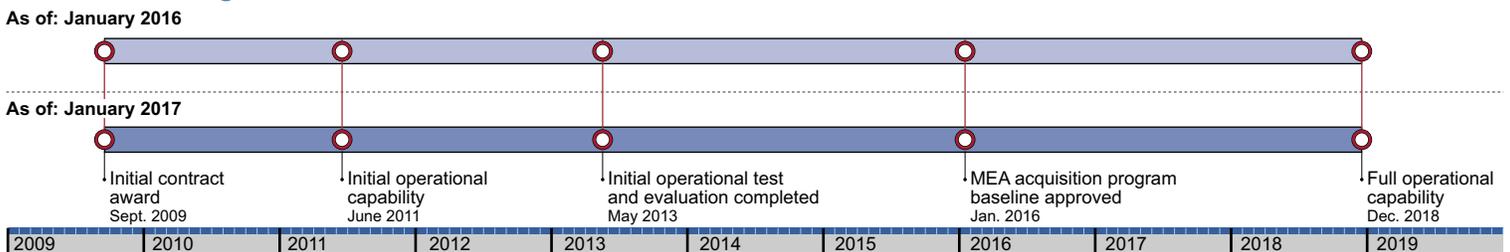
### Projected Funding vs. Estimated Costs



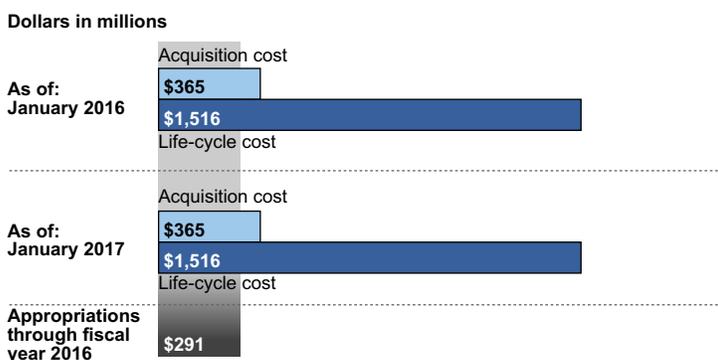
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

The MEA program has met all five of its key performance parameters (KPP). In March 2016, DHS's Director, Office of Test and Evaluation (DOT&E) determined that the MEA program continued to meet four of its KPPs. Specifically, the MEA met two KPPs related to the aircraft's marine interdiction capabilities and two KPPs related to air mobility. DOT&E previously determined the MEA had met its fifth KPP for communications during initial operational test and evaluation (IOT&E). Going forward, the program plans to establish additional KPPs for air and land interdiction, LETC operations, and suitability for future MEA configurations.

## Acquisition Strategy

CBP initially planned to procure 50 MEAs and awarded the first production contract in September 2009. However, the aircraft did not perform well during testing. In October 2014, DHS leadership said CBP could not procure or accept transfer of additional MEA without approval. CBP procured 12 aircraft under the initial contract, which expired in March 2015. In August 2015, DHS's Under Secretary for Management (USM) authorized CBP to procure 4 additional MEAs for a total of 16 and directed CBP to work with the Joint Requirements Council (JRC) to determine the appropriate quantity and configuration for future MEA procurements. In September 2016, CBP awarded an indefinite delivery, indefinite quantity contract for 1 base year with four 1-year options, and issued a delivery order for MEAs 13 and 14. Program officials plan to exercise the first option year in fiscal year 2017 to procure MEAs 15 and 16, and the remaining option years once CBP receives approval for additional quantities. In April 2016, CBP developed a report that described capability gaps in multiple mission areas and proposed future MEA quantities and configurations. In September 2016, the JRC Chair endorsed CBP's findings, but stated additional analysis was necessary for the JRC to fully validate them and recommended CBP develop a number of acquisition documents including an operational requirements document.

CBP is replacing the mission system processor on the MEA with a system used by the U.S. Navy and the U.S. Coast Guard. The new processor is intended to enhance operator interface and sensor management, as well as replace obsolete equipment. CBP tested a prototype of the processor in July 2015. According to program officials, MEAs 13-16 will be delivered with the new mission system, and CBP will begin retrofitting previously delivered MEAs in fiscal year 2017.

## Program Execution

CBP officials said the program is on track to meet the goals in its initial Acquisition Program Baseline (APB), which DHS's USM approved in January 2016. This APB established schedule, cost, and performance parameters for the program's approved quantity of 16 MEAs. The program achieved initial operational capability in June 2011 upon delivery and acceptance of the first aircraft. The program plans to achieve full operational capability (FOC) by December 2018 upon delivery and acceptance of MEA 16. However, this is later than CBP previously planned. For example, a draft 2007 APB—which was never department approved—reported that the program planned to achieve FOC by September 2016. CBP plans to revise its APB if it receives approval to acquire future aircraft, which may delay FOC further and increase costs.

In April 2015, DHS headquarters completed an independent cost estimate for the MEA, which CBP adopted as the program's life-cycle cost estimate (LCCE). The MEA LCCE is approximately \$1.5 billion for 16 aircraft. From fiscal year 2017 to 2021, MEA's cost estimates appear to exceed the program's funding by approximately \$435 million. However, the projected funding gap may not be this large. In October 2016, program officials said that the funding data they provided to GAO did not include funding for MEA operations and maintenance (O&M) because these costs are funded through a separate, central funding account for all of CBP's air and marine assets. Officials anticipate that MEA's acquisition funding will be reflected in the next Future Years Homeland Security Program report to Congress—the first report to include MEA as a distinct major acquisition program—but said the O&M funding will not be

reflected for the reason stated. This issue limits insight into the program's funding needs and may obscure the size of future funding gaps.

## Test Activities

In March 2016, DHS's DOT&E determined that the MEA was effective and had resolved issues found during prior testing. DOT&E had assessed the program's IOT&E results in 2013, and concluded that additional testing was needed to assess the MEA's air interdiction capabilities. DOT&E also said CBP needed to take 28 specific actions as soon as possible to improve MEA performance and that CBP should prioritize those that affect flight safety. CBP officials previously told GAO that they began addressing flight safety issues in January 2014. In July 2015, the program's operational test agent (OTA) conducted an operational assessment and found that CBP had addressed 24 of the 28 actions. However, the OTA also made 15 additional recommendations to improve the aircraft's operational effectiveness and suitability, and offered 14 additional findings to improve the effectiveness of the MEA's new mission system. DOT&E concurred with the OTA's findings, and subsequently determined that the remaining 4 actions had no operational impact or had been addressed by CBP. DOT&E recommended the program develop a plan to address the OTA's recommendations, and consider the OTA's additional findings to improve the mission system. In September 2016, CBP officials told GAO the program plans to conduct additional testing when MEA 14 is delivered by September 2017.

## Other Issues

In September 2016, officials told GAO that CBP designated a program manager to lead each former StAMP acquisition program—including the MEA—but that it maintained a consolidated program office where the same staff from StAMP continue to support all remaining acquisitions. Officials explained that this matrixed approach works well because they are able to leverage each team member's particular subject matter expertise. Officials added that the program's prior staffing challenges decreased significantly once they completed MEA's required acquisition documentation, and officials did not anticipate future staffing issues.

### Program Office Comments

CBP is committed to accurate reporting of all of its programs and would like to clarify any misunderstanding in terms of program affordability. O&M of the MEA is funded separately, thus is not reflected in the acquisition funding. This assessment reflects only the acquisition funding plan. Additionally, CBP disagrees with GAO's use of a 2007 draft APB. The program should be assessed according to the APB signed in January 2016 that was provided. CBP officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

### GAO Response

The draft 2007 APB provides perspective on the history of the program; however, GAO did assess MEA against its January 2016 APB as shown in the figures above.

# Non-Intrusive Inspection (NII) Systems Program

Customs and Border Protection (CBP)

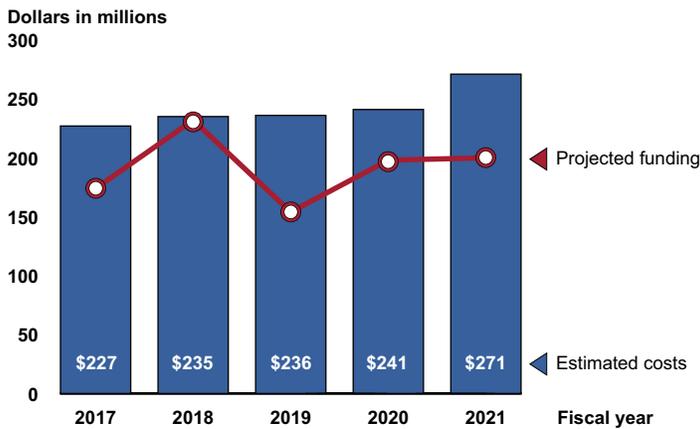


Source: Customs and Border Protection.

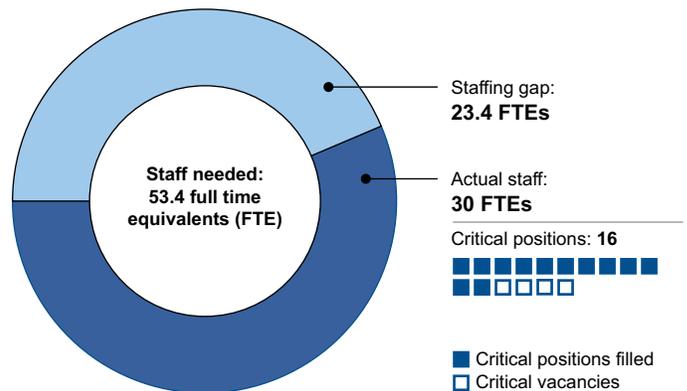
## Program Description

The NII Systems Program supports CBP's interdiction of weapons of mass destruction, contraband such as narcotics, and illegal aliens being smuggled across U.S. borders, while facilitating the flow of legitimate commerce. CBP officers in the field utilize large- and small-scale NII systems at air, sea, and land ports of entry, as well as border checkpoints and international mail facilities. Large-scale NII systems use directed beams of X-rays or gamma rays that allow officers to examine the entire contents of containers and vehicles without breaching them. Small-scale NII systems are used to perform inspections of passenger baggage and cargo, view the inside of fuel tanks and small compartments, and identify false walls in containers. Small-scale NII systems include X-ray systems and fiber optic scopes, among other devices. GAO previously reported on CBP's NII Systems Program in March 2016 ([GAO-16-338SP](#)).

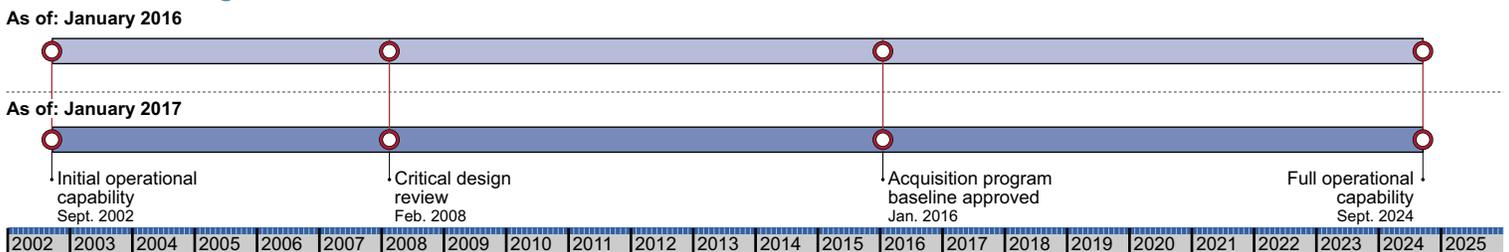
## Projected Funding vs. Estimated Costs



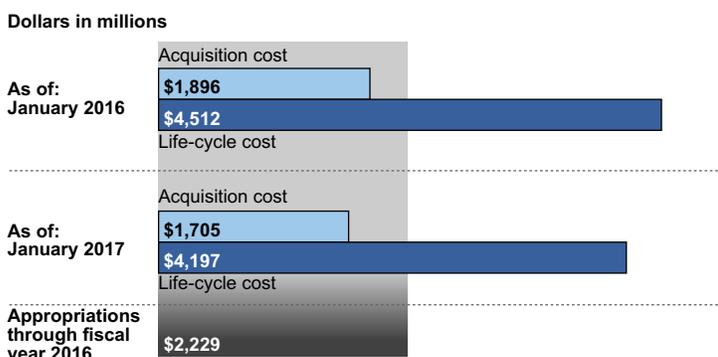
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

In January 2016, the NII Systems Program reduced the number of its key performance parameters (KPP) from 24 to 18. According to officials, the program continues to meet all 18 KPPs including one requiring CBP to examine 100 percent of cargo identified for inspection. CBP previously reported challenges obtaining examination data for this KPP in the land environment because of data accessibility and compatibility issues. However, in August 2016, CBP officials said they worked with stakeholders to develop a standard methodology to report examination data. That said, the Department of Homeland Security's (DHS) Director, Office of Test and Evaluation did not independently validate CBP's assertion that it has met this KPP.

## Program Governance

CBP has been deploying NII systems since the 1980s, but DHS leadership did not approve the NII Systems Program's Acquisition Program Baseline until January 2016. Later that month, DHS leadership granted the program Acquisition Decision Event (ADE) 3 approval, and simultaneously required that CBP update NII's life-cycle cost estimate (LCCE) and identify a final year for the program. CBP officials subsequently identified fiscal year 2035 as the program's end date and submitted an updated LCCE in February 2016. However, this LCCE only updated costs estimated through fiscal year 2026—9 years short of the program's final year. Nevertheless, DHS approved the program to transition into sustainment without an understanding of the program's full costs, as required by DHS acquisition policy.

As a part of the program's ADE 3 approval, DHS leadership also required CBP to reassess future program requirements. In response, CBP developed a Capabilities Analysis Study Plan in March 2016 outlining the methodology for an 8-month analysis that will assess current capability gaps to ascertain future program requirements. CBP plans to complete the analysis by December 2016.

## Program Execution

From January 2016 to January 2017, the program's acquisition cost estimate decreased from \$1.9 billion to \$1.7 billion, and the LCCE decreased from \$4.5 billion to \$4.2 billion. NII's estimates previously increased when CBP extended the program's lifespan from fiscal year 2022 to fiscal year 2026; increased the total procurement quantity for large- and small-scale systems, from 9,427 to 11,448; and increased the number of planned replacement systems by more than 2,000 units. CBP officials reported that the updated LCCE is lower because of reduced NII system costs in newly awarded and anticipated contracts, reduced maintenance costs resulting from fixed price maintenance contracts, and the replacement of some NII systems that were costly to maintain. However, as noted above, the updated LCCE does not account for operations and maintenance or replacement costs through the program's end date of fiscal year 2035. CBP officials said they plan to update the program's LCCE in 2017.

From fiscal year 2017 to 2021, the NII Systems Program's yearly cost estimates appear to exceed the program's funding plan by \$253 million. However, the yearly cost estimates over this 5-year period also include \$138 million for operating and maintaining radiation detection equipment acquired by the Domestic Nuclear Detection Office. According to CBP officials, the program has instituted positive cost controls including a service life extension for some NII systems to address affordability challenges, but funding shortfalls continue to be the program's greatest risk. Officials stated that the program is sustainable with these cost controls, but most of the NII systems will reach the end of their expected service lives within the next 5 years. Without funding for replacement of these critical systems, CBP officials said they will not have the capability to scan cargo and will have to inspect cargo manually. The program may also experience further slips in reaching full operational capability (FOC). As we found in March 2016, funding shortfalls previously caused the program's FOC to slip 5 years—from fiscal year 2019 to fiscal year 2024.

## Test Activities

NII systems are commercial-off-the-shelf products, and for this reason, DHS leadership decided that the NII Systems Program does not need a Test and Evaluation Master Plan. However, the program regularly tests NII systems and plans to conduct operational assessments through FOC in fiscal year 2024. In August 2016, CBP officials said that they assessed the performance capabilities of deployed units earlier in the year. Among other things, CBP compared two fielded NII systems to determine their operational effectiveness in detecting contraband in both empty and loaded containers. The two systems were found to be equally effective at detecting contraband in empty containers, but one was generally determined to be a better option for loaded containers.

The NII Systems Program has also conducted testing for future capabilities. In 2015, the program assessed whether NII and radiation detection technology could be combined to examine rail cargo, and whether cameras are capable of detecting new welding—indicating the possible presence of contraband—in moving trains. In August 2016, CBP officials told GAO that preliminary assessments of these tests were positive and the results will be further evaluated on fielded systems to validate the return on investment. This will better inform future acquisitions or systems upgrades where practical. For example, CBP is conducting operational testing on one of its rail systems with the combined radiation detection technology. If successful, future rail systems will incorporate this upgrade.

## Other Issues

As of August 2016, the NII Systems Program continued to face a staffing gap of approximately 44 percent. The largest shortfalls were in the program management and life cycle logistics disciplines. According to CBP officials, the current staffing gap has reached a critical point because of the risk of acquisition and deployment delays. Officials said that the program is utilizing contractor support, but this approach comes at a higher cost than filling the vacancies with government employees. Program officials explained that CBP has not hired additional staff because of an ongoing realignment of CBP's organizational structure, and CBP is placing a higher priority on hiring officers, such as Border Patrol agents, versus program staff.

### Program Office Comments

CBP officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Tactical Communications (TACCOM) Modernization

## Customs and Border Protection (CBP)

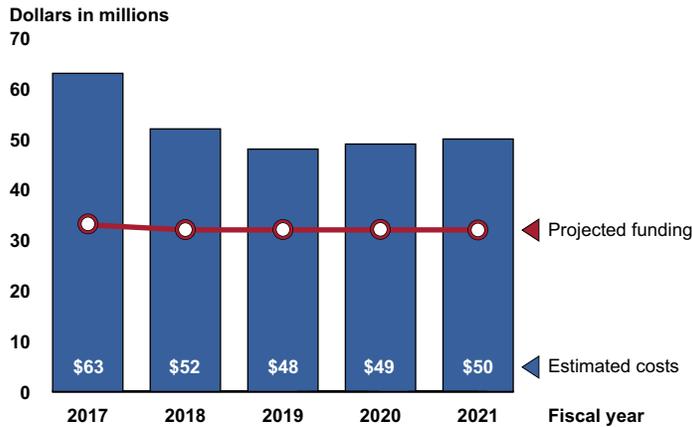


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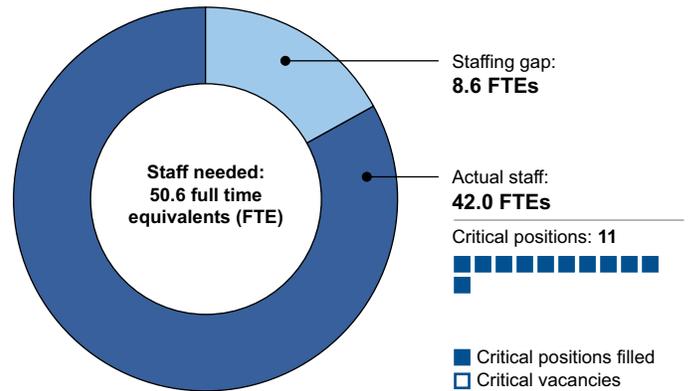
### Program Description

The TACCOM program is intended to upgrade land mobile radio (LMR) infrastructure and equipment. It is replacing obsolete radio systems with modern digital systems in 20 different service areas, linking 19 of these service areas to one another through a nationwide network, and building new communications towers to expand coverage in 5 of the 20 service areas. The program is delivering LMR capability to approximately 95,000 users at CBP and other federal agencies. GAO previously reported on the TACCOM program in March 2016 and March 2015 (GAO-16-338SP, GAO-15-201).

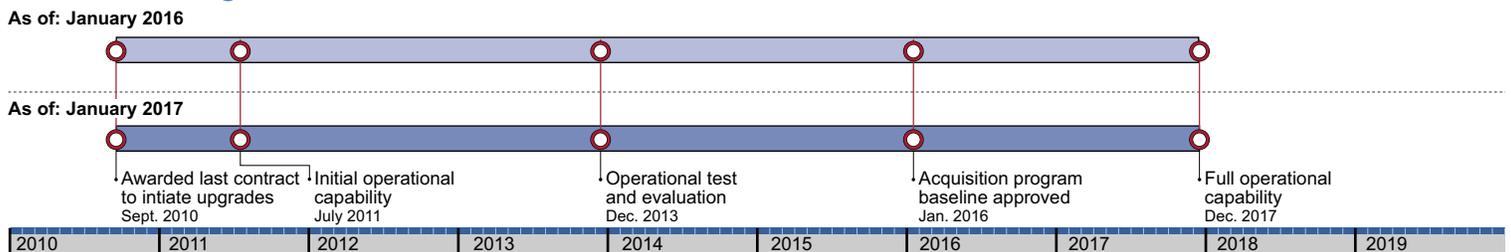
### Projected Funding vs. Estimated Costs



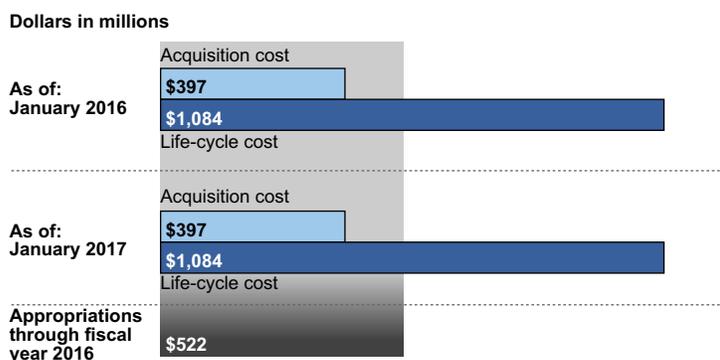
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

In July 2016, CBP officials told GAO that the TACCOM program continued to meet its two key performance parameters, which measure coverage area and the percentage of time the systems are available. In May 2014, the Department of Homeland Security's (DHS) Director, Office of Test and Evaluation (DOT&E) determined that the TACCOM program's systems met their performance requirements. Going forward, the TACCOM program plans to conduct annual assessments in select locations to monitor systems performance.

## Acquisition Strategy

The TACCOM program was initially intended to upgrade LMR infrastructure and equipment in 20 different service areas, replacing obsolete radio systems with modern digital systems. The program was also intended to build new communications towers in all 20 of those service areas to expand LMR coverage. However, CBP subsequently decided to reduce the number of service areas where it would build new communications towers from 20 to 5 due to funding constraints. In the 15 remaining service areas, the program will still replace obsolete analog radio equipment with modern digital systems, but it will not expand coverage. The funding needed for tower construction in one service area was adequate to replace the radio systems in the 15 remaining service areas.

In addition to upgrading LMR capabilities within the 20 service areas, the TACCOM program is also responsible for connecting 19 service areas to one another. CBP plans to do so by replacing the circuitry that connects these service areas to an existing nationwide network. CBP officials said this effort constitutes the majority of the program's remaining work, which they anticipate will be completed in December 2017.

## Program Governance

In January 2016, DHS leadership approved the TACCOM program's transition to sustainment at the same time that it approved the program's first Acquisition Program Baseline (APB). The APB establishes the program's cost, schedule, and performance parameters. DHS's current acquisition policy, which was first established in 2008, states that a program's APB should be approved before the program starts obtaining new capabilities. Further, CBP awarded contracts in 2010 worth a total of \$145 million to initiate upgrades in 3 of the 20 service areas, but the DHS's Under Secretary for Management did not approve the TACCOM program's operational requirements until September 2013.

## Program Execution

From January 2016 to January 2017, the program's cost estimates remained unchanged. However, TACCOM's cost estimates in its January 2016 APB reflected changes from the program's previous internal estimates. The acquisition cost estimate decreased from \$467 million to \$397 million, but the life-cycle cost estimate increased from \$959 million to approximately \$1.1 billion when the program added government personnel costs.

The program is projected to have a funding shortfall of over \$100 million from fiscal years 2017 through 2021. In August 2016, program officials explained that they have taken steps to mitigate the anticipated funding gap by cutting TACCOM's \$4 million real properties budget in half; reducing manpower support contracts, travel, and gas; and performing minimum maintenance; among other things. However, they also explained that the anticipated funding shortfall may have a substantial long-term impact on operations and maintenance.

Program officials told GAO they anticipate completing all development activities to achieve full operational capability (FOC) by the end of December 2017, despite the program's affordability challenges. According to officials, FOC will include planned upgrades to the San Diego system. However, DHS is still in the process of negotiating the transition of the legacy system from Department of Justice management to DHS

management in order to initiate the upgrades. If DHS does not reach an agreement with the Department of Justice on the ownership and maintenance of the San Diego system, the program expects that the funding gap will increase.

## Test Activities

The TACCOM program conducts operational assessments annually in select locations where upgrades were recently completed to determine whether the system is operating as intended. From March to June 2016, the program's operational test agent (OTA) conducted an operational assessment in the Houlton and Miami sectors and concluded the TACCOM systems were operationally effective and operationally suitable. However, the OTA noted some limitations, including interoperability with external users and collecting performance data for management review. The OTA recommended the program office conduct periodic user reviews by sector to identify and resolve coverage shortfalls and establish a system to collect and report on TACCOM performance monthly, among other things. In August 2016, program officials told GAO they monitor performance of TACCOM systems regularly and report outages to CBP's Chief Information Officer daily.

According to officials, the program will also conduct another operational test after it has connected the 19 service areas to one another. Program officials said the risk associated with this effort is low, but they do not expect to determine whether the capability meets mission needs until June 2017. CBP conducted operational testing in the Rio Grande Valley in December 2013 after the program had replaced obsolete radio systems with modern digital systems and built new communications towers. DOT&E concluded that the new TACCOM systems were operationally effective, and that the systems will likely prove suitable over time.

## Other Issues

In August 2016, program officials said they had hired two business managers and were actively working to fill the program's remaining staffing gap.

## Program Office Comments

The deployed system is consistently exceeding the objective value for its operational availability key performance parameter. The program implements a formal process to review and update life-cycle cost estimates annually. Program officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# TECS Modernization

## Customs and Border Protection (CBP)

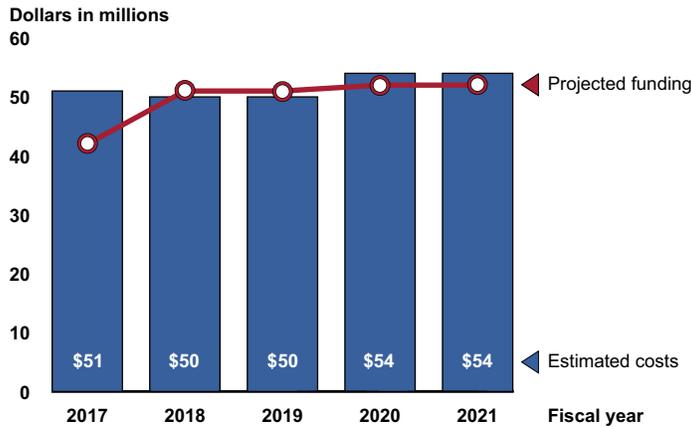


Source: Customs and Border Protection.

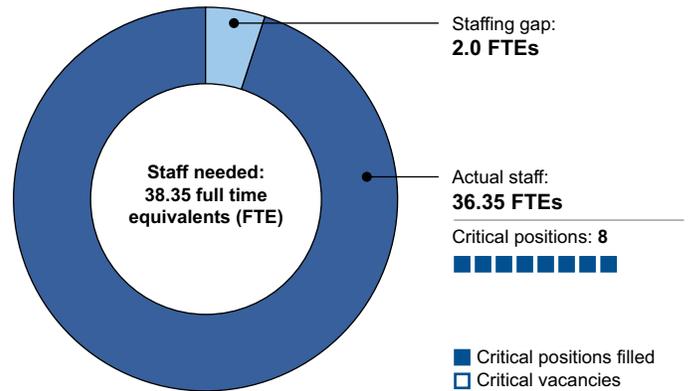
### Program Description

TECS (not an acronym) is a law-enforcement information technology system that helps CBP officials determine the admissibility of persons wanting to enter the United States at border crossings and ports of entry as well as pre-screening sites located abroad. The legacy TECS system has been in place since the 1980s and is obsolete, expensive to maintain, and unable to support CBP's evolving mission needs. In 2008, the Department of Homeland Security (DHS) initiated efforts to modernize TECS to provide its users with enhanced capabilities for accessing and managing data. Immigration and Customs Enforcement (ICE) is executing a separate TECS Modernization program, which GAO is also assessing in this report. GAO previously reported on CBP's TECS Modernization program in March 2016 (GAO-16-338SP).

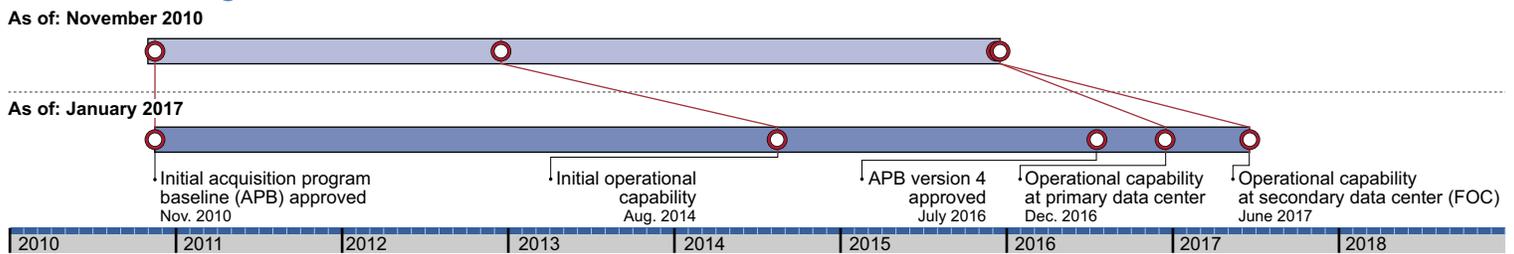
### Projected Funding vs. Estimated Costs



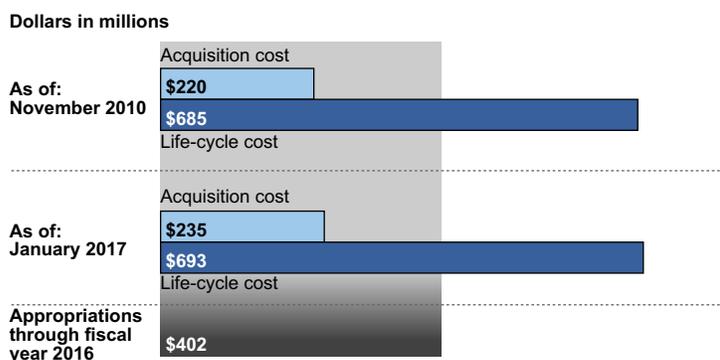
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

In August 2016, CBP officials told GAO the program had met its remaining key performance parameter (KPP), which establishes how quickly the system can create a new, searchable record. CBP officials previously told GAO in August 2015 that the program had met its other five KPPs, but DHS's Director, Office of Test and Evaluation (DOT&E) has not validated this assertion. According to officials, the program will demonstrate its KPPs through a series of four operational test events scheduled between September 2016 and January 2017. After the final event, DOT&E is to assess the test results to validate the program's performance.

## Acquisition Strategy

To modernize TECS, CBP is replacing its legacy, mainframe-based platform with a combination of hardware, custom-developed and commercial software, and a web-based portal that will allow TECS to deliver capabilities to users within CBP and other DHS agencies. The TECS Modernization program consists of five projects, and officials stated CBP initially used an incremental acquisition approach for four of these projects. However, CBP is now using an agile software development methodology for all five of the projects. Under the agile software development methodology, programs deliver software in short, small increments—rather than long, sequential phases—which allows programs to measure interim progress.

According to program officials, the program leverages existing CBP contracts to support TECS Modernization efforts. In June 2008, CBP awarded a contract to Bart & Associates, Inc. to develop software and provide operations and maintenance support. CBP exercised options on this contract from 2009 to 2012. However, the program experienced delays during this period. Officials told GAO that, in 2013, CBP awarded a new development and support contract to Northrop Grumman. That February, Bart & Associates, Inc. and two other firms submitted bid protests to GAO. CBP took corrective action, and 20 months later awarded another contract to Northrop Grumman in September 2014. Bart & Associates, Inc. submitted a second protest, which GAO denied. In January 2015, Northrop Grumman resumed work under the awarded contract that is being used to support TECS Modernization application development activities.

## Program Execution

In July 2016, DHS's Under Secretary for Management approved the fourth version of the CBP TECS Modernization's Acquisition Program Baseline (APB), which removed the program from the breach status it had been in for 3 months due to schedule slips. In April 2016, the program notified DHS leadership that it would not complete all required activities to achieve full operational capability (FOC) by its previously revised date of September 2016. Specifically, the program reported it needed more time to switch the TECS Modernization system between its primary and secondary data centers and perform testing to validate final functionality once the switch was complete. According to CBP officials, the schedule delay resulted from three main challenges, (1) workforce shortages emerged after Northrop Grumman resumed work under the new software development contract in January 2015, (2) the program took steps to improve cybersecurity in response to the 2015 Office of Personnel Management security breach, and (3) the program rearranged priorities to develop 18 new interfaces to support integration with the ICE TECS Modernization program.

In the most recent APB, the program split FOC into two separate operational capability milestones at each data center. Operational capability at the primary data center is projected for December 2016 and includes transitioning all TECS users to the modernized system to support the retirement of the legacy system. However, program officials said CBP will need to keep the legacy system active through fiscal year 2017 to support other programs that use TECS data. Operational capability at the secondary data center is projected for June 2017 and is a planned enhancement to the legacy system that will provide CBP redundant TECS access to minimize downtime during system maintenance or unscheduled outages. In total, this represents a slip of 18 months from the program's initial FOC date from its first APB in November 2010.

In April 2016, the program updated its life-cycle cost estimate, which remained largely unchanged since November 2010. According to CBP officials, the schedule delays have had little to no effect on the program's cost estimate or end users because the legacy TECS system remains active.

## Test Activities

In May 2016, DOT&E approved a fourth version of CBP TECS Modernization's Test and Evaluation Master Plan that provided additional information on how cybersecurity threats would be addressed during operational testing starting in fall 2016. According to officials, CBP conducted three operational test events in September and November 2016—one event each at a land border crossing, a seaport, and an airport—prior to conducting a fourth operational test event in January 2017 that will verify final integration of the system's hardware and software at both the primary and secondary data centers. CBP officials anticipate receiving preliminary results as testing is conducted, but said a test report encompassing all four events will be submitted to DHS's DOT&E for assessment after the final test is complete. They explained that the January 2017 operational test event is the program's biggest challenge because it will test integration of the TECS Modernization's hardware and software with DHS's network.

## Other Issues

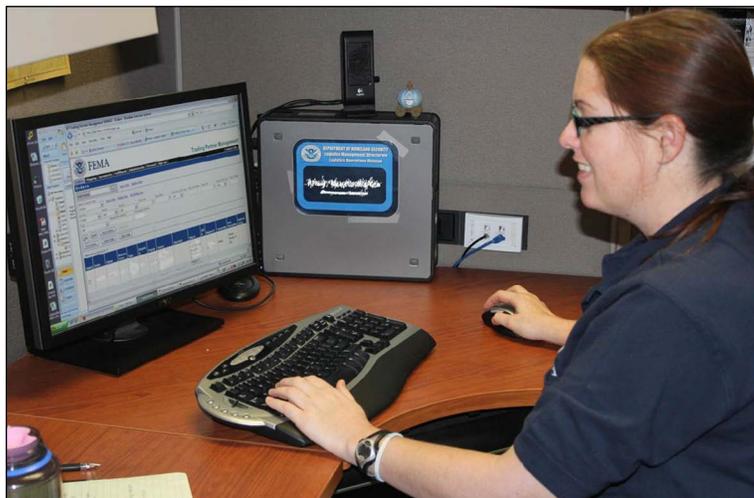
In August 2016, CBP officials stated that staffing shortfalls related to the previous bid protests have been resolved. Officials do not plan to fill the remaining two full time equivalents because they are for requirements analysts, which the program no longer needs this late in the acquisition life cycle.

### Program Office Comments

CBP officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Logistics Supply Chain Management System (LSCMS)

Federal Emergency Management Agency (FEMA)

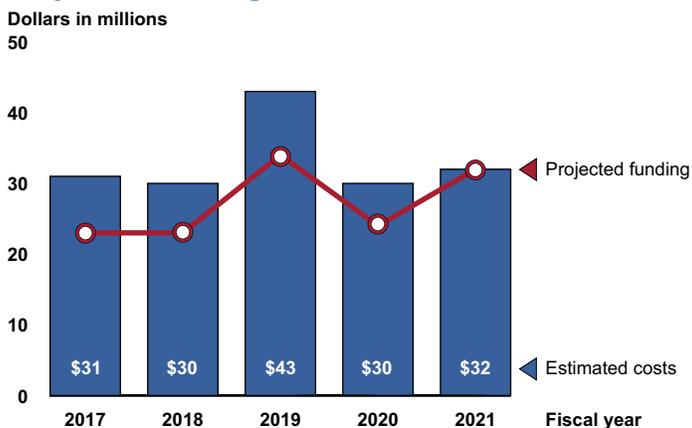


Source: Federal Emergency Management Agency.

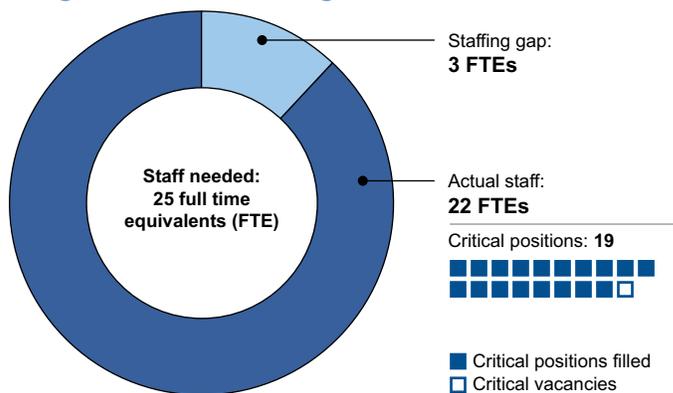
## Program Description

LSCMS is a computer-based tracking system that FEMA officials use to track shipments during disaster-response efforts. It is largely based on commercial-off-the-shelf software. FEMA initially deployed LSCMS in 2005, and initiated efforts to enhance the system in 2009. According to FEMA officials, LSCMS can identify when a shipment leaves a warehouse and the location of a shipment after it reaches a FEMA staging area near a disaster location. However, LSCMS cannot track partner organizations' shipments—such as those by state and local governments—en route to a FEMA staging area, and it lacks automated interfaces with its partners' information systems. GAO previously reported on LSCMS in March 2016 (GAO-16-338SP).

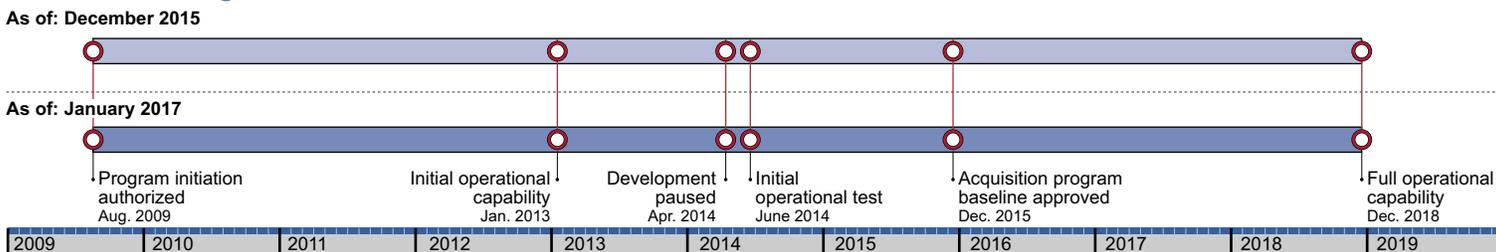
## Projected Funding vs. Estimated Costs



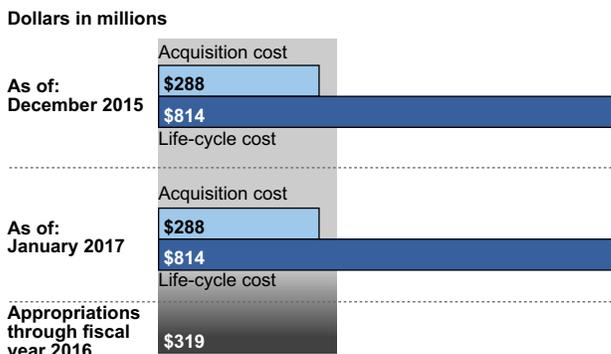
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

FEMA plans to conduct additional operational testing on the system by March 2018, after the program completes anticipated upgrades, including the capability to interface automatically with its partners' information systems. According to FEMA officials, LSCMS previously demonstrated it could meet all seven of its key performance parameters (KPP) through either operational or developmental testing. However, the Department of Homeland Security's (DHS) Director, Office of Test and Evaluation (DOT&E) noted that the testing was not adequate and recommended FEMA retest LSCMS. FEMA subsequently met two of its KPPs during a performance test for a single software release.

## Program Governance

In March 2016, DHS leadership authorized LSCMS to resume all development and acquisition efforts after a nearly 2-year program pause. FEMA deployed the enhanced LSCMS in 2013 without approval from the DHS Under Secretary for Management (USM) or key documentation such as a department-approved Acquisition Program Baseline (APB) or a DOT&E letter of assessment, as required by DHS's acquisition policy. In April 2014, based on the preliminary results of a DHS Office of Inspector General (OIG) report, the Acting USM directed FEMA not to initiate the development of any new LSCMS capabilities until further notice. The DHS OIG noted that neither DHS nor FEMA leadership ensured the program office identified all mission needs before selecting a solution, and the Acting USM instructed FEMA to conduct an analysis of alternatives to address LSCMS's remaining capability gaps.

In June 2015, a contractor completed the analysis of alternatives and recommended that FEMA pursue the current version of LSCMS plus additional capabilities that would improve coordination with partner organizations. On the basis of this assessment, in August 2015, FEMA officials stated they were planning to pursue an upgrade known as Electronic Data Interchange (EDI), which would provide LSCMS with the ability to automatically interface with its partners' information systems. In December 2015, DHS's USM approved the program's APB, which established cost, schedule, and performance parameters for LSCMS's new capabilities.

## Program Execution

LSCMS is on track to meet the schedule and cost parameters established in its December 2015 APB. In September 2016, officials told GAO they had initiated several efforts after receiving authority to resume development. For example, the program is working to implement security upgrades, add the EDI capability to the existing system, and integrate LSCMS with DHS's asset management system for fixed property. After completing planned upgrades, FEMA expects LSCMS to reach full operational capability by December 2018—over 7 years later than the program planned when FEMA initiated efforts to enhance LSCMS in 2009. FEMA officials previously attributed this schedule slip to the need to address capability gaps identified by the DHS OIG and staffing shortages, among other factors.

FEMA officials told GAO in September 2016 that they anticipate meeting, or potentially coming in under, the program's APB cost threshold of \$814 million, based on an April 2016 update to the program's approved life-cycle cost estimate. This estimate represents a nearly \$500 million increase from the program's initial 2009 estimate, which was never approved by DHS. FEMA officials previously stated that the 2009 life-cycle cost estimate did not account for costs beyond fiscal year 2017, among other things.

From fiscal year 2017 through fiscal year 2021, LSCMS's yearly cost estimates exceed the program's funding plan by almost \$29 million. However, the program's updated life-cycle cost estimate includes approximately \$35 million in costs for some services, such as personnel, that are funded by organizations external to LSCMS. When excluding the externally funded costs, the program is affordable during this 5-year period.

## Test Activities

In March 2016, DHS's USM directed the program to select a new operational test agent (OTA) and develop a Test and Evaluation Master Plan (TEMP) to address issues identified through past operational testing. Previously, FEMA deployed the enhanced LSCMS in January 2013 before operationally testing the system. When the operational test was conducted, DHS's DOT&E determined that the test was inadequate. The OTA at the time—the Department of Defense's Joint Interoperability Test Command—conducted the operational testing throughout calendar year 2013, leveraging performance data from the field, including data collected during FEMA's responses to real-world disasters. The OTA's conclusions were generally positive, but DOT&E determined in June 2014 that these conclusions were not supported by the test results, in part because the test's sample size was not adequate. DOT&E recommended that the program conduct additional operational testing. In June 2016, DOT&E approved FEMA's selection of a new OTA for LSCMS. In November 2016, DOT&E approved the program's TEMP, which defines a new overall testing approach for evaluating unresolved issues from previous testing along with LSCMS's new capabilities. The new TEMP also includes plans for cybersecurity testing. FEMA plans to complete additional operational testing by March 2018, once the security upgrades and the addition of the EDI capability are complete.

## Other Issues

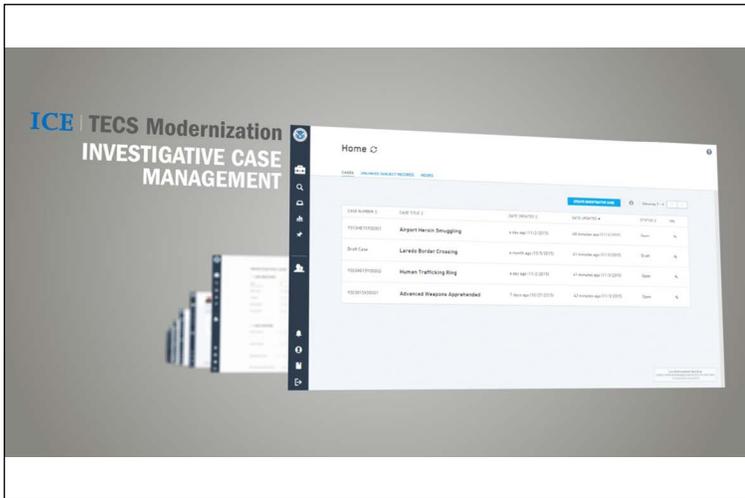
In September 2016, FEMA officials told GAO that the LSCMS program had 22 of the 25 full time equivalents (FTE) it needed and was working to recruit additional staff. This represents a significant improvement from fiscal year 2014, when GAO found that the program had only 7 of the 22.5 FTEs it needed ([GAO-15-171SP](#)). Officials previously attributed the program's governance and testing challenges in part to staffing shortages. In September 2016, officials stated that the addition of new staff has helped the program to update acquisition documents and conduct business analyses that may help identify future cost savings.

### Program Office Comments

FEMA officials reviewed a draft of this assessment and provided no comments.

# TECS Modernization

## Immigration and Customs Enforcement (ICE)

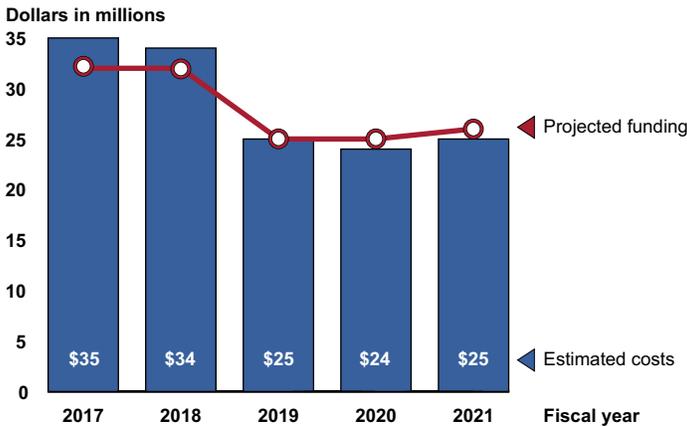


Source: Immigration and Customs Enforcement.

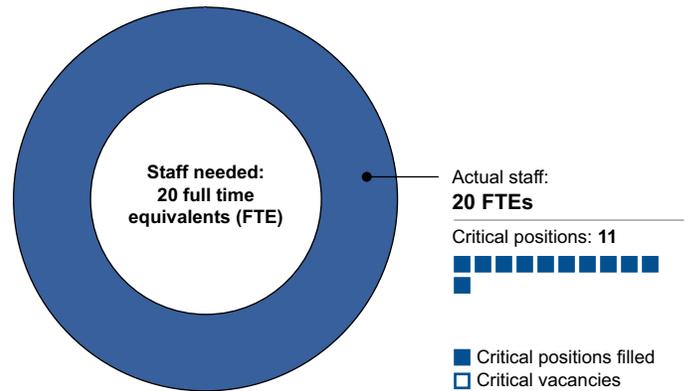
### Program Description

ICE is responsible for investigating and enforcing border control, customs, and immigration laws. The legacy TECS (not an acronym) system has supported ICE's mission since the 1980s, providing case management, intelligence reporting, and information sharing capabilities. However, the legacy system is obsolete, expensive to maintain, and unable to support ICE's growing mission needs. In 2009, ICE began efforts to modernize aging TECS functionality and provide end users with additional functionality required for mission execution. The Department of Homeland Security's (DHS) Customs and Border Protection is executing a separate TECS Modernization program, which GAO has also assessed in this report. GAO previously reported on ICE's TECS Modernization program in March 2016 (GAO-16-338SP).

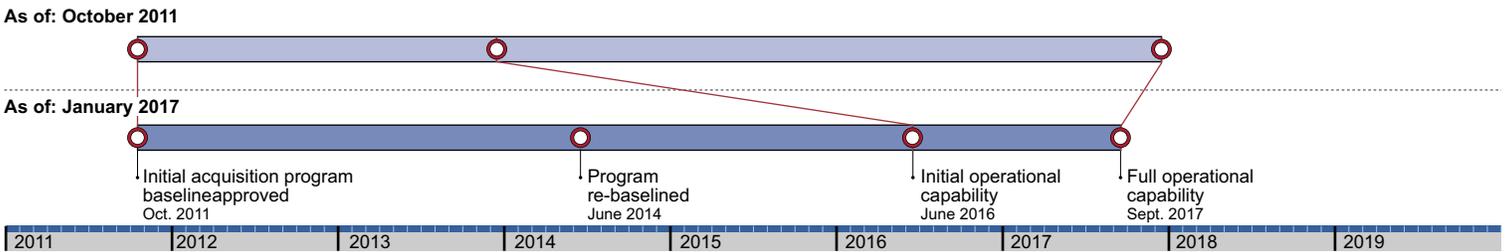
### Projected Funding vs. Estimated Costs



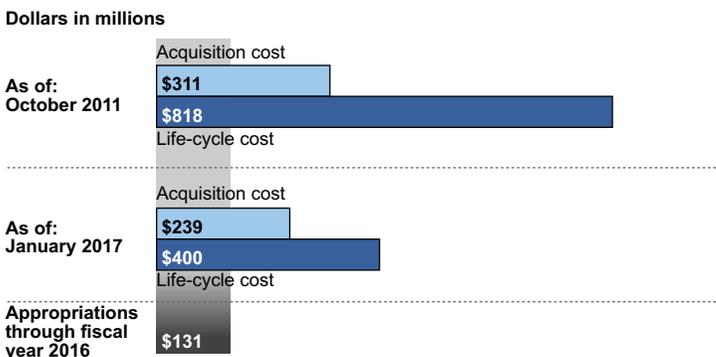
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

The modernized ICE TECS system demonstrated two of its three key performance parameters (KPP) during operational testing conducted from August to October 2016. However, DHS's Director, Office of Test and Evaluation (DOT&E) has not yet validated these results. The third KPP, related to concurrent users, was not tested and ICE officials said it will be difficult for the program to meet this KPP because the requirements are not realistic. The current KPP threshold assumes 6,000 officers will use the system simultaneously. In August 2016, officials said data showed there are between 500 and 600 concurrent users. ICE officials said they are working with end users to revise the KPP threshold prior to full operational capability (FOC).

## Acquisition Strategy

ICE initiated efforts to modernize the TECS system with a custom-developed solution in 2011. By June 2013, ICE officials determined that the existing TECS Modernization approach was unfeasible and subsequently restructured the program. The program now leverages commercial-off-the-shelf products, and is no longer pursuing a custom-developed solution. According to the program manager, the program is acquiring capabilities through four concurrent “work streams,” each of which delivers discrete portions of the system’s total planned functionality. Different contractors are responsible for different work streams, and the program office is managing their efforts and integrating their software. Program officials said that this approach is intended to improve management visibility into each of the contractor’s efforts. However, officials added that integrating the program across the four work streams has presented challenges and that ICE has utilized multiple techniques to address these challenges including co-locating all work stream teams, conducting daily coordination meetings, and establishing a cross-program body of ICE and DHS technical experts to address integration issues.

## Program Execution

The program achieved initial operational capability (IOC) in June 2016—3 months later than previously planned. The program office attributed the delay to resolving technical problems with Customs and Border Protection support services that emerged during final integration testing. In February 2016, ICE notified DHS that it would breach its re-baselined IOC threshold date of March 2016 and subsequently revised its Acquisition Program Baseline and life-cycle cost estimate (LCCE) to account for the delay. According to officials, IOC entailed delivering 80 percent of the modernized TECS system’s functionality to operators in the field and successfully transitioning ICE off the legacy system.

In achieving IOC, ICE has overcome past technical difficulties and schedule delays. In June 2014, DHS’s Under Secretary for Management re-baselined the program to reflect ICE’s new acquisition approach. The program’s IOC date slipped from December 2013 to March 2016, but the FOC date moved forward, from December 2017 to September 2017. In August 2016, ICE officials told GAO that the program remains on track to achieve its revised FOC date. However, at that time, the program had not yet identified what FOC would entail and officials stated that they were working with end users to determine final FOC functionality. ICE officials subsequently said they completed FOC planning activities in October 2016, including confirming FOC functionality such as enhanced system search capabilities.

From January 2016 to January 2017, the program’s acquisition cost estimate increased by \$4 million. ICE officials attributed this increase to including actuals for a data center contract that was awarded in 2016. However, the program’s cost estimates previously decreased significantly when the program revised its acquisition approach. In fiscal years 2017 and 2018, the program is projected to face a \$5 million funding gap. However, ICE officials anticipate utilizing a multi-year appropriation to cover the projected gap.

## Test Activities

ICE conducted an operational assessment from December 2015 to May 2016. DOT&E assessed the results and, in June 2016, concluded that ICE had successfully migrated TECS

data from the legacy system but deferred final evaluation of the modernized system’s operational suitability, operational effectiveness, and KPPs until further testing could be conducted in a production environment. The program’s operational test agent conducted initial operational test and evaluation from August 2016 to October 2016. ICE initially planned to start this testing in May 2016, but it slipped once IOC was delayed. The operational test agent determined the modernized ICE TECS system was operationally effective and operationally suitable with limitations, and recommended the program conduct additional tests related to cybersecurity prior to FOC, among other things. The final operational test agent report was released in December 2016, and DOT&E plans to complete an assessment of the results by the end of February 2017.

ICE officials told GAO they plan to revise the program’s Test and Evaluation Master Plan once FOC functionality is finalized and conduct follow-on operational test and evaluation prior to achieving FOC in September 2017. According to officials, final testing will include threat-based cybersecurity testing.

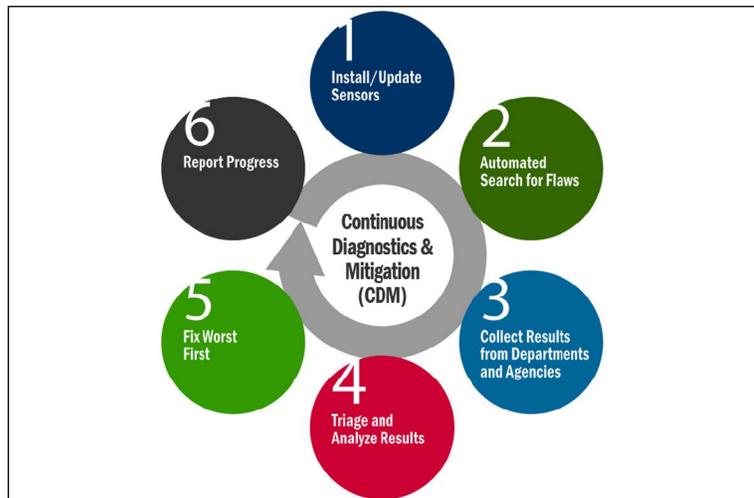
Prior to IOC, program officials stated the program conducted a “soft launch” of the case management capabilities at the New York field office, which allowed users to update their credentials, conduct test searches, and insert test records into the modernized TECS system. Program officials stated the exercise helped users get comfortable with the new TECS system and allowed the program to initiate the transfer of user provisions from the legacy system to the modernized system. In August 2016, program officials told GAO that use of the modernized TECS system since IOC has been consistent across all field offices and they have received positive feedback from ICE field agents that the system is meeting their day-to-day needs. Program officials stated that ICE established a 24/7 Command Center for the first 4 weeks following IOC implementation to address end user problems and concerns. These officials added that they continue to track help desk tickets on a weekly basis and plan to release monthly updates to address identified issues.

## Program Office Comments

ICE officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Continuous Diagnostics & Mitigation (CDM)

National Protection and Programs Directorate (NPPD)

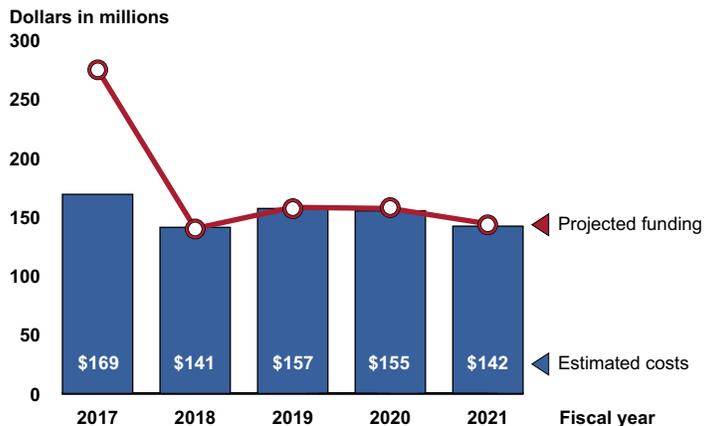


Source: National Protection and Programs Directorate.

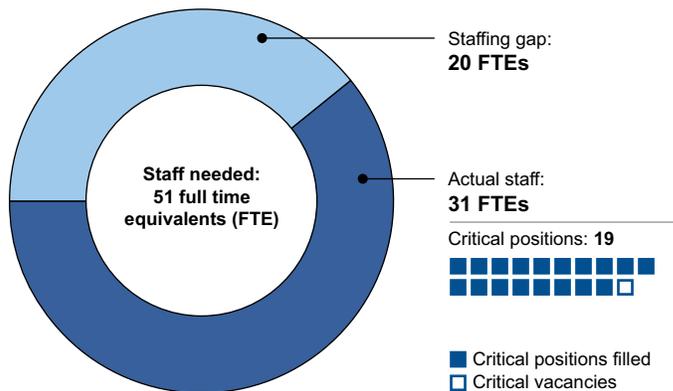
## Program Description

The CDM program is intended to strengthen the cybersecurity of the federal government's computer networks by providing sensors and dashboards to more than 65 participating civilian departments and agencies. The sensors continually monitor agency networks for vulnerabilities rooted in both hardware and software, and automatically notify agency personnel through dashboards when vulnerabilities are detected. CDM is also delivering a government-wide dashboard to the Department of Homeland Security (DHS), which will extract data from the agency-level dashboards and enhance situational awareness across the federal government. In June 2016, DHS leadership directed the program to re-baseline for the third time to address implementation challenges and to account for additional capabilities. GAO previously reported on the CDM program in March 2016 (GAO-16-338SP).

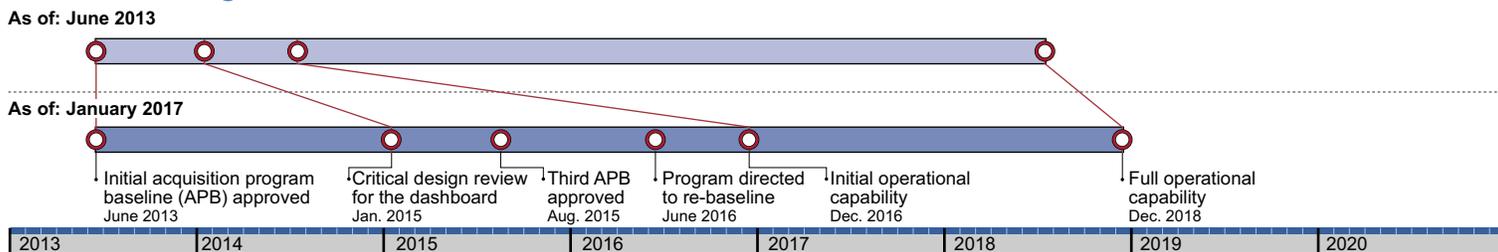
## Projected Funding vs. Estimated Costs



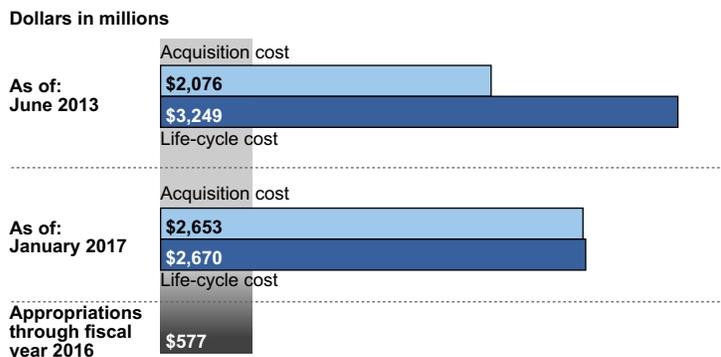
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

CDM currently has 12 key performance parameters (KPP), which it has not yet demonstrated. However, in August 2016, NPPD officials told GAO that they were revising the program's operational requirements document as a part of the program's re-baseline effort. Officials said DHS leadership directed the program to consolidate its existing 12 KPPs, but the program may add KPPs to account for additional capabilities.

## Acquisition Strategy

CDM plans to provide sensors and tools to the departments and agencies in four phases. Phase 1 sensors will report vulnerabilities in hardware and software; phase 2 tools will report on user access controls; phase 3 tools will report on department and agency efforts to prevent attacks and limit the impact of ongoing attacks; and phase 4 tools will focus on encryption and other data masking techniques to protect data on the network. Phase 4 was added at the request of the Office of Management and Budget (OMB) in December 2015 to address vulnerabilities on government networks that threats may seek to exploit. The General Services Administration (GSA) is administering CDM's contracts using blanket purchase agreements (BPA) established under vendors' GSA Federal Supply Schedule contracts. Through these BPAs, the program issues task orders to acquire commercial-off-the-shelf software, hardware, and services. In June 2016, GSA awarded the final phase 1 task order—to deliver sensors for 44 agencies—as well as the first of two task orders for phase 2 tools—to provide tools for managing user network privileges at 69 agencies. GSA awarded the second phase 2 task order in November 2016, which will provide tools for verifying user network credentials at 26 agencies. GSA previously awarded five task orders to deliver phase 1 sensors to 25 agencies and a separate task order for the agency-level and government-wide dashboards.

## Program Execution

In June 2016, DHS leadership directed CDM to re-baseline for the third time to account for the addition of phase 4 and to address challenges encountered during phase 1. Specifically, contractors found large gaps for 12 of the agencies receiving phase 1 sensors in the actual number of network-connected devices needing coverage from what was originally reported. The gaps in coverage ranged from 19 percent to 384 percent. NPPD officials attributed the gaps to different interpretations by some agencies of what devices should have been counted, as well as a time lag between when the agencies reported their coverage needs and when GSA awarded the task orders. In August 2016, program officials said that DHS leadership instructed CDM to self-fund the increased cost caused by the gaps, which NPPD estimated to be at least \$66 million to support all agencies except the U.S. Postal Service (USPS). USPS had the largest identified coverage gap, which NPPD estimated would cost an additional \$93 million to cover. According to program officials, USPS will fund the cost of covering its own phase 1 sensors, but NPPD will provide two subject matter experts to support USPS's efforts.

As of January 2017, NPPD had not yet completed the CDM re-baseline effort, which officials said will include revisions to the program's Acquisition Program Baseline (APB) and life-cycle cost estimate (LCCE). NPPD officials anticipate the program's cost estimates will increase and acknowledged that the phase 1 gaps will likely delay the program's ability to execute subsequent phases. To cover the phase 1 gaps, NPPD officials said they deferred \$30 million of phase 2 funding by limiting the number of agencies covered by phase 2 tools and used \$36 million originally planned for phase 3. In fiscal year 2017, OMB plans to allocate an additional \$172 million to DHS to accelerate deployment of CDM phase 3 capabilities and to support creation of phase 4. Despite the challenges encountered with phase 1, CDM achieved initial operational capability by its revised deadline of December 2016 after the program delivered sensors and dashboards to five agencies.

DHS leadership approved three versions of CDM's APB between 2013 and 2015. In each new version, the program's cost estimates and schedule changed. The program's third APB, which DHS leadership approved in August 2015, reflected schedule slips that officials largely attributed to contracting delays. The program's acquisition cost estimate increased to \$2.7 billion for several reasons, including increased staff levels and costs for sensor replacement. In contrast, the program's LCCE decreased to \$2.7 billion when NPPD determined it did not need to support all of the sensors CDM offers at all agencies and DHS leadership determined CDM would only fund the operation and maintenance of CDM sensors, tools, and dashboards for the first 2 years of deployment, rather than over their entire life cycles.

## Test Activities

CDM is only authorized to conduct testing on DHS networks, which means the other departments and agencies are responsible for testing the CDM sensors and dashboards on their own networks. In August and October 2016, the contractor providing phase 1 sensors for the DHS network conducted initial testing to demonstrate their functional requirements. CDM's test team found that 65 percent of the requirements were not demonstrated or not tested during these events. The program plans to work with the contractor to identify and address reasons why the requirements were not met or tested. In August 2016, NPPD officials said they had observed operational testing conducted at three agencies and plan to revise CDM's Test and Evaluation Master Plan as a part of the programs' re-baseline effort.

## Other Issues

In December 2016, NPPD officials told GAO the program's authorized staffing levels had increased from 30 to 51 full time positions, but that CDM continued to face significant staffing shortages and needed a program manager. Officials said the staffing gap of 20 full time positions—meaning actual personnel rather than equivalents—forces the program to divert individuals from their normal responsibilities to critical areas, such as project management. NPPD is actively working to fill CDM's vacancies, but officials said they struggle to hire new staff due to lengthy security clearance processes.

## Program Office Comments

The program continues to re-baseline and is targeting April 2017 for completion. CDM continues to manage its budget to ensure program costs match available funding. CDM is leveraging the collective buying power of federal agencies and strategic sourcing to achieve over \$344 million in government cost savings on CDM products—a 61 percent savings compared to GSA's Schedule 70. As of December 2016, CDM has deployed dashboards to nine agencies and is planning to deploy the government-wide dashboard in June 2017. CDM has received many accolades from agencies and federal leaders. NPPD officials also provided technical comments on this assessment, which GAO incorporated as appropriate.

# Homeland Advanced Recognition Technology (HART)

National Protection and Programs Directorate (NPPD)

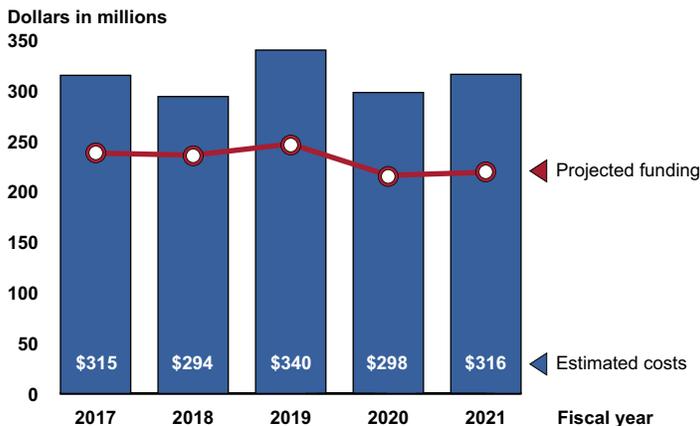


Source: National Protection and Programs Directorate.

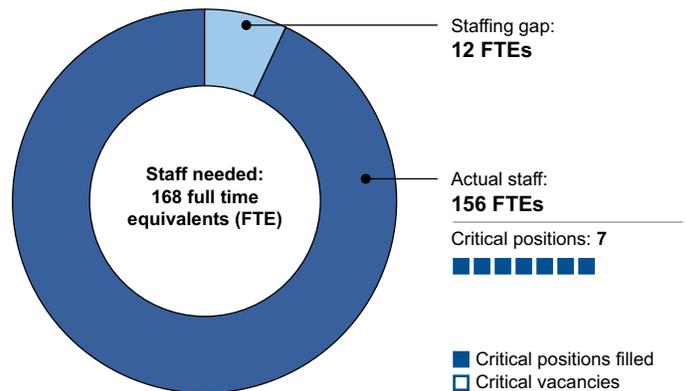
## Program Description

HART is intended to replace and modernize the Department of Homeland Security's (DHS) legacy biometric identification information system known as the Automated Biometric Identification System (IDENT). Since 1994, IDENT has enhanced national security and facilitated legitimate travel, trade, and immigration by receiving, maintaining, and sharing information on foreign nationals with DHS border management organizations, other federal agencies, law enforcement, and foreign partners. However, IDENT is at risk of failure because it cannot keep pace with a growing number of daily system transactions. In 2011, DHS initiated efforts to replace IDENT with HART in order to provide users with enhanced capabilities for accessing and managing biometric identification data.

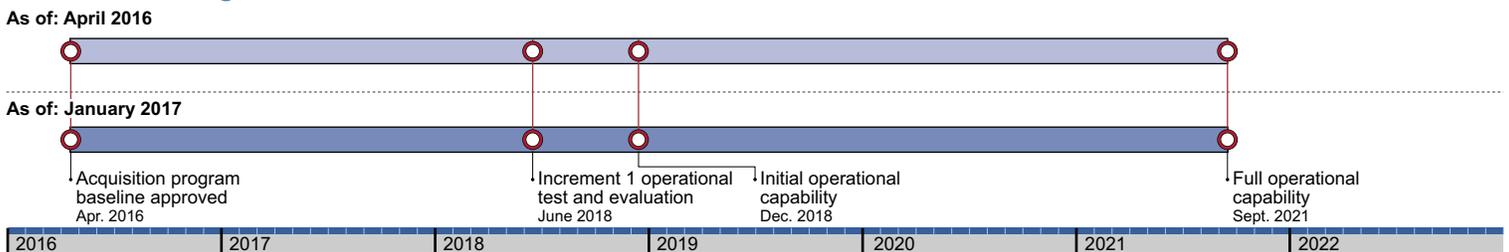
## Projected Funding vs. Estimated Costs



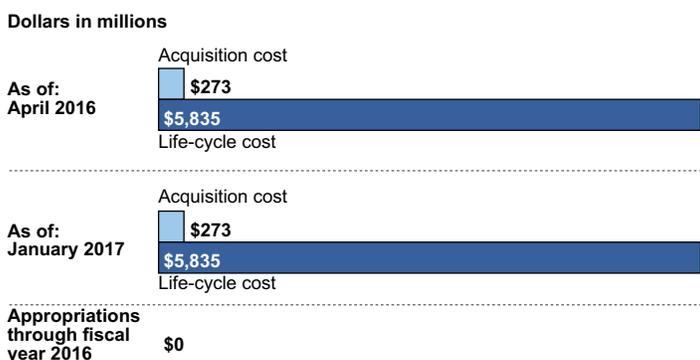
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

HART is still in a relatively early acquisition stage, and the program has not yet demonstrated whether it can meet its eight key performance parameters (KPP). The program plans to demonstrate its KPPs as capabilities are developed. The first two KPPs establish requirements for system availability and a fingerprint biometric identification service. The next set of four KPPs establishes requirements for multimodal biometric verification services and interoperability with a Department of Justice system. The program's remaining two KPPs establish requirements for web portal response time and reporting capabilities.

## Acquisition Strategy

HART plans to develop and deploy capabilities through 4 increments: increments 1 and 2 are intended to replace and enhance existing IDENT system functionality, and increments 3 and 4 are intended to provide additional capabilities. Specifically, increment 1 will provide the core infrastructure including system hardware and basic functionality to operate HART. Increment 2 will provide enhanced biometric capabilities, such as facial and iris identification, and the full test environment for measuring system performance. Increment 3 will introduce a web portal to improve system accessibility and provide a holistic person-centric view of biometric identification data. Increment 4 will provide additional tools for improved data analysis and reporting capabilities.

According to NPPD officials, the program is focused on awarding an initial contract for the development and delivery of increments 1 and 2, and plans to pursue separate contracts for the development and delivery of increments 3 and 4.

## Program Execution

In April 2016, DHS's Under Secretary for Management (USM) approved HART's Acquisition Program Baseline (APB)—which established the program's cost, schedule, and performance parameters—and authorized the program to initiate development efforts for increments 1 and 2 in October 2016. HART plans to achieve initial operational capability (IOC) with the deployment of increment 1 in December 2018, at which point program officials anticipate beginning to transition users from the legacy IDENT system to HART. HART plans to achieve full operational capability with the deployment of increment 4 by September 2021.

NPPD officials told GAO that the program's schedule and cost estimates may change once they award the contract for increments 1 and 2 and receive the contractor's proposed technical solution. The program has experienced delays in awarding the contract. In September 2016, NPPD officials told GAO that the program received and incorporated industry feedback into the request for proposal (RFP) in July 2016. In October 2016, NPPD officials told GAO that the program was resolving a potential issue with the final RFP and had released a second draft RFP in order to maintain communication with industry. Program officials anticipate releasing the final RFP in January 2017. Subsequently, they plan to update HART's schedule and cost estimates once the contract for increments 1 and 2 is awarded because the contractor's proposed solution will assist officials in determining how much of the legacy IDENT system can be reused for HART, a factor that may affect the program's cost estimate.

From fiscal year 2017 through fiscal year 2021, HART is projected to face a \$406 million funding gap. In April 2016, NPPD identified that DHS plans to program an additional \$335 million to the program over this 5-year period. In September 2016, program officials stated that they have taken steps to mitigate remaining shortfalls. For example, the program extended the planned schedule for technical refreshes from 5 years to 7 years, carried over \$39 million into fiscal year 2016, and identified approximately \$27.3 million of no-year funding in fiscal year 2016 that could be used to cover the anticipated funding gap.

## Test Activities

DHS's Director, Office of Test and Evaluation approved the HART program's Test and Evaluation Master Plan in September 2016, after the program incorporated feedback from DHS's Science and Technology Directorate (S&T) and HART's operational test agent, the Department of Defense's Joint Interoperability Test Command. For example, the program revised its developmental test and evaluation strategy, added risk assessment levels for planned tests, and aligned cybersecurity objectives with requirements. HART plans to conduct operational testing for increment 1 in June 2018 prior to achieving IOC.

Additionally, S&T's Office of Systems Engineering completed a technical assessment on HART in February 2016, and concluded that the program had a moderate overall level of technical risk. In October 2016, DHS's USM directed HART to work with S&T to monitor the risks identified in the technical assessment, and directed S&T to conduct further analysis following the program's initial contract award for increments 1 and 2.

## Other Issues

NPPD reported the program had a staffing gap of 12 full time equivalents, but in September 2016, program officials did not attribute any negative effects to workforce shortages. Program officials said that they plan to hire additional contractors to support the new systems integrator, and will transition existing staff to support HART efforts as the legacy IDENT system is decommissioned. The program is also undergoing efforts to determine future staffing needs. Program officials said they proactively engaged the Office of Personnel Management to conduct a workforce analysis. Additionally, DHS directed the program to conduct a staffing analysis with assistance from the department's Chief Technology Officer to determine any gaps, particularly in the cyber security field. The results of this analysis are required to be completed by March 2017.

DHS proposed moving the IDENT and HART programs from NPPD to Customs and Border Protection in its fiscal year 2017 budget submission. In September 2016, program officials told GAO that the transition had not yet been approved and that HART would remain with NPPD through at least the end of the fiscal year 2017.

## Program Office Comments

NPPD officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# National Cybersecurity Protection System (NCPS)

National Protection and Programs Directorate (NPPD)

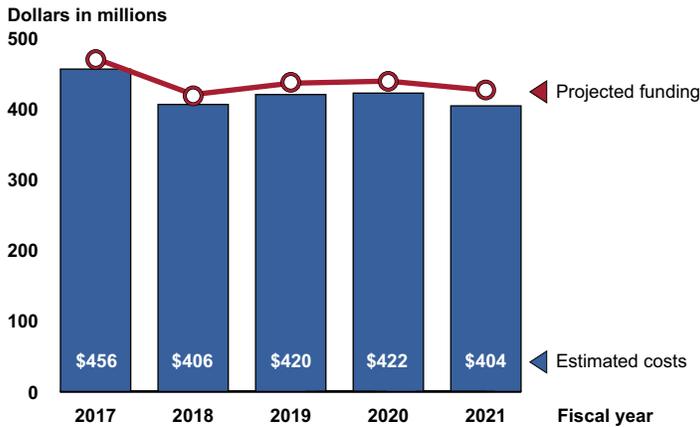


Source: National Cybersecurity Protection System.

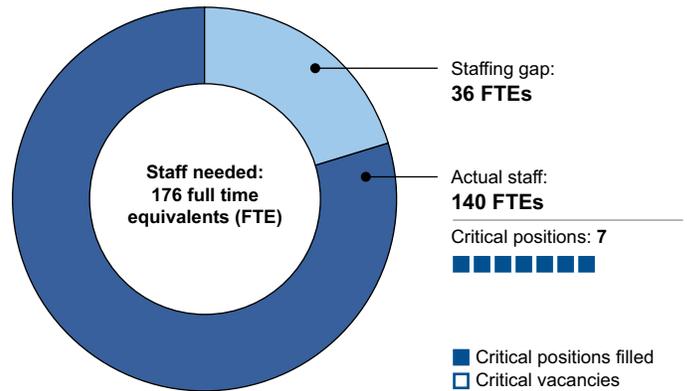
## Program Description

NCPS is intended to defend the federal civilian government's information technology infrastructure from cyber threats. The Department of Homeland Security (DHS) established the program to acquire hardware, software, and services, and NCPS delivers capabilities through a series of interdependent upgrades designated "blocks." Blocks 1.0, 2.0, and 2.1 are fully deployed and collectively provide intrusion-detection and analytic capabilities across government agencies. NCPS is currently deploying EINSTEIN 3 Accelerated (E<sup>3</sup>A), previously designated block 3.0, which is intended to provide an intrusion-prevention capability. Going forward, NCPS plans to deliver block 2.2 to improve information sharing across agencies. GAO previously reported on the NCPS program in March 2016 and January 2016 ([GAO-16-338SP](#), [GAO-16-294](#)).

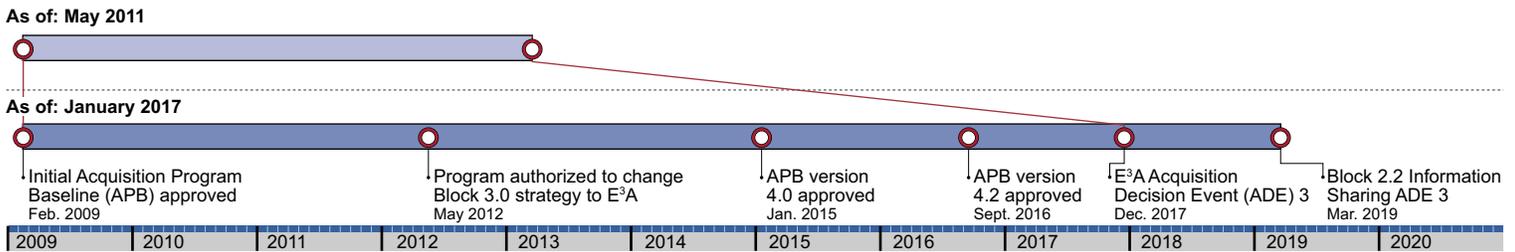
## Projected Funding vs. Estimated Costs



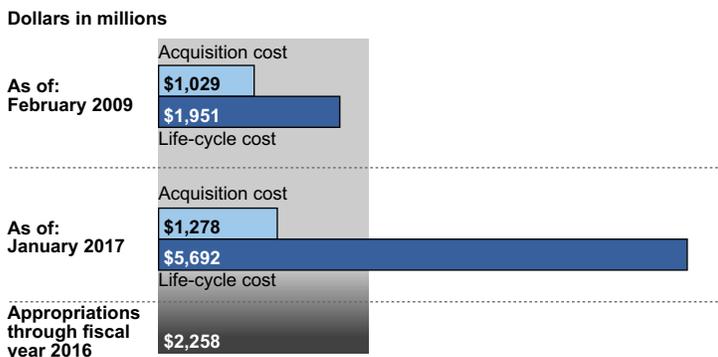
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

In June 2015, DHS's Director, Office of Test and Evaluation (DOT&E) found E<sup>3</sup>A had met its key performance parameters (KPP) for coverage and accuracy, and had made progress towards meeting its KPP for timeliness. In August 2016, NPPD officials said the program continued to meet its coverage KPP, but encountered challenges in measuring whether it had met the accuracy and timeliness KPPs. Block 2.2 is still early in development and officials said NCPS has yet to demonstrate whether block 2.2 can meet any of its five KPPs. NPPD began further E<sup>3</sup>A testing in June 2016 and plans to initiate block 2.2 testing in March 2017.

## Acquisition Strategy

The program originally planned to use government technology to deliver block 3.0 intrusion-prevention capabilities, but in May 2012, it significantly changed its acquisition strategy, decided to work directly with commercial internet service providers (ISP), and designated the revised effort E<sup>3</sup>A. The program re-baselined in January 2014 and the E<sup>3</sup>A intrusion-prevention capabilities are now primarily provided through sole source contracts with the nation's largest ISPs to maximize coverage. However, in May 2015, NCPS decided to provide E<sup>3</sup>A through fewer ISPs than previously planned. Program officials said at the time that they made this decision due to performance concerns involving certain ISPs. This change threatened to limit E<sup>3</sup>A's coverage, but the program developed a plan that instead allowed it to expand its coverage. Program officials said they awarded a contract to provide basic intrusion-prevention services at a greater number of federal agencies and enable the program to have the capacity to cover all federal email and internet traffic. However, officials noted that providing intrusion-prevention services has some challenges, such as protecting classified information used to identify threats on unclassified networks and rolling out these services across the federal government.

In December 2015, Congress required federal government agencies and departments to adopt intrusion-prevention services, such as NCPS's E<sup>3</sup>A, by December 2016. Program officials updated its strategy in March 2016 for rolling out these services across the federal government, and as of December 2016, NCPS had integrated E<sup>3</sup>A at approximately 93 percent of federal agencies and departments. Program officials cited legal and network challenges as barriers to integration because they must negotiate and customize E<sup>3</sup>A for individual agencies and departments. These officials said they continue to work with all agencies and departments to provide E<sup>3</sup>A services.

In January 2015, DHS's Under Secretary for Management (USM) approved a fourth version of NCPS's Acquisition Program Baseline (APB), which established cost, schedule, and performance goals for block 2.2. NCPS had planned to develop custom solutions for all block 2.2 information sharing capabilities through the ISPs, but in January 2016, DHS leadership directed the program to adopt tools from DHS's Homeland Security Information Network (HSIN) program for providing some block 2.2 capabilities and updated its APB to reflect this change.

## Program Execution

In September 2016, DHS's USM approved an update to the program's fourth APB that reflected changes resulting from the adoption of HSIN capabilities into block 2.2. Specifically, the program's major acquisition decisions for deploying additional block 2.2 capabilities—Acquisition Decision Event (ADE) 2C—and for approving transition to sustainment—ADE 3—both slipped 6 months to December 2017 and March 2019, respectively. Program officials said they identified about \$9 million in cost savings due to adopting HSIN tools, but that these savings were not significant enough to change the program's existing APB life-cycle cost estimate (LCCE) threshold of \$5.7 billion. NCPS's LCCE previously increased when DHS leadership re-baselined the program in January 2015 to account for block 2.2 and refinements to E<sup>3</sup>A. Program officials said the 2009 LCCE only accounted for costs over a 5-year period, whereas the 2015 LCCE accounted for costs through fiscal year 2022, which is the program's end date

The E<sup>3</sup>A schedule did not change further under the program's September 2016 APB. However, in April 2015, we found that NCPS's decision to work directly with the ISPs on E<sup>3</sup>A had a significant effect on the program's schedule. Among other things, the program delayed an acquisition decision to operate deployed capabilities until July 2015—when DHS leadership reviewed the results of E<sup>3</sup>A's first independent operational assessment (OA)—and delayed the ADE 3 for E<sup>3</sup>A until December 2017.

## Test Activities

In June 2015, DHS's DOT&E evaluated the results of E<sup>3</sup>A's first OA and found that it demonstrated progress toward operational effectiveness and operational suitability, but recommended the program take actions to strengthen future testing. Program officials told GAO they began to take steps to address DOT&E's recommendations in early 2016 and, in June 2016, the program's operational test agent—the Institute for Defense Analyses—began conducting a second E<sup>3</sup>A OA. Program officials anticipate receiving final OA results at the end of January 2017 and have begun planning for initial operational test and evaluation, which is planned for late fiscal year 2017.

According to program officials, NCPS plans to conduct an OA on block 2.2 capabilities in March 2017 after it completes adoption with HSIN. The results of this OA will inform the program's Block 2.2 ADE 2C scheduled for December 2017.

## Other Issues

In August 2016, program officials said NCPS's staffing need had increased to 176 full time positions—meaning actual personnel rather than equivalents—of which only 140 positions were filled. Program officials said they have difficulty obtaining cybersecurity staff and are working with DHS to recruit talented staff. These officials added that the staffing gap limits the program's ability to test the E<sup>3</sup>A system against security requirements, oversee contractors, and manage finances.

## Program Office Comments

Since the last assessment, the NCPS program office has made progress toward achieving program objectives. Departments and agencies have continued to onboard E<sup>3</sup>A services. Approximately 93 percent of the federal civilian .gov user population is protected by at least one E<sup>3</sup>A service. NCPS continues to work with agencies to provide all available EINSTEIN protections. Also in 2016, the NCPS program office developed and implemented a plan to leverage an existing DHS investment to meet a portion of the NCPS information sharing requirements (block 2.2), resulting in a cost savings for the program. Program officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Next Generation Networks Priority Services (NGN-PS)

National Protection and Programs Directorate (NPPD)



**Government Emergency Telecommunications Service**  
Office of Emergency Communications

**John Smith**  
Department of Defense

Dial Access Number: **1-710-627-4387**

After Tone, Enter PIN: **\*\*\*\*\***

When Prompted, Dial: **Area Code + Number**

Source: Leidos.

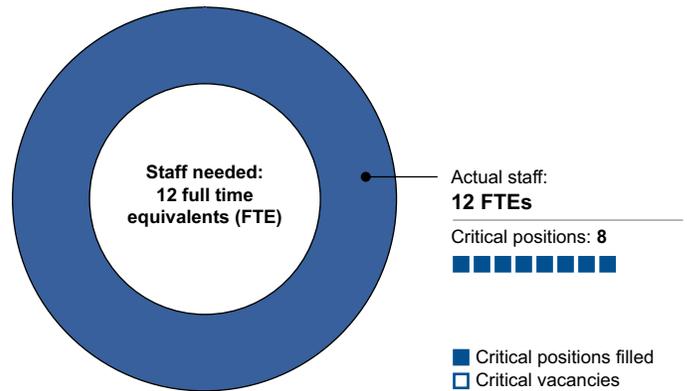
## Program Description

NGN-PS is intended to address an emerging capability gap in the government's emergency telecommunications service, which prioritizes select officials' phone calls when networks are overwhelmed. NPPD executes the NGN-PS acquisition program through commercial telecommunications service providers, which address the government's requirements as they modernize their own networks. NPPD plans to execute NGN-PS in phases—voice, video, and data—and is currently focused on the voice phase. Once NGN-PS capabilities become operational, NPPD's Priority Telecommunications Services (PTS) program assumes responsibility for sustaining them. The cost and funding figures in this assessment account for both NGN-PS and PTS in accordance with Department of Homeland Security (DHS) guidance. GAO reported on the NGN-PS acquisition program in March 2016 ([GAO-16-338SP](#)).

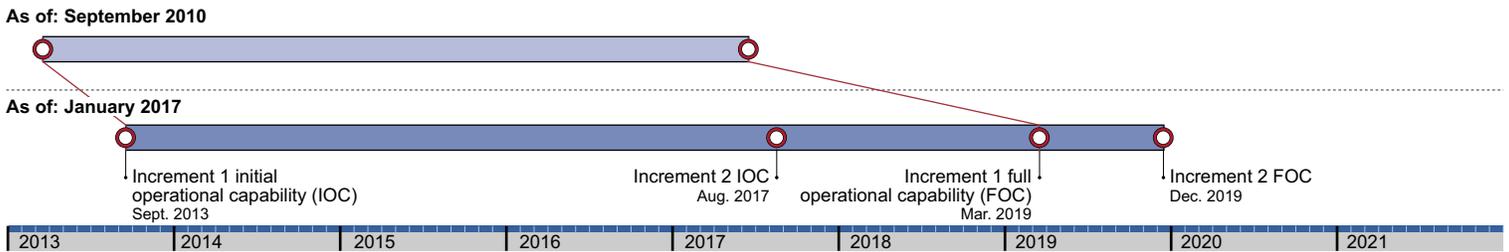
## Projected Funding vs. Estimated Costs



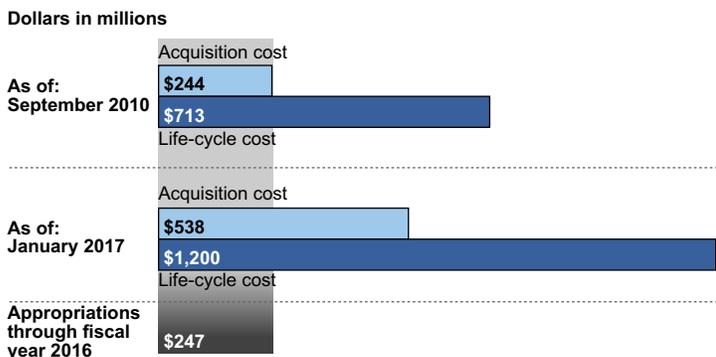
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

In August 2016, NPPD officials told GAO that NGN-PS continued to meet all six of its key performance parameters (KPP) for the voice phase, but DHS's Director, Office of Test and Evaluation (DOT&E) has not yet validated the program's performance. NPPD officials noted that each emergency is unique and that performance can be affected by damage to telecommunications infrastructure. NPPD officials also stated that they are in the process of developing additional KPPs for the video and data capabilities of NGN-PS.

## Acquisition Strategy

NGN-PS was established in response to an Executive Order requiring the federal government to have the ability to communicate at all times during all circumstances to ensure national security and manage emergencies. The NGN-PS program works with telecommunication service providers as they enhance their carrier networks so they can provide select government officials survivable telecommunications capability nationwide through the PTS program. The NGN-PS voice phase is divided into three increments: increment 1 includes paying service providers to ensure their major core networks can continue to prioritize government phone calls as needed; increment 2 delivers wireless capabilities; and increment 3 is intended to address landline capabilities. NGN-PS has initiated the first two increments and awarded three base contracts in 2014, each of which includes 9 option years. In August 2016, NPPD officials said they had begun planning for the third increment.

In July 2016, the White House issued a Presidential Policy Directive that superseded previous directives requiring continuous communication services for select government officials. NPPD officials said the new directive validates the program's requirements and that they do not expect it to affect the program's costs or schedule. NPPD officials noted that they plan to update the Acquisition Program Baseline once the impact of the new directive is understood, but could not provide a timeframe for when this will be complete. The NGN-PS data and video capabilities were initially planned as separate phases, but in August 2016, NPPD officials told GAO that they plan to acquire them together. NPPD officials explained that it now makes more sense to consolidate the data and video capabilities as a result of technological advancements achieved since the program's acquisition plan was developed in 2013. The data and video phase is in the early planning stages and NPPD officials said they plan to work with stakeholders to refine requirements based on the July 2016 directive.

## Program Execution

From January 2016 to January 2017, the NGN-PS program's department-approved cost and schedule goals remain unchanged. However, NPPD officials stated that they are in the process of revising the program's life-cycle cost estimate (LCCE) to clarify NGN-PS costs because past estimates had double counted some operations and sustainment costs that are funded by PTS. From September 2010 to September 2014, NGN-PS's LCCE increased to \$1.1 billion when the program accounted for the voice phase's second increment. In August 2015, DHS's Chief Financial Officer approved a revised cost estimate that increased the LCCE to \$1.2 billion. NPPD officials attributed the increase to the inclusion of sustainment costs for the PTS program, as requested by DHS headquarters. In August 2016, NPPD officials told GAO they plan to specifically identify operations and sustainment costs attributable only to NGN-PS acquisition efforts in the updated LCCE. In addition, program officials said the LCCE will account for changes related to the new Presidential Policy Directive.

NGN-PS's acquisition cost previously increased from \$244 million in September 2010 to \$691 million in September 2014 when the program accounted for the voice phase's second increment. In August 2015, the acquisition cost decreased to \$538 million. According to NPPD officials, the decrease reflected a refinement of the estimate based on knowledge gained from the service providers. As GAO reported in April

2015, the full operational capability date for increment 1 slipped from June 2017 to March 2019, which NPPD officials attributed to funding shortfalls. In August 2016, NPPD officials said they do not anticipate further schedule slips for planned increment 1 and 2 activities. The program plans to use surplus funding expected in fiscal years 2019 through 2021 to implement new services such as landline capabilities.

## Test Activities

DHS's DOT&E approved a revised Test and Evaluation Master Plan for the NGN-PS program in June 2016, which clarified the program's existing testing approach. Specifically, NGN-PS capabilities are evaluated through developmental testing, government acceptance testing, and operational assessments. The service providers play a central role in NGN-PS test activities because they conduct the developmental testing and operational assessments on their own networks. NPPD officials review the service providers' test plans, oversee tests to verify testing procedures are followed, and approve test results to determine when testing is complete. The government's operational test agent (OTA)—the Department of Defense's Joint Interoperability Test Command—does not plan to conduct a stand-alone operational test event for NGN-PS. Instead, the OTA leverages the service providers' test and actual operational data to assess program performance. NPPD officials told GAO that NGN-PS has performed well when its capabilities have been tested and deployed. NPPD officials also said that they continuously review actual NGN-PS performance and that all service providers undergo annual network service verification testing under the PTS program.

## Other Issues

In January 2016, NPPD reported that NGN-PS's required staffing level decreased by approximately 5 full time equivalents, and that the program no longer had a staffing gap. In August 2016, NPPD officials said that these numbers only account for funded positions and that NGN-PS also relies on about 20 contracted staff to execute day-to-day activities. NPPD officials also stated that the NGN-PS leverages support from PTS program staff, as needed.

## Program Office Comments

The NGN-PS LCCE update is the refined analysis of development service acquisition costs that will include separate projections for the annual impact of validated NGN-PS capabilities that are transferred to the PTS operations program. The LCCE update will more accurately represent NGN-PS technical support for authorized users to have seamless priority services for critical communications during crises while commercial service providers evolve their infrastructure—while meeting or exceeding performance metrics and managed under budget. NPPD officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# National Bio and Agro-Defense Facility (NBAF)

Science and Technology Directorate (S&T)

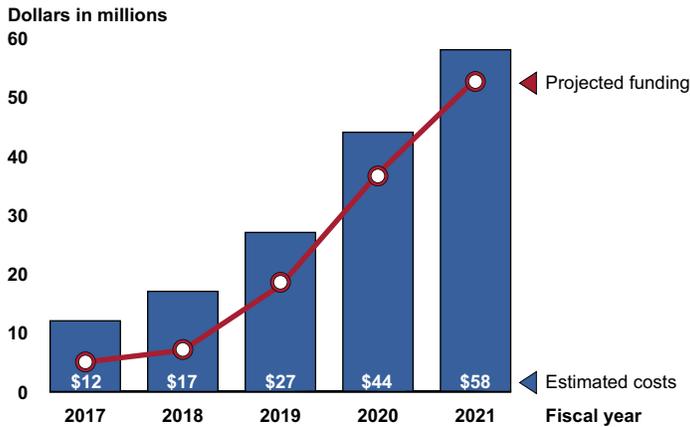


Source: NBAF Design Partnership.

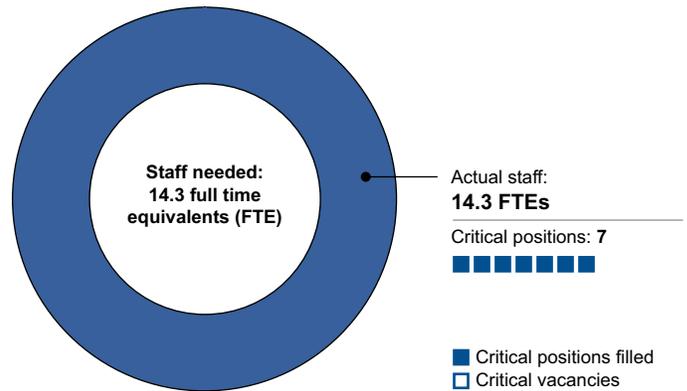
## Program Description

The NBAF program is constructing a state-of-the-art laboratory in Manhattan, Kansas, to enable the United States to conduct comprehensive research, develop vaccines, and provide enhanced diagnostic capabilities to protect against foreign animal, emerging, and zoonotic diseases that threaten the nation's food supply, agricultural economy, and public health. The facility will provide 574,000 square feet of laboratory space to support the research missions of the Department of Homeland Security (DHS) and the Department of Agriculture (USDA). NBAF is intended to replace and expand upon the capabilities provided at an existing facility called the Plum Island Animal Disease Center, which is nearing the end of its useful life. GAO previously reported on NBAF in March 2016 (GAO-16-338SP).

## Projected Funding vs. Estimated Costs

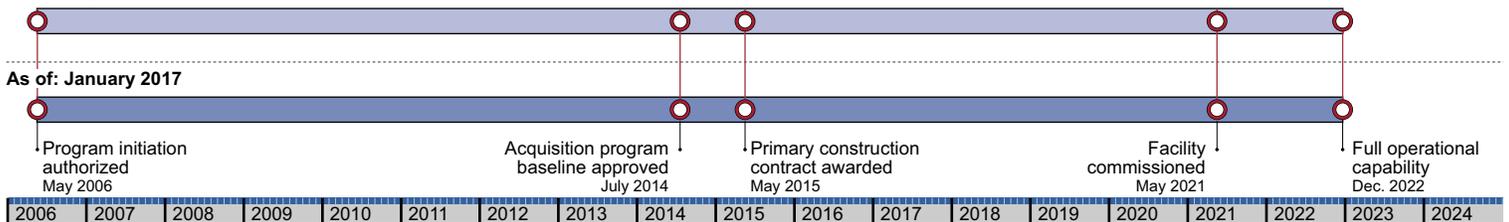


## Program Office Staffing Profile

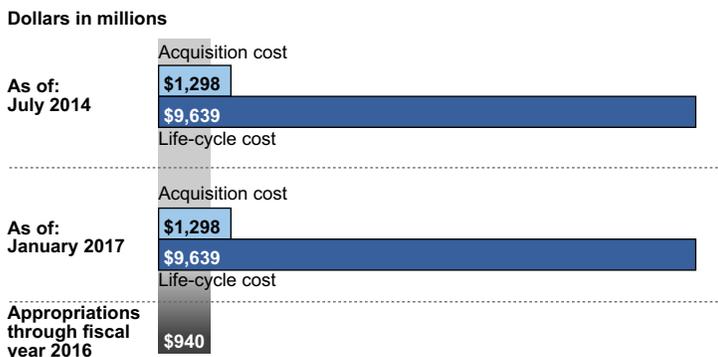


## Schedule Changes over Time

As of: July 2014



## Cost Estimate Changes over Time



## Performance

The NBAF program must commission several laboratory spaces that meet different biosafety standards in order to meet its sole key performance parameter (KPP). Program officials reported that NBAF will not be able to demonstrate that it has met its KPP until the facility is fully constructed and commissioned in May 2021.

## Acquisition Strategy

S&T leadership, the NBAF program office, a facility design team, and a construction manager are coordinating throughout all phases of the NBAF program in an effort to ensure the facility will be constructed as designed and within estimated cost parameters. According to program officials, they selected a construction manager early in the design process in order to increase coordination between the design and construction phases of the program, and to help reconcile cost and schedule as the program progressed.

## Program Execution

In July 2014, DHS's Acting Under Secretary for Management (USM) approved the NBAF Acquisition Program Baseline (APB), which established the program's cost, schedule, and performance parameters. According to NBAF officials, the program remains on track to meet these parameters. The program awarded the contract for construction of the main laboratory facility in May 2015, and is scheduled to commission NBAF in May 2021. NBAF is scheduled to become fully operational in December 2022, after it receives the certifications needed to operate as a biocontainment facility.

However, NBAF previously experienced significant cost growth and schedule slips. Between August 2009, when the Acting Under Secretary for Science and Technology approved the initial version of NBAF's APB, and July 2014, when the Acting USM approved the current version of NBAF's APB, the program's acquisition cost estimate increased from \$725 million to \$1.3 billion, and the facility's anticipated commissioning date slipped by almost 6 years. In 2010, DHS and the National Academy of Sciences both recommended the NBAF program take a number of actions to mitigate its operational risks as a biocontainment facility. Subsequently, at the direction of Congress and DHS leadership, the program office revised NBAF's design in response to these recommendations, which increased costs and caused delays.

Program officials reported that funding constraints between 2009 and 2014 exacerbated the cost growth and schedule slips, and it appears the program continues to face a funding gap of more than \$38 million from fiscal year 2017 to fiscal year 2021. According to program officials, the anticipated funding gap is driven by the cost of operational stand-up activities for NBAF, which are separate from facility construction. Operational stand-up activities are scheduled to ramp up in fiscal year 2018 and include hiring additional operations management personnel; preparing standard operating procedures; training laboratory support personnel and researchers; and demonstrating proficiency in biocontainment operations, among other things. Program officials told GAO they are working with S&T to mitigate the funding gap, but there is a risk these affordability challenges could cause delays in the operational stand-up of NBAF and, in turn, the transition from Plum Island Animal Disease Center.

NBAF officials told GAO the program has received full funding for facility construction efforts, through federal appropriations and gift funds from the state of Kansas. DHS entered into a cost-sharing agreement with Kansas's state government to reduce the federal government's share of NBAF costs. Kansas's state government has contributed \$307 million to NBAF, which amounts to nearly 25 percent of the program's estimated acquisition cost.

## Test Activities

In May 2013, DHS's Director, Office of Test and Evaluation determined he was not responsible for overseeing NBAF because it was a facility as opposed to a system. According to program officials, the NBAF program has implemented a commissioning process for the facility to determine whether it can meet its KPP and other requirements once construction is complete. Program officials stated that a third-party commissioning agent has been retained as a subcontractor to the prime construction management contractor, and a commissioning plan has been in place since 2012. The commissioning agent will monitor and test the facility's equipment and building systems while construction is ongoing to ensure they are properly installed and functioning according to appropriate biosafety specifications. The commissioning agent will report its findings directly to program officials and coordinate with other entities involved in the commissioning process, including the NBAF program office, the construction management contractor, and end users, among others. Full commissioning of the facility is scheduled for May 2021, 6 months after the planned completion of construction.

## Other Issues

S&T reported that the NBAF program office does not have a staffing gap, and program officials told GAO the program had recently completed the hiring of additional staff for the program's construction oversight team. According to NBAF officials, the program office's staffing requirements will change in the coming years, as the NBAF program progresses through construction and moves towards the operational stand-up of the facility. For example, the program office reported it will need to hire an Operations Director, Research and Development Director, Business Manager, and Facility Engineer, among others, by fiscal year 2018 for NBAF operations management.

### Program Office Comments

As noted in the assessment, all out-year funding requests are for operational planning and operationalization activities. Current funding gaps will be eliminated if the program is funded to S&T requested amounts reflected in the next Future Years Homeland Security Program update.

# Electronic Baggage Screening Program (EBSP)

Transportation Security Administration (TSA)

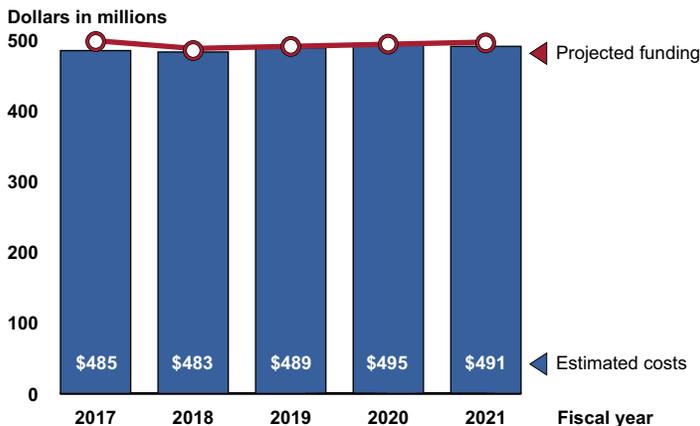


Source: Transportation Security Administration.

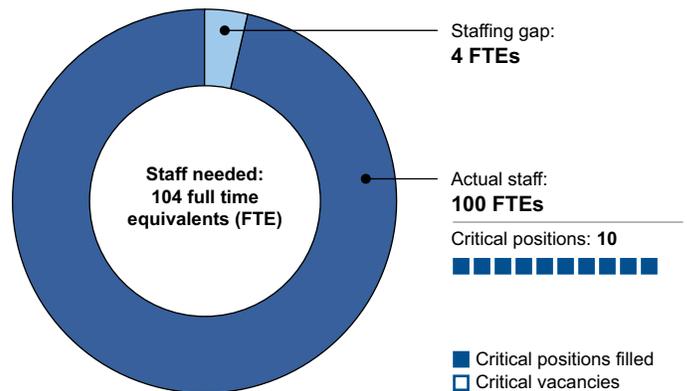
## Program Description

TSA established EBSP in response to the terrorist attacks of September 11, 2001. EBSP identifies, tests, procures, deploys, installs, and sustains transportation security equipment across approximately 440 U.S. airports to ensure 100 percent of checked baggage is screened for explosives. The program's key objectives include: increasing threat detection capability, improving the efficiency of checked baggage screening, replacing aging equipment, and obtaining new screening technologies. The program awarded contracts for 20 types of baggage screening systems from 2002 to 2015. GAO previously reported on EBSP in March 2016 and December 2015 (GAO-16-338SP, GAO-16-117).

## Projected Funding vs. Estimated Costs

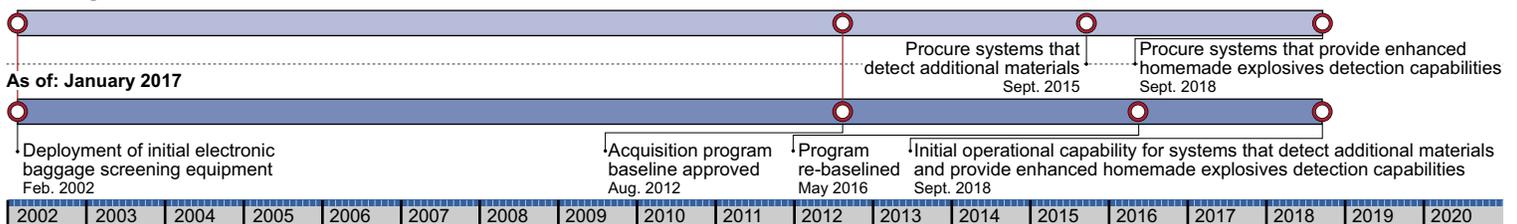


## Program Office Staffing Profile



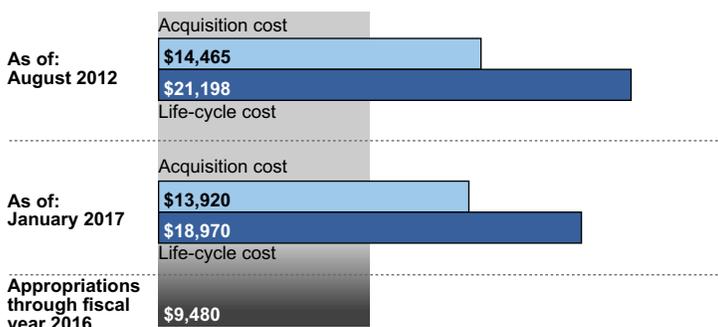
## Schedule Changes over Time

As of: August 2012



## Cost Estimate Changes over Time

Dollars in millions



## Performance

TSA officials stated that EBSP has demonstrated that all deployed systems can meet the minimum threshold for all of the program's key performance parameters including automated threat detection, throughput, and operational availability. TSA officials told GAO that two scanners underwent testing in fiscal year 2016, and that two additional scanners are scheduled to undergo testing in fiscal year 2017.

## Acquisition Strategy

EBSP acquires explosives trace detectors and medium-speed and reduced-size explosives detection systems through various vendors. In 2002 and 2003, TSA deployed baggage screening equipment to all federally regulated airports. Since then EBSP has worked to deliver new systems with enhanced screening capabilities and, according to program officials, development efforts are primarily focused on software upgrades. As of December 2016, EBSP had deployed 1,880 explosives detection systems and 2,638 explosives trace detectors to screen checked baggage nationwide. EBSP initially acquired explosive detection systems during specific procurement windows. In 2014, EBSP revised its acquisition strategy to competitively procure systems on an ongoing basis using qualified product lists. TSA officials told GAO this strategy provides the program more flexibility in acquiring scanning devices than its previous approach because vendors are able to submit devices for consideration at any time. Additionally, officials said this approach allows the program to keep better pace with technology advancements. EBSP's initial competitive procurement of explosive detection systems will end in fiscal year 2018, at which point TSA plans to initiate a second competitive procurement.

## Program Execution

In May 2016, Department of Homeland Security (DHS) leadership approved a revised Acquisition Program Baseline (APB) for EBSP. According to TSA officials, the new APB reflects changes made to the program since it revised its acquisition strategy and aligns with the program's most recent cost estimate that was approved by DHS's Chief Financial Officer in July 2015. In EBSP's revised APB, DHS leadership authorized TSA to increase the program's cost thresholds by 10 percent over its July 2015 cost estimate to account for risk, which increased the program's acquisition cost to approximately \$14 billion and life-cycle cost estimate to approximately \$19 billion. However, this reflects a nearly \$545 million decrease in acquisition costs and \$2.2 billion decrease in life-cycle costs from the program's 2012 estimates. TSA officials said EBSP's cost estimates decreased when the program was shortened to end in fiscal year 2027, rather than fiscal year 2030. TSA officials also said that the new cost estimate updated the program's actual costs, which were lower than anticipated, and revised assumptions for future costs. For example, EBSP reduced the amount of systems it planned to recapitalize annually due to anticipated mechanical failures from 7 percent to 0.5 percent after DHS leadership approved a plan in December 2013 that re-evaluated the projected useful life of explosive detection systems from 10 years to 15 years. Additionally, TSA officials said the program plans to shift some costs for replacing equipment to airports. Officials explained that, in the past, EBSP funded not only the costs for replacing equipment at airports, but also infrastructure-related costs, such as reconfiguring the lanes where the equipment was installed. Going forward, EBSP will fund costs for replacing equipment, but infrastructure costs will generally be covered by the airports.

From January 2016 to January 2017, the date the program planned to achieve initial operational capability for systems that detect additional materials and provide enhanced homemade explosives detection capabilities slipped. TSA officials previously told GAO that they planned to achieve this milestone in September 2016, but according to the program's May 2016 APB, TSA has until September 2018 to achieve this milestone. Previously, EBSP planned to award contracts for these systems in September 2015 and September 2018, respectively.

## Test Activities

DHS's Director, Office of Test and Evaluation (DOT&E) has assessed nine of EBSP's systems and determined that six of them are effective and suitable. As for the remaining three, TSA is implementing a third party testing strategy to address system failures during testing. TSA's interim guidance, effective July 2014, states that TSA will not re-admit systems into testing until vendors provide sufficient data from a third party tester that the system meets the failed requirements. According to program officials, an explosives detection system was the first to undergo such testing after failing operational testing. After third party testing of this system, DOT&E issued a memorandum stating the system should be considered operationally suitable and DHS approved full rate production in May 2015. In December 2015, GAO found that TSA has yet to finalize key aspects of its third party testing strategy and recommended it do so before implementing further third party testing requirements for vendors to enter testing. In November 2016, TSA officials said they now plan to implement the third party testing program by the end of calendar year 2017—a full year later than initially planned. These officials attributed the delay to the need to reprioritize third party testing needs and challenges in coordinating proposed strategy changes, among other things.

DOT&E approved EBSP's Test and Evaluation Master Plan (TEMP) in 2010. TSA officials previously told GAO that they were updating the TEMP to reflect EBSP's acquisition strategy change, but subsequently decided to wait until the start of EBSP's second competitive procurement of explosives detection systems before formally revising the TEMP, based on discussion with DOT&E.

## Other Issues

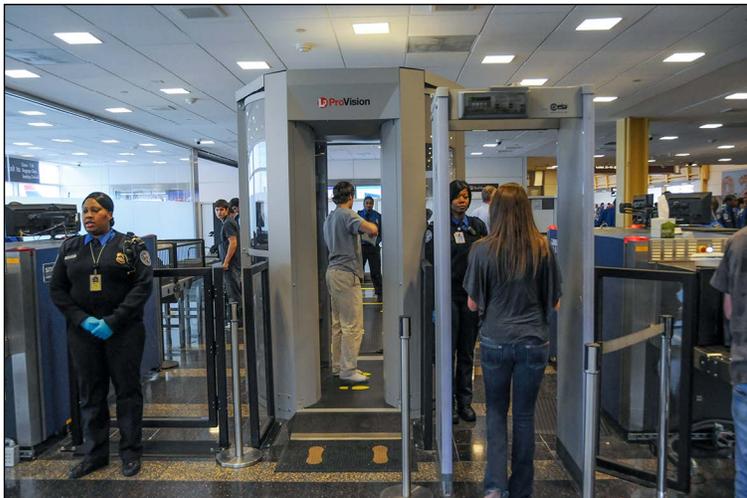
In June 2016, DHS reported that the program needed 20.5 full time equivalents (FTE) and did not have a staffing gap. However, in December 2016, TSA officials told GAO that this reflected only a subset of EBSP staff. These officials explained that EBSP is supported by personnel from five different TSA divisions and had a total staff need of 104 FTEs.

## Program Office Comments

TSA officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Passenger Screening Program (PSP)

Transportation Security Administration (TSA)

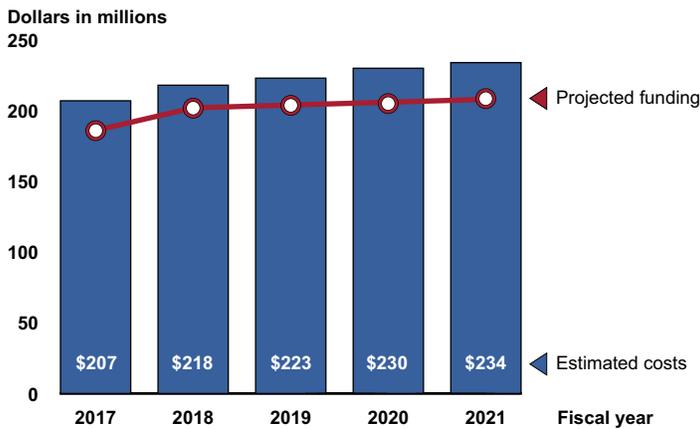


Source: Transportation Security Administration.

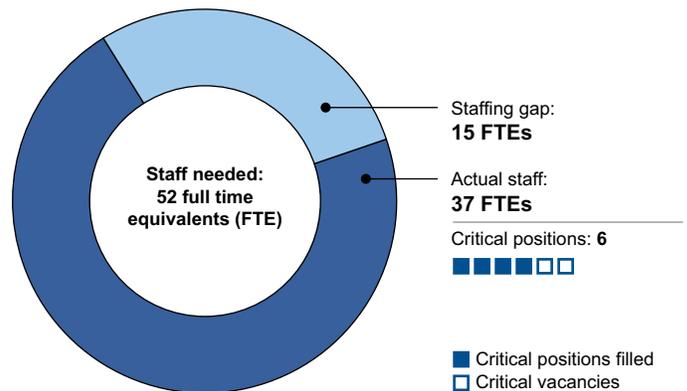
## Program Description

The Department of Homeland Security (DHS) established PSP in response to the terrorist attacks of September 11, 2001. PSP identifies, tests, procures, deploys, and sustains transportation security equipment across approximately 440 U.S. airports to help TSA officers identify threats concealed on people and in their carry-on items. The program's key objectives include: increasing threat detection capabilities, improving the efficiency of passenger screening, and balancing passenger privacy and security. The program has pursued 11 variants of passenger screening systems since 2002, including 5 that TSA is currently acquiring. GAO previously reported on PSP in March 2016 and December 2015 (GAO-16-338SP, GAO-16-117).

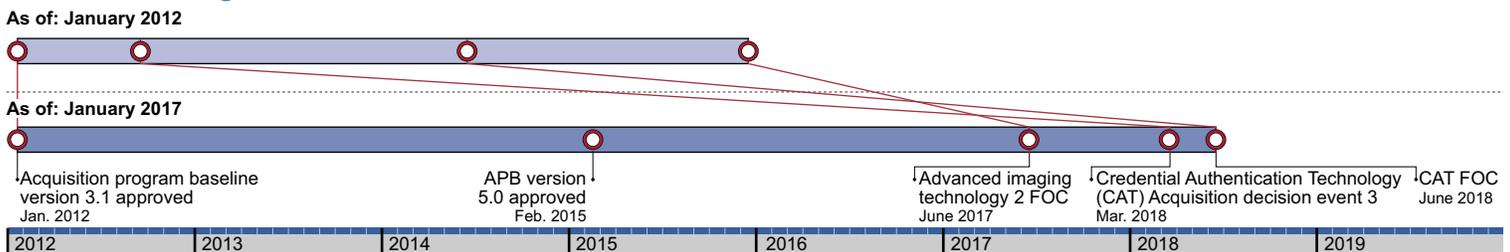
## Projected Funding vs. Estimated Costs



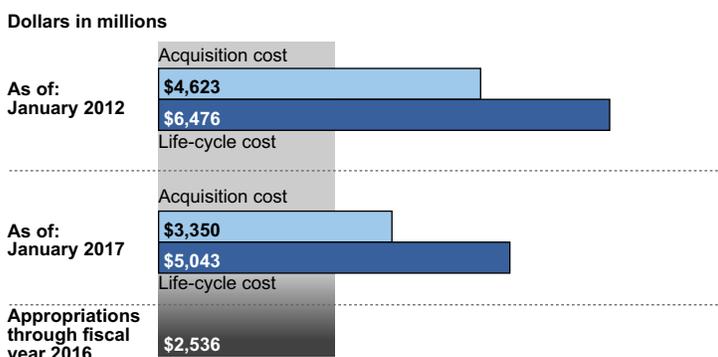
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

PSP has faced challenges acquiring and deploying new technologies, including the program's newest technology: the Credential Authentication Technology (CAT). However, TSA officials stated that PSP has demonstrated that all deployed systems can meet their key performance parameters. The program is focused on addressing emerging threats with next generation technologies as well as ensuring that deployed and new technologies meet cybersecurity requirements.

## Acquisition Strategy

TSA has acquired and deployed five variants of commercial-off-the-shelf passenger screening systems from multiple contractors. One system—CAT—remains in development. Program acquisition efforts are largely focused on upgrading existing detection technology capabilities. In July 2016, TSA identified an urgent operational need for automated screening lanes to address increasing passenger wait times.

The program employs two acquisition strategies to acquire PSP systems. It has designated one the Qualified Product List (QPL) approach and the other the Low Rate Initial Production (LRIP) approach. PSP uses the QPL approach for established and tested technologies, when capability requirements are rigid and contractors' systems are mature. For this approach, any contractors' systems that demonstrate they meet the capability requirements are added to the QPL. TSA has used this approach to acquire the second generation Advanced Technology X-ray (AT-2) systems, Bottled Liquid Scanners, and Explosive Trace Detectors. In May 2016, TSA published its intent to establish a new QPL for the next generation of Explosive Trace Detectors.

Alternatively, PSP uses the LRIP approach when capability requirements are flexible and contractors' systems are evolving. With the LRIP approach, PSP uses a series of development contracts to enhance systems' capabilities over time. PSP is currently using the LRIP approach to acquire CAT, which TSA will use to verify the authenticity of passenger identification, and confirm a passenger's risk status. CAT is intended to help TSA expand risk-based screening. PSP is also using the LRIP strategy to acquire second generation Advanced Imaging Technology (AIT-2).

## Program Execution

Between 2008 and 2015, DHS leadership approved five versions of PSP's Acquisition Program Baseline (APB). Each time, the program's cost, schedule, and performance parameters changed. TSA's plans to submit the sixth version of PSP's APB to DHS's Under Secretary for Management (USM) for approval have been delayed by over a year because it has taken longer than expected to update the program's cost estimate and incorporate new cybersecurity requirements. In December 2016, TSA officials said the revised APB was in the final process of being submitted to DHS's USM for approval.

The program's fifth APB—which the DHS USM approved in February 2015—reflected schedule slips. The full operational capability (FOC) dates for the AT-2 and AIT-2 both slipped 18 months due to testing issues. The FOC date for CAT also slipped to June 2018—4 years later than initially planned—after operational testing revealed performance issues. In January 2016, the PSP program declared an APB schedule breach of a key CAT milestone—Acquisition Decision Event (ADE) 3, which was scheduled to be complete by June 2016—because of delays in incorporating new cybersecurity requirements before completing operational testing. Program documentation indicates CAT's ADE 3 could be delayed by nearly 2 years, which would directly affect follow-on events including FOC.

PSP's yearly cost estimates from fiscal year 2017 to 2021 exceed the program's funding plan by \$107 million. TSA officials anticipate submitting an updated cost estimate for DHS approval by the end of calendar year 2016. From 2012 to 2015, TSA reduced PSP's scope in response to funding

constraints, significantly decreasing PSP's acquisition costs to \$3.2 billion and its life-cycle cost estimate to \$4.8 billion. However, by January 2016, emerging threats drove TSA to increase capability requirements, which in turn increased PSP's acquisition and life-cycle cost estimates by about \$154 million and \$264 million, respectively.

## Test Activities

DHS's Director, Office of Test and Evaluation (DOT&E) approved PSP's Test and Evaluation Master Plan in 2010, and each PSP system has its own approved addendum. DOT&E has assessed seven PSP systems and determined that three are effective and suitable. However, according to TSA officials, many vendors' systems cannot successfully pass initial qualification testing because their technologies are not mature, and some systems do not even get to the point in the testing process where DOT&E would assess them. To address this issue, TSA is implementing a third party testing strategy. In December 2015, GAO found that TSA had yet to finalize key aspects of its third party testing strategy and recommended it do so before implementing further third party testing requirements for vendors. Subsequently, TSA gathered and considered industry feedback on potential third party test strategy changes and identified potential third party test vendors. In November 2016, TSA officials said they now plan to implement the third party testing program by the end of calendar year 2017—a full year later than initially planned. These officials attributed the delay to the need to reprioritize third party testing needs and challenges in coordinating proposed strategy changes, among other things.

## Other Issues

DHS reported that PSP faced a staffing gap of 15 full time equivalents (FTE)—a shortfall of nearly 30 percent. According to TSA officials, the current staffing level hinders the program's response to emerging threats. This could affect the program's ability to meet the urgent operational need for automated screening lanes that TSA identified in July 2016. Further, the program projects the need for 38 percent more FTEs over the current approved level, as TSA plans to initiate new checkpoint-related programs in 2018.

## Program Office Comments

TSA officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Technology Infrastructure Modernization (TIM)

Transportation Security Administration (TSA)



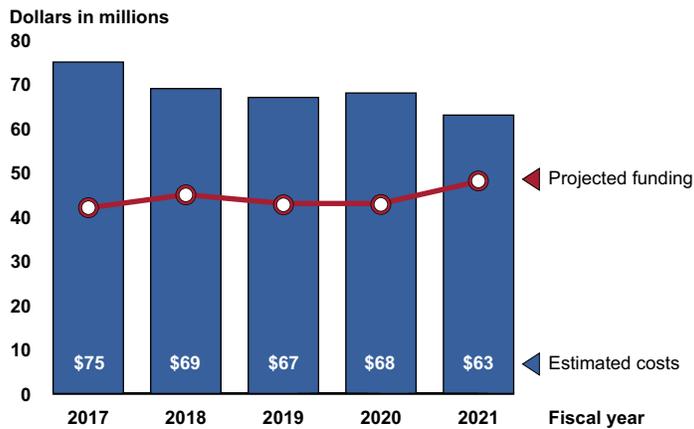
## Transportation Security Administration

Source: Transportation Security Administration.

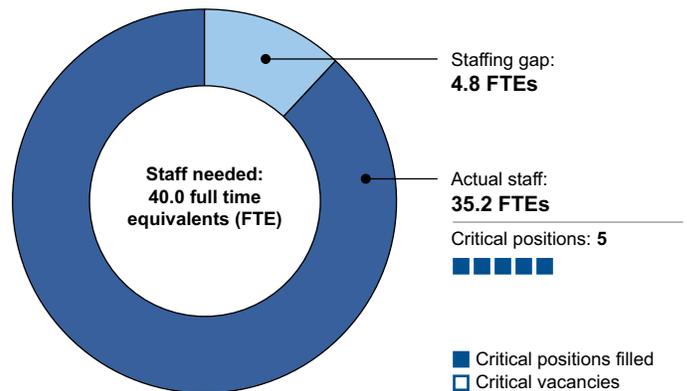
### Program Description

TSA conducts various threat assessment screening and credentialing activities for millions of transportation workers and travelers. However, these assessments are hindered by stove-piped systems and duplicative processes which cannot accommodate growing enrollment demand. In 2008, TSA initiated the TIM program to address these shortfalls by developing and operating a centralized system to manage credential applications and the review process for three segment populations: maritime, surface, and aviation. The program delivered the maritime segment in May 2014, but subsequently struggled to deliver additional capabilities. GAO previously reported on the TIM program in March 2016 ([GAO-16-338SP](#)) and has an ongoing review of the program's current efforts.

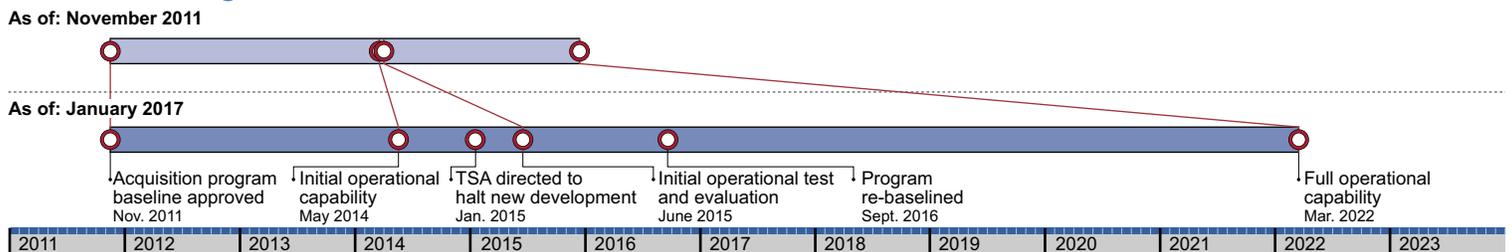
### Projected Funding vs. Estimated Costs



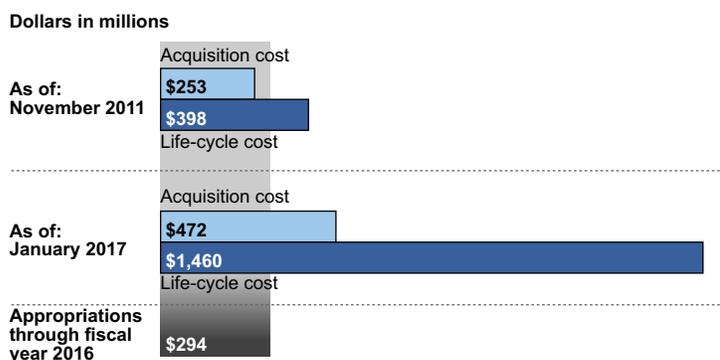
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

In September 2016, Department of Homeland Security (DHS) leadership approved a fourth key performance parameter (KPP) for the program for enforcing system user access controls. The program previously demonstrated TIM could meet two of its KPPs—vetting response time and operational availability—during initial operational test and evaluation (IOT&E) of the maritime segment, but DHS's Director, Office of Test and Evaluation (DOT&E) concluded the system was extremely unreliable due to frequent critical failures. DOT&E cannot assess TIM's other KPP—information reuse—until additional segments are deployed.

## Acquisition Strategy

In April 2016, DHS leadership approved a new technical approach for the TIM program, which TSA developed in collaboration with DHS's Chief Information Officer (CIO) and subject matter experts. In November 2015, DHS's Under Secretary for Management (USM) directed the CIO to work with TSA to develop a new approach, after the CIO reported he could not support TSA's initial strategy for addressing the TIM program's execution challenges. Under the new approach, TSA plans to replace the TIM system's existing commercial-off-the-shelf applications with open source applications and move to a new virtual environment. The program also adopted an agile development methodology that relies on small teams to rapidly develop, test, and deploy capabilities using an iterative, rather than a sequential approach. TSA officials anticipate that the agile approach will allow the program to accelerate development, better respond to customer needs, and achieve cost savings by eliminating expensive proprietary licensing costs, among other things. The TIM program began piloting its agile approach in May 2016 when developing fixes to address issues identified during the maritime segment's IOT&E. TSA awarded two task orders totaling \$17.6 million to the program's existing contractor in September 2016 for agile design and development services, and plans to competitively award a new contract in 2017. TSA officials expect to have multiple agile development teams in place by early fiscal year 2017.

## Program Execution

In October 2016, DHS's USM removed the TIM program from breach status, which authorized TSA to resume new development after a nearly 22-month program pause. TSA notified DHS's Acting USM in September 2014 that the TIM program had breached its baseline due to significant cost, schedule, and performance issues, and DHS leadership directed the program to halt new development in January 2015 until TSA identified a strategy for addressing these issues. TSA officials identified several causes for the breach, including technical challenges and insufficient contractor performance. In addition, the TIM program reported that TSA added significant new requirements to TIM after DHS leadership had approved the initial acquisition strategy.

In September 2016, DHS's USM approved a new Acquisition Program Baseline (APB), which established cost, schedule, and performance parameters for the TIM program's new agile approach. The program now plans to achieve full operational capability in March 2022—more than 6 years later than initially planned. The program's cost estimates also changed from its previous life-cycle cost estimate (LCCE), which DHS's Chief Financial Officer approved in September 2015. Specifically, TIM's acquisition cost estimate increased \$66 million and LCCE decreased \$74 million. However, in TIM's revised APB, DHS's USM authorized TSA to increase the program's acquisition cost and LCCE thresholds to \$472 million and approximately \$1.5 billion, respectively, to account for risk. In total, this accounts for a \$219 million increase and more than \$1 billion increase over the program's November 2011 APB acquisition cost and LCCE thresholds, respectively. TSA officials attributed the acquisition cost increase to several factors such as remediation of IOT&E issues, adoption of the program's new acquisition strategy, and inclusion of additional populations such as TSA's Pre-Check program. TSA officials primarily attributed the LCCE increase to integration with the Transportation Vetting System and extending the estimate from fiscal year 2018 to 2031 to include 7 years of additional operations and to account for the

program's 6-year schedule slip. The TIM program's yearly cost estimates from fiscal year 2017 through 2021 exceed its funding plan by almost \$122 million. However, the program expects to carry over almost \$17 million into fiscal year 2017 and receive nearly \$106 million in fees from vetting programs during this 5-year period.

In September 2016, TSA officials identified several program and technical risks associated with TIM's new agile approach that could affect the program's schedule, cost, and performance going forward. These risks include an increase in new requirements or enrollments in TSA Pre-Check, implementation of automated testing into its agile approach, and the availability of knowledgeable contractor development staff. TSA officials are working to mitigate these risks.

## Test Activities

In September 2016, TSA officials told GAO they worked with TIM customers to prioritize and address performance issues identified during IOT&E of the maritime segment, which was conducted from May to June 2015. DHS's DOT&E assessed the program's IOT&E results in September 2015 and concluded the system was not operationally effective or suitable, and was not cyber-secure. According to TSA officials, the program's operational test agent completed follow-on operational test and evaluation on the maritime segment in November 2016, but the test results will not be available until March 2017.

In September 2016, DOT&E approved TSA's proposed test and evaluation strategy for the TIM program's new approach. However, DOT&E noted that DHS guidance for Test and Evaluation Master Plans (TEMP) did not adequately address programs using agile development. He reported his office was leading an effort to develop such guidance and would work with TSA officials to assist with revising the TIM program's TEMP by January 2017.

## Other Issues

In June 2016, DHS reported that the TIM program's staffing need increased from 24 to 43 full time equivalents (FTE). TSA officials explained that the additional FTEs were technical staff funded by the TIM program, but matrixed from another TSA office. In December 2016, TSA officials said the program had only been authorized for 40 FTEs, 35.2 of which were filled.

## Program Office Comments

TSA continues to implement an agile strategy for the completion of the TIM system development. Early agile releases of the TIM system have shown the ability to provide functionality that meets the immediate needs of the mission operators in an accelerated timeframe from traditional development approaches. TIM has also partnered with DHS to form an Agile Integrated Product Team. The role of this group is to take best practices of agile development and policy from across DHS and tailor it for use with the TIM program. TSA officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# C4ISR

United States Coast Guard (USCG)

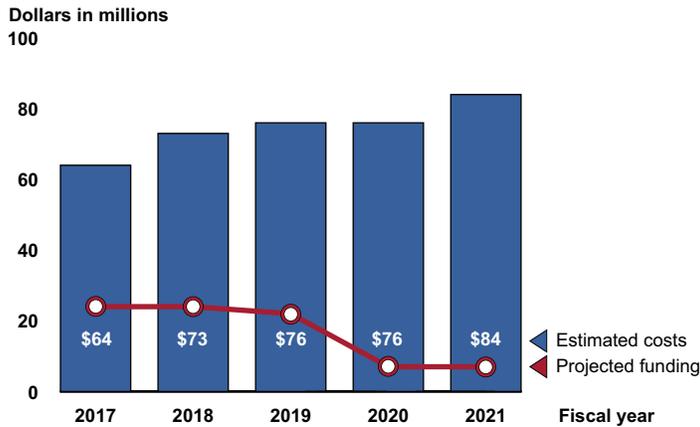


Source: U.S. Coast Guard.

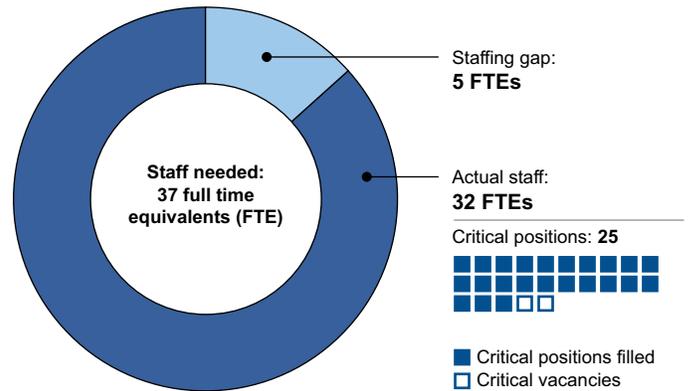
## Program Description

Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems provide situational awareness, data gathering and processing, and information exchange tools that are installed in a variety of USCG ships and aircraft. According to the current C4ISR program's baseline, the program encompasses the acquisition of C4ISR systems tailored for the National Security Cutter (NSC), Fast Response Cutter, Offshore Patrol Cutter, HC-130J and HC-144 aircraft, and legacy vessels. However, USCG officials told GAO the program is now primarily working on the C4ISR system on the NSC. GAO previously reported on the USCG's C4ISR program in March 2016 and June 2014 (GAO-16-338SP, GAO-14-450).

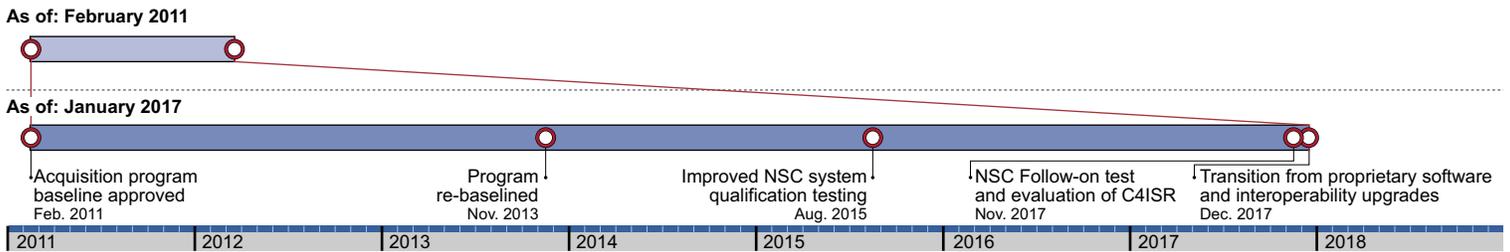
## Projected Funding vs. Estimated Costs



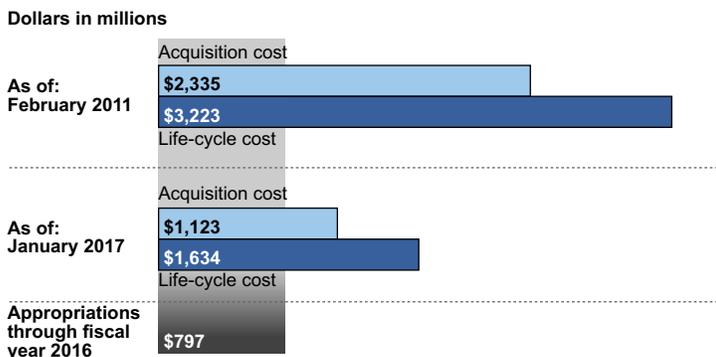
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

The USCG is no longer planning to operationally test its C4ISR systems against its key performance parameters (KPP). Instead, the C4ISR systems will be tested in conjunction with the USCG's planes and vessels to save money and avoid duplication. However, the effectiveness and suitability of the C4ISR systems were not specifically evaluated during the HC-144, Fast Response Cutter, and NSC tests. Since this C4ISR system will now only be used on the NSC, testing is focused on this asset. The USCG plans to demonstrate the ability of the C4ISR system to meet the NSC's KPPs during follow-on operational testing, which is scheduled to be completed in November 2017.

## Program Governance

The USCG has significantly decreased the C4ISR program's scope since the Department of Homeland Security's (DHS) Under Secretary for Management (USM) approved the C4ISR program's first Acquisition Program Baseline (APB) in February 2011. This APB established the C4ISR program in broad terms, namely that the program would improve the detection and engagement of potential targets in the maritime domain through better coordination and data sharing. However, the initial version of the system relied on contractor-proprietary software, which was in danger of becoming obsolete and too costly to maintain. In November 2013, the USM approved a revised C4ISR APB after lower than expected funding levels caused a schedule breach. The new APB reflected a less comprehensive approach to C4ISR, but established that the C4ISR program would still deliver certain capabilities to specific cutters and aircraft.

## Program Execution

USCG officials said the C4ISR program remains on track to meet the cost and schedule goals in its revised APB. The C4ISR program's cost estimates significantly decreased from February 2011 and November 2013. It is likely the program's costs have decreased further because the USCG continued to reduce the program's scope. For example, the Fast Response Cutter and aviation programs decided to pursue their own solutions, which are being managed by the respective assets' program offices. In September 2015, USCG officials confirmed the program is focused primarily on improving the C4ISR system for the NSC. Despite pursuing different systems across the USCG's aviation and surface fleet, USCG officials stated that all of the systems are planned to be able to exchange information using common data formats.

The USCG has developed a new C4ISR system for the NSC known as segment 2 spiral 2 (S2S2). The S2S2 system is intended to replace the NSC's initial system to address proprietary and obsolescence issues and, according to USCG officials, to provide improved capabilities. In September 2016, USCG officials told GAO that the S2S2 system performed well during qualification testing conducted in August 2015 and that the USCG will install S2S2 on future NSCs. As of January 2017, the USCG had installed S2S2 on three of the five already-delivered NSCs and officials anticipated retrofitting the remaining two NSCs by the end of calendar year 2017. If completed, the USCG will have transitioned from contractor-proprietary software almost 2 years earlier than the deadline established in the program's revised APB, but more than 5 years later than initially planned. USCG officials previously attributed delays in completing the transition to funding shortfalls and difficulties scheduling S2S2 installations for when the NSCs are in port.

In September 2016, USCG officials told GAO that they also plan to use the S2S2 system on the Offshore Patrol Cutter. However, the Offshore Patrol Cutter program is responsible for tailoring the system for the asset with help from the C4ISR program. USCG officials noted that the C4ISR program does not plan on conducting any new development following S2S2. Instead, USCG officials said the C4ISR program's focus will be on continuing to modify the current S2S2 software to maintain compliance with information security regulations and improving the system's ability to handle cyber threats. However, it is unclear if the USCG's scaled-down plans for the C4ISR program are affordable. It appears that the program is facing a potential \$286 million funding gap from fiscal year 2017

through fiscal year 2021. However, the gap may not be as great as it appears. In April 2015, GAO found that the DHS funding plan presented to Congress did not identify the operations and maintenance funding the USCG plans to allocate for each of its major acquisition programs—including the C4ISR program—and recommended DHS account for this funding in its future report ([GAO-15-171SP](#)). DHS concurred with the recommendation, but has yet to take action.

## Test Activities

The USCG initially planned to test the C4ISR system against its KPPs separately from its planes and vessels, including the NSC, but officials subsequently decided to test the C4ISR system in conjunction with the planes and vessels to lower costs and avoid duplication. However, the C4ISR system's KPPs were not specifically evaluated during the NSC's initial operational test and evaluation in April 2014, in part because the necessary testing activities were not fully integrated into the NSC's test plan. The USCG also deferred testing of a significant portion of C4ISR functionality on the NSC, including cybersecurity capabilities and real-time tactical communications with the Navy, to later dates. In June 2014, GAO recommended the USCG fully integrate C4ISR assessments into other assets' test plans or test the C4ISR program independently. The USCG concurred with GAO's recommendation and stated that it planned to test the C4ISR system's KPPs during follow-on testing for the NSC. According to USCG officials and the current follow-on testing plan, the USCG will test S2S2 to evaluate the extent to which this improved system meets the NSC's C4ISR-related KPPs, which the USCG will trace to the C4ISR KPPs. However, the NSC's KPPs only overlap with one of the C4ISR's six KPPs, so this testing will not demonstrate how the C4ISR system performs against five of its KPPs. The USCG began NSC's follow-on operational test and evaluation in fiscal year 2015, but testing is not planned to be complete until the end of calendar year 2017.

## Other Issues

In January 2016, the USCG reported that C4ISR had a staffing gap of 5 full time equivalents, but in September 2016, program officials did not attribute any negative effects to workforce shortages.

### Program Office Comments

The acquisition program's primary focus is on delivery of the S2S2 baseline for the NSC class. Also, the acquisition program continues to provide acquisition, technical, and cyber security support to Offshore Patrol Cutter, Fast Response Cutter, and other new asset acquisitions to tailor C4ISR systems acquisition strategies and requirements to meet respective platform milestones. The C4ISR acquisition program plans to operationally test S2S2 in the next NSC follow-on operational test and evaluation event. USCG officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Fast Response Cutter (FRC)

## United States Coast Guard (USCG)

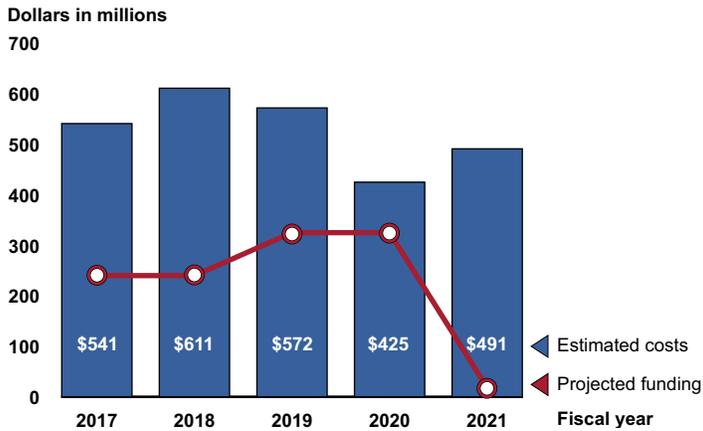


Source: U.S. Coast Guard.

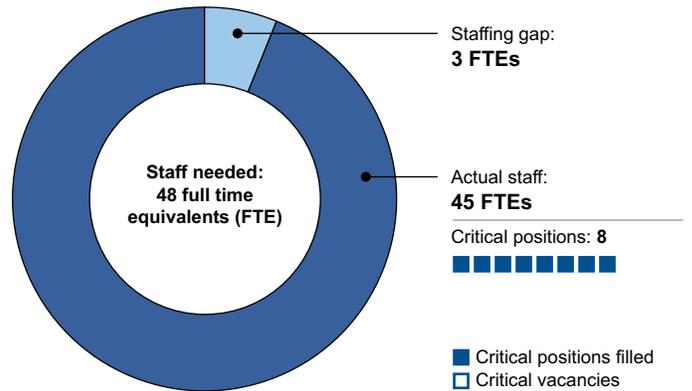
### Program Description

The USCG uses the FRC to conduct search and rescue, migrant and drug interdiction, and other law enforcement missions. The FRC replaces the USCG's Island Class patrol boat and carries one cutter boat onboard. It provides greater fuel capacity, improved communications and surveillance interoperability with other Department of Homeland Security (DHS) and Department of Defense assets, and the ability to conduct full operations in moderate sea conditions. The USCG plans to acquire 58 FRCs, and as of October 2016, 20 had been delivered. GAO previously reported on the FRC program in March 2017, March 2016, and June 2014 ([GAO-17-218](#), [GAO-16-338SP](#), [GAO-14-450](#)).

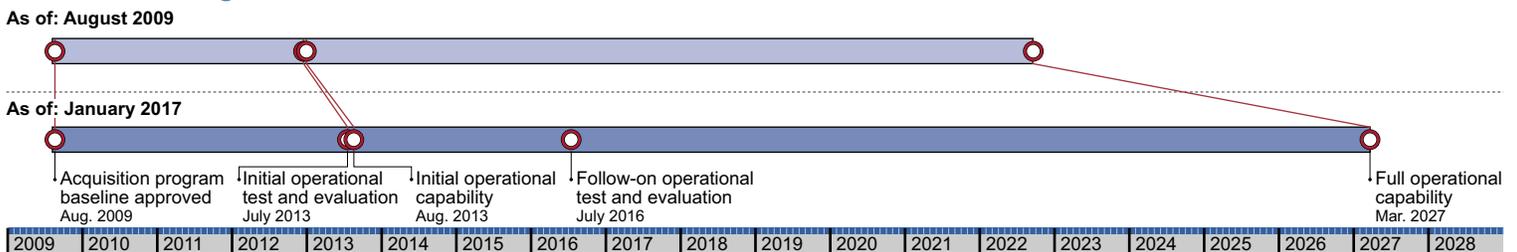
### Projected Funding vs. Estimated Costs



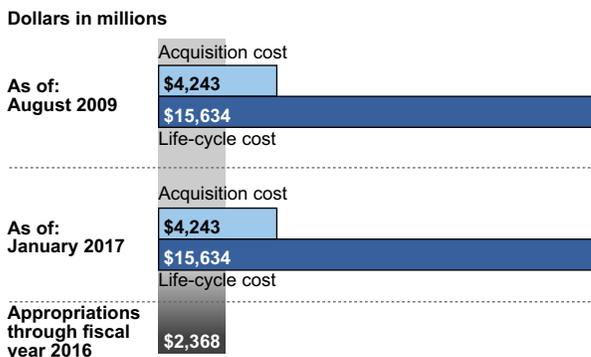
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

According to USCG officials, the FRC demonstrated all six of its key performance parameters (KPP) during follow-on operational test and evaluation (FOT&E) in July 2016. As of January 2017, DHS's Director, Office of Test and Evaluation (DOT&E) was in the process of validating the FOT&E results and planned to issue its assessment of the FRC's performance in February 2017. The FRC completed initial operational test and evaluation (IOT&E) in fiscal year 2013 and partially met one of its six KPPs.

## Acquisition Strategy

In September 2008, USCG officials awarded Bollinger Shipyards Lockport a contract for 1 FRC with options to build up to 33 more. GAO subsequently received a bid protest, which was denied, and upheld the USCG's contract award in January 2009. In May 2014, the USCG established that it would procure only 32 of the 58 FRCs through this contract. The USCG subsequently purchased the technical specifications and licenses from Bollinger that are necessary to build the FRC and used this information to conduct a full and open competition for the remaining 26 vessels. The USCG has designated this effort as phase 2 of the program. In May 2016, the USCG awarded the phase 2 contract, which officials stated has a potential value of \$1.42 billion to Bollinger Shipyards Lockport. According to USCG officials, the phase 2 design will be similar to the phase 1 cutters with minimal changes to non-critical systems and updates to address obsolescence issues. The phase 2 contract is the same contract type as the phase 1—fixed price with economic price adjustment—and includes the same warranty. The USCG anticipates delivery of the first phase 2 cutter in spring 2019.

## Program Execution

According to USCG officials, the FRC program is on track to meet its revised schedule goals. Previously, the program's initial operational capability date slipped from December 2012 to August 2013 because of the bid protest and the need for structural modifications. Additionally, the program's full operational capability date slipped from September 2022 to March 2027 because, according to USCG officials, the procurement quantities for the FRC changed under the phase 1 contract. In fiscal years 2010 and 2011, the quantities decreased from six FRCs per year to four. Under the phase 2 contract, the USCG can procure four to six FRCs per option period. The USCG has established that the annual procurement quantity will be dictated by funding levels, and funding shortfalls could cause further delays going forward. A \$1.5 billion gap appears to remain between the program's projected funding levels and estimated costs from fiscal year 2017 through fiscal year 2021. However, the projected funding gap may not be this large. In April 2015, GAO found that the DHS funding plan presented to Congress did not identify the operations and maintenance funding the USCG plans to allocate for of its major acquisition programs—including the FRC—and recommended DHS account for this funding in its future report ([GAO-15-171SP](#)). DHS concurred with the recommendation, but has yet to take action. If the USCG needs to order fewer FRCs per year, the program's costs will likely increase. In June 2014, GAO found that the USCG estimated a decision to order two ships per year would likely increase the program's costs by \$600 million to \$800 million beyond its current estimates.

The program continues to experience numerous problems with the FRC's main diesel engines. Twenty engines have been replaced under the program's warranty, which according to officials has allowed the USCG to avoid \$51.8 million in potential costs. USCG officials said the program is also conducting a 15-week dry-dock period for the first 13 cutters to correct warranty items, which is also being covered by the warranty. This effort began in January 2016 and is expected to continue through November 2019.

## Test Activities

In May 2016, DOT&E approved the FRC program's revised Test and Evaluation Master Plan (TEMP) in preparation for

FOT&E, which focused on resolving issues found during prior testing. The USCG's operational test agent (OTA) from the U.S. Navy conducted IOT&E on the FRC in fiscal year 2013 and assessed three of the program's six KPPs. At that time, the FRC only partially met one of the KPPs tested. IOT&E also revealed several major deficiencies, the most significant of which involved the FRC's cutter boat, which exhibited problems operating in moderate sea conditions, and the FRC's main diesel engines, which had multiple equipment failures during testing. Subsequently, independent testers concluded the FRC was operationally effective, but not operationally suitable. USCG officials told GAO they have improved the FRC's performance since IOT&E. For example, they replaced and successfully tested the FRC's cutter boat, worked with the engine manufacturer to determine the root cause of equipment failures, and have begun retrofitting the engines. However, as recently as May 2016, three diesel engines were replaced during production on two FRCs, indicating that the problems with the diesel engines are ongoing.

The USCG completed FOT&E in July 2016 and the OTA found that several deficiencies from IOT&E had been corrected. For example, the OTA closed a severe deficiency related to the engines based on modifications to the FRC's main diesel engines along with observing that the cutter achieved an operational availability of 99 percent during FOT&E. Six major deficiencies from IOT&E remain unresolved and the OTA identified four new major deficiencies during FOT&E. Ultimately, the OTA declared the FRC operationally effective and suitable. As of January 2017, DOT&E was in the process of assessing the FOT&E results to independently validate the program's performance.

## Other Issues

In January 2016, the USCG reported that the FRC program had a staffing gap of 3 full time equivalents. In August 2016, program officials told GAO they had addressed the FRC's staffing gap and did not have any staffing vacancies.

## Program Office Comments

The FRC program is fully funded, executable, and on track for full operational capability by March 2027, within baseline. FRCs provided over 26,000 operational hours in support of the USCG's Western Hemisphere strategy in the last 12 months in which over 6,300 undocumented migrants were rescued from unseaworthy vessels and 19,000 kg of illegal narcotics trafficking was disrupted. The program office looks forward to receiving DOT&E's independent validation of the program's performance. USCG officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# H-65 Conversion/Sustainment Projects (H-65)

United States Coast Guard (USCG)

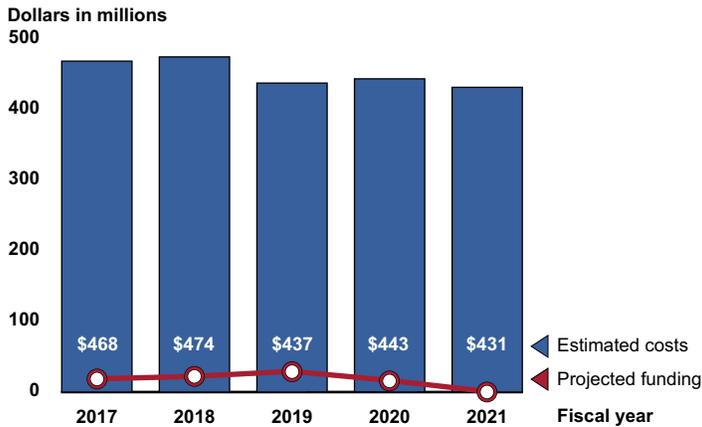


Source: U.S. Coast Guard.

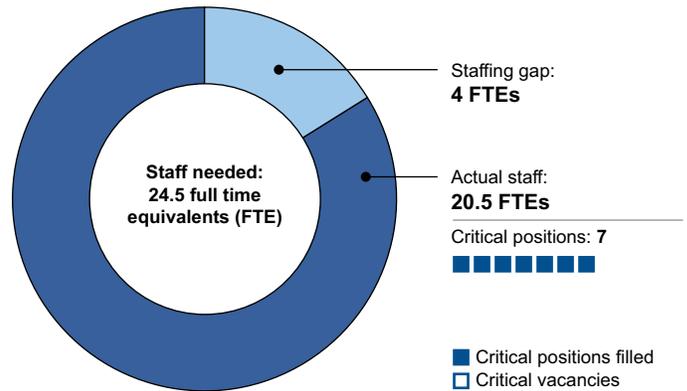
## Program Description

The H-65 aircraft is a short-range helicopter that the USCG uses in search and rescue, ports and waterways security, ice-breaking, marine safety and environmental protection, and defense readiness operations. The H-65 acquisition program increased the USCG's fleet size from 95 to 102 helicopters and added armament capabilities, upgraded navigation systems, and replaced all of the helicopters' engines. The program is focused on the final phase of upgrades to the radar sensor system, the automatic flight control system (AFCS), and avionics. The upgrades allow for greater reliability, maneuverability, and interoperability between the H-65 and other government assets. GAO previously reported on the H-65 program in March 2016 (GAO-16-338SP).

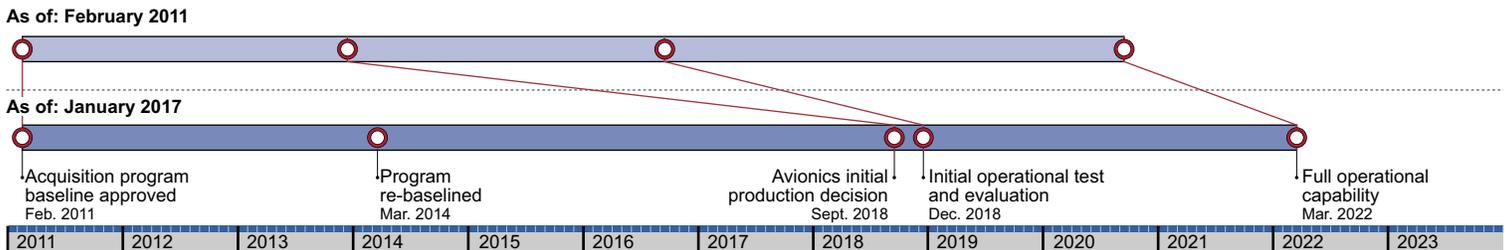
## Projected Funding vs. Estimated Costs



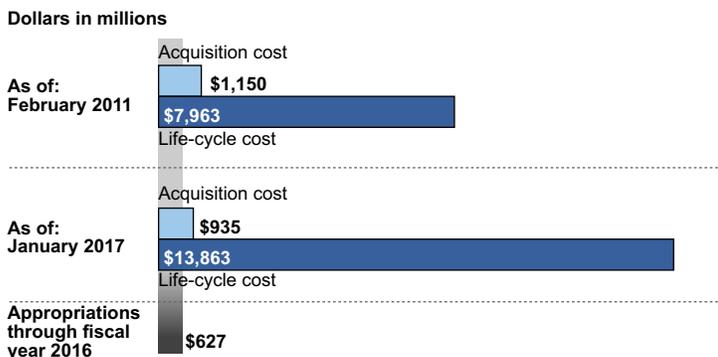
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

According to USCG officials, the program has met 16 of its 18 key performance parameters (KPP), but has not yet demonstrated its 2 avionics KPPs. The USCG plans to demonstrate these KPPs through developmental testing and an operational assessment prior to installing the avionics upgrade across the fleet, but the assessment has been delayed. USCG officials stated that during actual operations, the aircraft have not consistently met 3 of the 16 previously demonstrated KPPs, which are related to operational availability. Program officials previously attributed these shortfalls to difficulties maintaining aging equipment, among other things, which the avionics upgrades should address.

## Acquisition Strategy

The USCG Aviation Logistics Center (ALC) is responsible for procuring and integrating all the systems needed to upgrade the H-65 aircraft. USCG leadership assigned the ALC this responsibility because it was already responsible for overhauling the H-65 aircraft every 4 years as part of normal maintenance. The ALC has completed upgrades to the engines, armament, and navigation systems on all flyable H-65 aircraft. The ALC is in the process of testing the systems for the H-65 aircraft's avionics and AFCS upgrades.

In June 2015, the Department of Homeland Security's (DHS) Under Secretary for Management (USM) authorized USCG to award contracts for long-lead production materials for the avionics and AFCS upgrades. Officials estimated these materials will cost \$20 million. In September 2016, USCG officials told GAO they had awarded all but 2 of about 40 of these contracts. According to officials, ordering long-lead material was necessary to ensure that the ALC has all the required parts to begin installing the upgrades during normal aircraft maintenance once the program receives approval for initial production.

## Program Execution

The USCG experienced an over 12-month delay in developing a portion of the avionics and AFCS upgrades that resulted in the H-65 program declaring a schedule breach in November 2016. USCG officials told GAO in September 2016 that several milestones for the avionics and AFCS upgrades had been delayed. Specifically, the production readiness review, completion of developmental testing, and operational assessment—all of which were planned for summer 2016—had been pushed into 2017. Program officials primarily attributed these delays to an underestimation of the technical effort necessary to meet requirements. As these activities support approval for the avionics and AFCS initial production, this decision was also delayed from the USCG's target date of December 2016. USCG officials anticipated receiving approval for initial production by the program's revised Acquisition Program Baseline (APB) threshold date of March 2017, but notified DHS leadership in November 2016 that it would not meet this date. According to USCG officials, they now plan to receive approval for initial production by September 2018—nearly 5 years later than the initial APB date of December 2013. The USCG plans to update the H-65's APB by May 2017 to account for these delays, which will also reflect schedule changes for subsequent milestones including initial operational test and evaluation (IOT&E), the full-rate production decision, and full operational capability.

USCG officials told GAO they are also updating the program's life-cycle cost estimate (LCCE). The USCG anticipates that the program's schedule delays will result in minor cost increases because of extended labor contracts and inflation, but that these costs will remain within the program's currently approved cost thresholds. The program's LCCE previously increased by approximately \$6 billion from 2011 to 2014 due to the USCG's decision to extend the aircraft's operational life by 9 years, from 2030 to 2039.

From fiscal year 2017 to fiscal year 2021, the H-65's yearly cost estimates exceed the program's funding by nearly \$2.1 billion. However, the funding gap may not be this large. In April 2015, GAO found that the DHS funding plan presented to Congress did not identify the operations and maintenance funding

the USCG plans to allocate for each of its major acquisition programs—including the H-65—and recommended DHS account for this funding in its future report ([GAO-15-171SP](#)). DHS concurred with the recommendation, but has yet to take action.

## Test Activities

According to USCG officials, the program has completed several years of developmental testing on the avionics and AFCS upgrades. In 2015, the program revised its Test and Evaluation Master Plan (TEMP) at the request of the USM to ensure the USCG has sufficient data to support approval for the initial production of these upgrades. Specifically, the program added an operational assessment conducted by the U.S. Navy to collect more data about the upgrades prior to the production decision. DHS's Director, Office of Test and Evaluation approved the TEMP in February 2016, but recommended the program make further updates to reflect anticipated test objective changes prior to program-wide IOT&E. IOT&E is intended to test all the H-65 upgrades installed throughout the life of the program to support approval for full-rate production. Officials told GAO they would update the TEMP by August 2018, prior to when IOT&E was scheduled to begin in fiscal year 2019. However, these activities will likely be rescheduled because of the program's delays.

## Other Issues

In January 2016, the USCG reported the program had a staffing gap of 4 full time equivalents. In September 2016, USCG officials told GAO the program had closed this gap and was sufficiently staffed. USCG officials also stated that they have been able to address long-standing ALC contracting personnel shortages by shifting some contracting duties from ALC to the USCG contracting office.

As of October 2016, USCG officials reported two aircraft have been lost during operational missions. As a result, the program's LCCE will likely decrease because the USCG no longer needs to fund operations and maintenance costs for these aircraft. However, if the USCG chooses to replace the aircraft, officials said there will be no adverse effect on the program's schedule or acquisition costs because all of the materials for the upgrades were previously purchased.

## Program Office Comments

USCG officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Long Range Surveillance Aircraft (HC-130H/J)

United States Coast Guard (USCG)

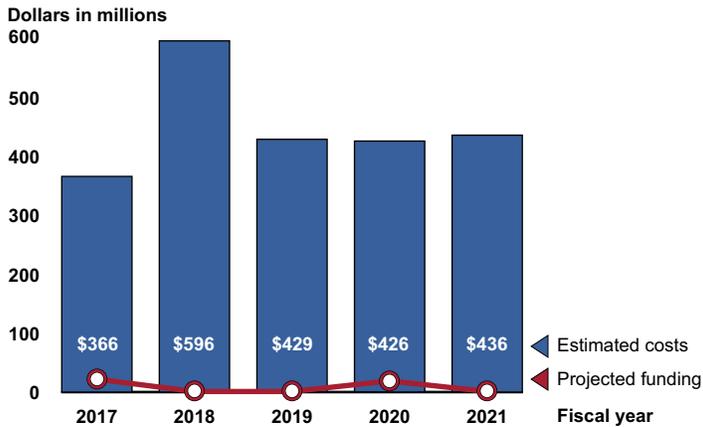


Source: U.S. Coast Guard.

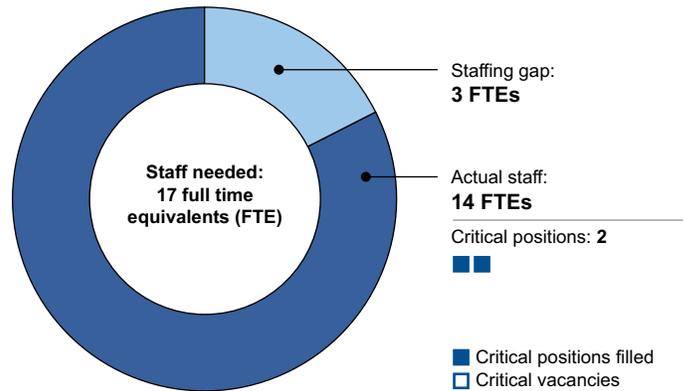
## Program Description

The USCG uses HC-130H and HC-130J aircraft to conduct search and rescue missions, transport cargo and personnel, support law enforcement, and execute other operations. In 2009, the Department of Homeland Security's (DHS) Under Secretary for Management (USM) approved an Acquisition Program Baseline (APB) for the HC-130H upgrade program, and a separate APB for the acquisition of the more modern and capable HC-130J aircraft. In 2012, the USM approved a third APB that combined and re-baselined the two programs. In October 2014, USCG officials told GAO they no longer planned to upgrade any additional HC-130H aircraft, and that they were pursuing an all-HC-130J fleet, in response to the addition of C-27J aircraft into the USCG's fleet of Medium Range Surveillance Aircraft. GAO reported on the USCG's HC-130H/J program in March 2016 and March 2015 ([GAO-16-338SP](#), [GAO-15-325](#)).

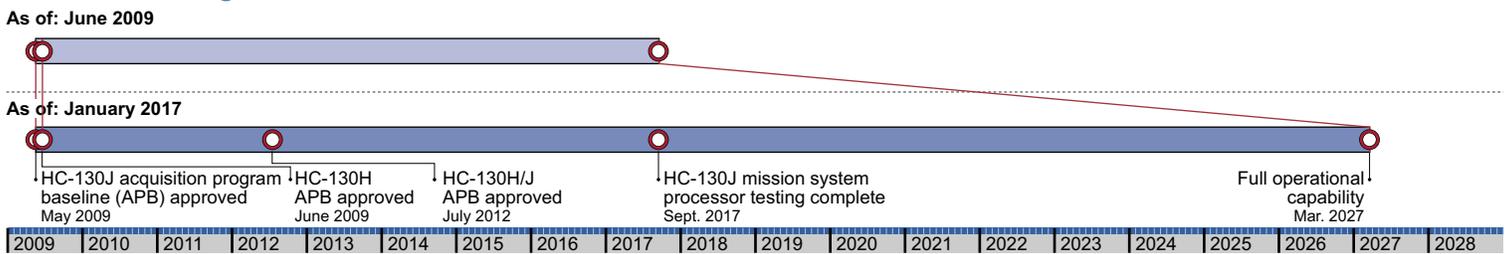
## Projected Funding vs. Estimated Costs



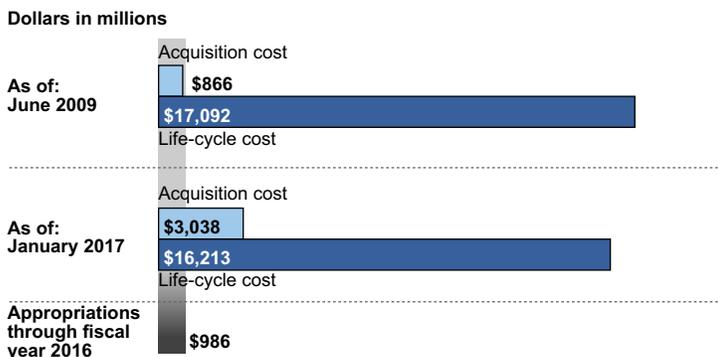
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

The HC-130J will not be able to meet two of its seven key performance parameters (KPP) until the USCG installs a new mission system processor on the aircraft, an effort that is underway. These two KPPs are related to the detection of targets and the aircraft's ability to communicate with other assets. USCG officials said they installed a prototype of the new HC-130J mission system processor in June 2016 and began developmental testing. The USCG plans to conduct further testing on the HC-130J's mission system processor in fiscal year 2017. USCG officials previously told GAO that the HC-130H aircraft met all six of its KPPs based on operational performance during USCG missions.

## Acquisition Strategy

The USCG plans to acquire 22 HC-130J aircraft, which will eventually replace the existing HC-130H aircraft. After deciding to pursue an all-HC-130J fleet in October 2014, the USCG began to decrease the number of HC-130H aircraft in its fleet. As of January 2017, the USCG had transferred or was in the process of transferring 9 of its 23 existing HC-130H aircraft to other organizations. For example, the USCG is transferring 7 of these aircraft to the U.S. Forest Service. USCG officials told GAO that the USCG will continue to operate 14 of its HC-130H aircraft until the end of their service lives or until they can be replaced with new HC-130J aircraft. Officials anticipate retiring all HC-130H aircraft by fiscal year 2022. As of January 2017, USCG officials said they had received 10 HC-130J aircraft and awarded contracts for 3 more.

The USCG is also replacing the mission system processor on all of its fixed-wing aircraft—including the HC-130J—with a system used by the U.S. Navy and DHS's Customs and Border Protection. The new mission system processor is intended to enhance operator interface and sensor management, as well as replace obsolete equipment. Pending test results, the USCG plans to install the new mission system processor on the 13 HC-130J aircraft it plans to receive by the end of fiscal year 2020. In September 2015, the USCG awarded a contract that will cover retrofitting efforts for 7 of these aircraft for a total of \$17.2 million.

## Program Governance

In October 2016, USCG officials told GAO the program had begun updating its life-cycle cost estimate to support a revised APB that accounts for the cancellation of HC-130H upgrades, the transition to an all-HC-130J fleet, and replacement of the HC-130J's mission system processor. However, officials said they would not update the APB until the USCG completed its multi-phased analysis of mission needs. Consistent with congressional direction, the USCG conducted a multi-phased analysis of its mission needs, including its flight-hour goals and mix of fixed-wing assets, which the USCG is delivering through both the Long Range Surveillance Aircraft program and the Medium Range Surveillance Aircraft program, which GAO is also assessing in this report. The USCG submitted the results of this analysis to Congress in November 2016, which confirmed the total quantity of 22 HC-130J aircraft the USCG plans to acquire and an annual flight-hour goal of 800 hours per aircraft.

## Program Execution

USCG officials told GAO they anticipate completing the update of the program's life-cycle cost estimate by March 2017. From 2009 to 2012, the combined acquisition cost estimate for the HC-130H/J aircraft increased from \$866 million to \$3.0 billion, and the full operational capability date slipped from September 2017 to March 2027. USCG officials primarily attributed this cost growth and schedule slip to the decision to increase the HC-130J quantity from 6 to 22. The combined life-cycle cost estimate decreased from \$17.1 billion in 2009 to \$16.2 billion in 2012 because the HC-130J aircraft are less expensive to maintain than the HC-130H aircraft they will replace. The program's life-cycle cost estimate may decrease further with the cancellation of the HC-130H upgrades.

In August 2016, USCG officials said they anticipated issuing a contract for additional HC-130J aircraft in fiscal year 2017, but did not identify how many. Officials previously told GAO that the USCG would need to acquire 1 to 2 aircraft per year in order to

meet the full operational capability date of March 2027. If the remaining aircraft are not delivered at this rate, the program's schedule could slip. USCG officials stated the delivery rate is dependent on the amount of funding the program receives. It appears that the program is facing a potential \$2.2 billion funding gap from fiscal year 2017 through fiscal year 2021. However, the gap may not be this large, because the USCG has historically received HC-130Js without including them in its budget requests. Additionally, in April 2015, GAO found that the DHS funding plan presented to Congress did not identify the operations and maintenance funding the USCG plans to allocate for each of its major acquisition programs—including the Long Range Surveillance Aircraft program—and recommended DHS account for this funding in its future report ([GAO-15-171SP](#)). DHS concurred with the recommendation, but has yet to take action.

## Test Activities

According to program officials, the USCG installed the HC-130J mission system processor prototype, and began developmental testing in June 2016. Once developmental testing is complete, USCG officials said they plan to demonstrate the HC-130J's mission system functionality against its requirements through performance testing conducted by the U.S. Navy in fiscal year 2017. USCG officials noted that this testing will be conducted in various operational environments. However, formal operational testing will not be conducted, which increases the risk that the new mission system processor will not perform as intended or be reliable once fielded. The USCG has not conducted operational testing on either aircraft. In 2009, DHS's Director, Office of Test and Evaluation (DOT&E) and the USCG determined the HC-130J did not need to operationally test the airframe because the U.S. Air Force conducted operational testing on the base C-130J airframe in 2005. Additionally, DOT&E approved a Test and Evaluation Master Plan for the HC-130H upgrades in 2010, but the USCG did not implement the plan because it canceled the upgrade.

## Other Issues

Despite reporting a staffing gap of 3 full time equivalents, program officials did not attribute any negative effects to workforce shortages.

### Program Office Comments

USCG officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Medium Range Surveillance Aircraft (HC-144A & C-27J)

United States Coast Guard (USCG)

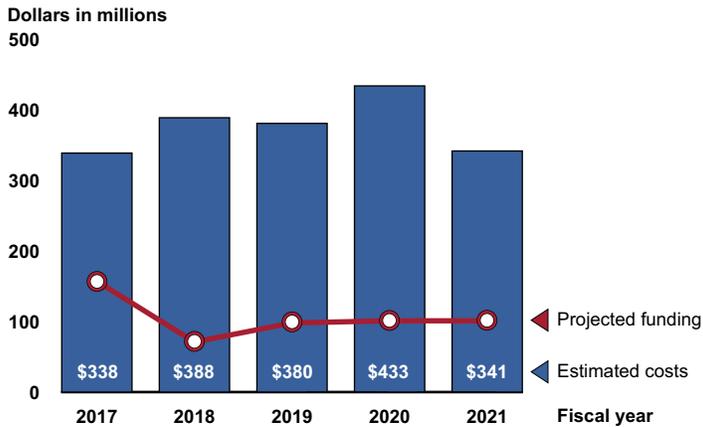


Source: U.S. Coast Guard.

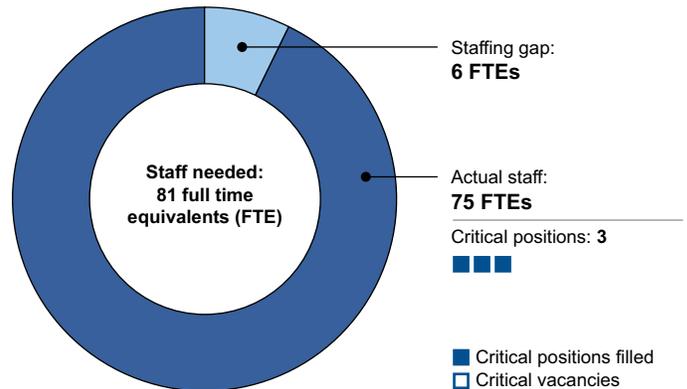
## Program Description

In October 2014, Department of Homeland Security (DHS) leadership directed the USCG to restructure its HC-144A acquisition program to accommodate 14 C-27J aircraft from the U.S. Air Force, and designated this combined acquisition the Medium Range Surveillance (MRS) Aircraft program. All 32 aircraft—14 C-27J aircraft plus 18 previously purchased HC-144A aircraft—are twin-engine propeller-driven platforms that the USCG plans to use to conduct all types of Coast Guard missions, including search and rescue and disaster response. In August 2016, DHS leadership approved MRS's Acquisition Program Baseline (APB), which established the program's cost, schedule, and performance parameters. GAO previously reported on the MRS program in March 2016 and the C-27J aircraft in March 2015 ([GAO-16-338SP](#), [GAO-15-325](#)).

## Projected Funding vs. Estimated Costs

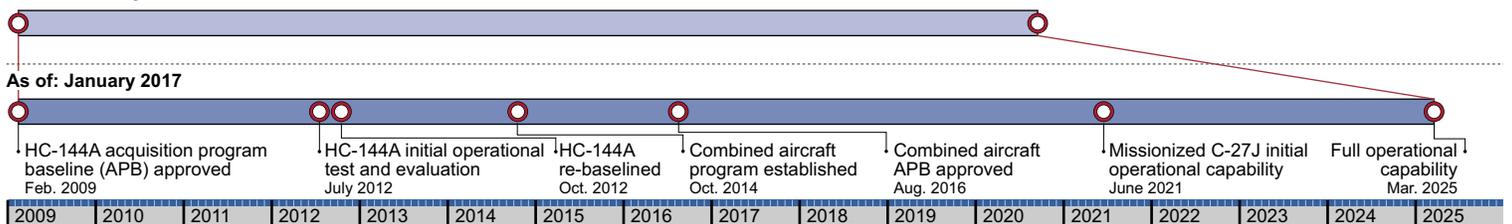


## Program Office Staffing Profile



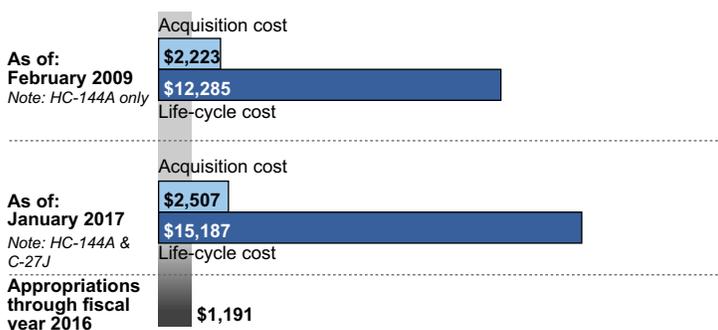
## Schedule Changes over Time

As of: February 2009



## Cost Estimate Changes over Time

Dollars in millions



## Performance

The seven HC-144A key performance parameters (KPP) apply to the C-27J aircraft. However, neither aircraft will be able to meet two KPPs until the USCG installs a new mission system processor, an effort that is underway, according to officials. These two KPPs are related to the detection of targets and the aircraft's ability to communicate with other assets. The HC-144A previously fully met three of its seven KPPs during testing conducted in July 2012. The C-27J aircraft will undergo testing once the USCG installs an entire mission system, consisting of the processor and sensor package, on the aircraft. However, the USCG has deferred its detection KPP due to technology limitations.

## Acquisition Strategy

The USCG initially planned to procure a total of 36 HC-144A aircraft, but reduced that number to the 18 they had already procured after Congress directed the U.S. Air Force to transfer 14 C-27J aircraft to the USCG in fiscal year 2014. As of October 2016, the USCG had accepted 9 C-27J aircraft. The USCG is also replacing the mission system processor on all of its fixed-wing aircraft—including both the HC-144A and C-27J—with a system used by the U.S. Navy and DHS’s Customs and Border Protection. In August 2016, USCG officials told GAO they expect to complete installation of the mission system processor prototype on the HC-144A by December 2016, and plan to outfit all 18 HC-144A aircraft by 2021. These officials said it will take longer to complete installation of this system on the C-27J because the aircraft first needs a sensor package—primarily a radar and electro-optical camera—to meet its requirements.

## Program Governance

In August 2016, the USCG completed a nearly 2-year effort to restructure the program when DHS approved the program’s revised APB. The MRS’s APB divides the program in two phases: phase 1 includes upgrades to the HC-144A aircraft, and phase 2 includes acceptance of the C-27J aircraft, as well as modifications to meet the USCG’s mission needs.

## Program Execution

Incorporating the C-27J into the USCG’s fleet revised the MRS program’s full operational capability date to March 2025. However, this reflects a 6-month acceleration from the USCG’s revised APB date for the HC-144A. In 2012, the HC-144A’s full operational capability date slipped from September 2020 to September 2025 when the USCG reduced the number of aircraft purchased per year in response to funding constraints.

The USCG initially estimated that it may cost \$600 million to convert the C-27J aircraft to meet USCG mission needs, but according to the MRS APB, it may cost \$1 billion, bringing the program’s total acquisition cost to \$2.5 billion. These costs include purchasing a sensor package, redesigning the aircraft and installing the package, and customizing and testing the new mission system processor. The MRS program’s life-cycle cost estimate (LCCE) exceeds \$15 billion, but this is an almost \$13.6 billion decrease compared to the USCG’s revised estimates for an all-HC-144A fleet. From 2009 to 2012, the HC-144A LCCE increased from \$12.3 billion to \$28.7 billion when the USCG accounted for 5 years of additional costs, among other things. The MRS program’s LCCE decreased because of the reduced number of aircraft acquired, a reduction in planned flight hours, and the 15-year shorter service life of the C-27J compared to the HC-144A. Nevertheless, the USCG will ultimately procure fewer aircraft than initially planned at a higher cost.

The MRS program is projected to face a \$1.3 billion funding gap from fiscal year 2017 through fiscal year 2021. However, the funding gap may not be this large. In April 2015, GAO found that the DHS funding plan presented to Congress did not identify the operations and maintenance funding the USCG plans to allocate for each of its major acquisition programs—including the MRS program—and recommended DHS account for this funding in its future report ([GAO-15-171SP](#)). DHS concurred with the recommendation, but has yet to take action.

## Test Activities

In July 2012, U.S. Navy officials responsible for testing the HC-144A aircraft reported that it was operationally effective and suitable, but fully met only three of its seven KPPs. Program officials previously stated that they are addressing the KPP deficiencies by changing operational tactics until the USCG installs a new mission system processor and other items. USCG officials plan to test the upgraded aircraft through performance testing conducted by the U.S. Navy in fiscal year 2017. USCG officials noted that this testing will be conducted in various operational environments. However, formal operational testing will not be conducted, which may increase the risk that the new mission system processor will not perform as intended or be reliable once fielded.

In October 2014, DHS leadership directed the USCG to test the C-27J mission system in an operational setting. In July 2016, DHS’s Director, Office of Test and Evaluation approved the program’s Test and Evaluation Master Plan for the C-27J, which shows operational testing beginning in April 2021. However, it is unclear when the C-27J will be able to meet its detection KPP because the technology required does not yet exist for this aircraft. In April 2016, the USCG received approval to defer these capabilities until the technology becomes commercially available.

## Other Issues

The USCG still faces challenges in transitioning the C-27J into the USCG fleet. In March 2015, GAO found that the successful and cost-effective fielding of the C-27J aircraft is contingent on the USCG’s ability to address three risk areas: (1) purchasing spare parts, (2) accessing technical data, and (3) understanding the condition of the aircraft. According to USCG officials, purchasing spare parts remains the greatest risk. However, in September 2016, the USCG awarded an \$11 million contract for spare parts. In December 2016, USCG officials also said they had not yet received access to the aircraft’s technical data to start the redesign effort.

In January 2016, the USCG reported that the program’s staffing need increased from 15 full time equivalents to 81, much of which was needed to establish a C-27J asset program office at the USCG’s Aviation Logistics Center.

### Program Office Comments

USCG officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# National Security Cutter (NSC)

## United States Coast Guard (USCG)

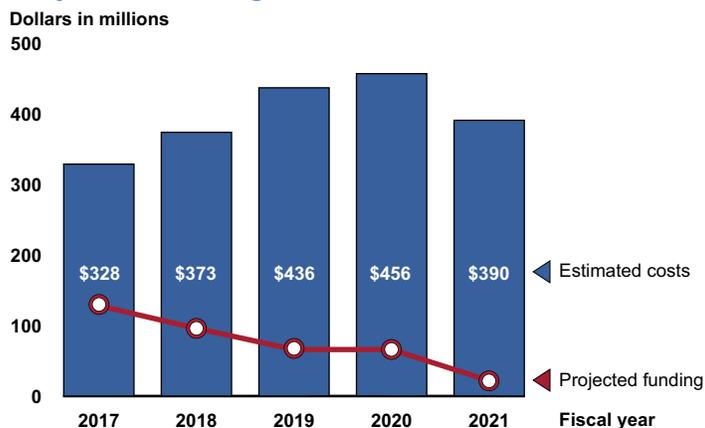


Source: U.S. Coast Guard.

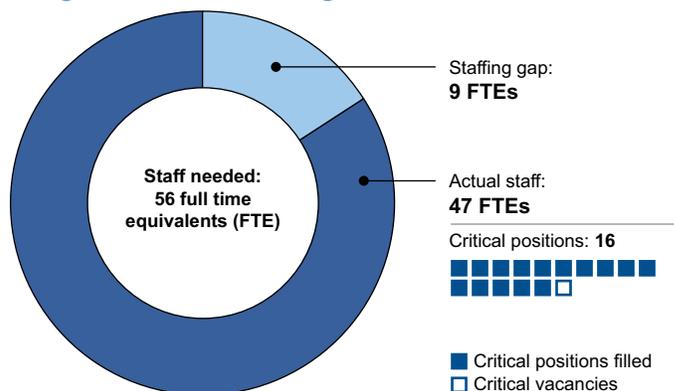
### Program Description

The USCG uses the NSC to conduct search and rescue, migrant and drug interdiction, environmental protection, and other missions. The NSC replaces the USCG's High Endurance Cutters and is intended to provide improved capabilities over this legacy asset. The NSC carries helicopters and cutter boats, provides an extended on-scene presence at forward deployed locations, and operates worldwide. As of January 2017, the USCG had received six of eight originally planned NSCs, and two were under construction. The Consolidated Appropriations Act of 2016 stated that not less than \$640 million shall be immediately available and allotted to contract for the production of a ninth NSC. Each NSC is designed to have a 30-year service life. GAO previously reported on the NSC in March 2017, March 2016, and January 2016 ([GAO-17-218](#), [GAO-16-338SP](#), [GAO-16-148](#)).

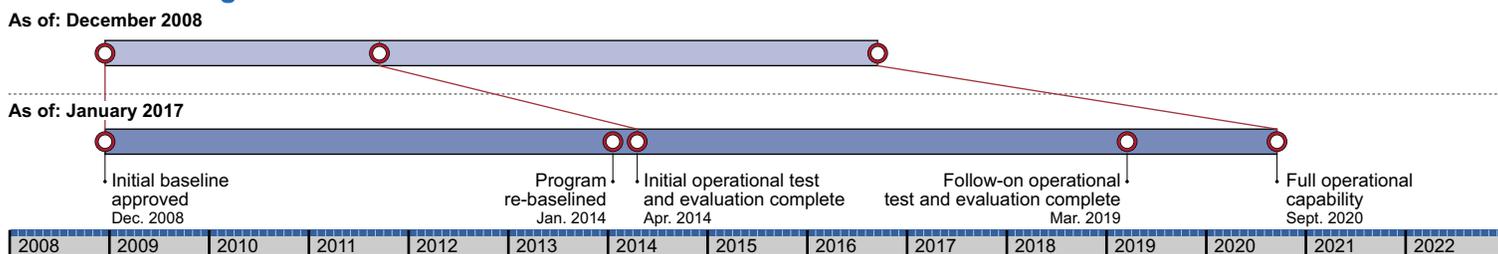
### Projected Funding vs. Estimated Costs



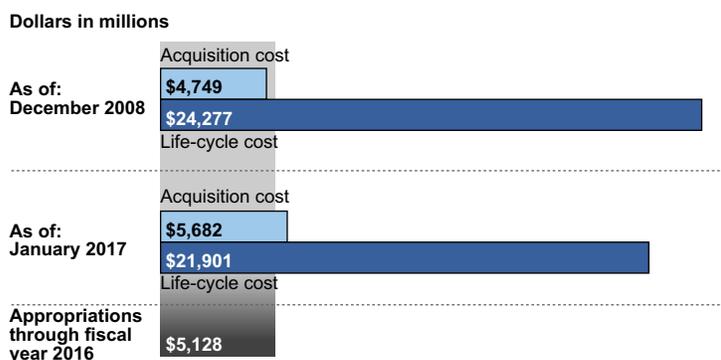
### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

The USCG has been operating the NSC since 2010, but it has not yet demonstrated that the NSC can fully meet 7 of its 19 key performance parameters (KPP). The NSC's unmet KPPs include those related to unmanned aircraft, cutter-boat deployment, and interoperability requirements. The USCG plans to demonstrate all unmet KPPs during follow-on operational test and evaluation (FOT&E) in fiscal years 2017 and 2018.

## Acquisition Strategy

The USCG awarded a contract to produce the first three NSCs to Integrated Coast Guard Systems—a joint venture between Northrop Grumman and Lockheed Martin—as part of the now-defunct acquisition effort designated Deepwater. In 2006, the USCG revised its Deepwater acquisition strategy, citing cost increases, and took over the role of lead systems integrator, acknowledging that it had relied too heavily on contractors. In 2010, the USCG awarded the production contract for the fourth NSC to Northrop Grumman. In 2011, Northrop Grumman spun off its shipbuilding sector as an independent company named Huntington Ingalls Industries (HII). HII delivered the fourth, fifth, and sixth NSCs, and is producing the seventh and eighth NSCs. In December 2016, the USCG awarded HII a contract to produce the ninth NSC, using the funding made available and allotted by Congress for this purpose in December 2015. The ninth NSC will be built to the same configurations as the eighth NSC.

## Program Execution

According to USCG officials, the NSC program is on track to meet its revised schedule and cost goals for the first eight NSCs. From 2008 to 2014, the program's full operational capability (FOC) date slipped 4 years. USCG officials attributed this schedule slip to, among other things, funding shortfalls. Additionally, the program's acquisition cost estimate increased nearly \$1 billion due to lingering effects of Hurricane Katrina, which in 2005 struck the region where the NSCs are built. However, the program's life-cycle cost estimate (LCCE) decreased by \$2.4 billion, which USCG officials attributed to increasingly accurate cost estimates for personnel, materials, and maintenance.

The program's costs include several design changes the USCG has had to implement on equipment with known issues aboard the NSC fleet. As of September 2016, 12 equipment systems required design changes costing over \$1 million each, for an estimated total cost of \$260 million. The estimated costs associated with these changes—such as structural enhancement work on the first two NSCs and the replacement of the gantry crane which aids in the deployment of the cutter boats—have increased by roughly \$60 million since GAO reported on this issue in January 2016. Program officials attributed the increase to the revised cost of structural enhancements on NSCs 1 and 2 based on actual contract values and the addition of the ninth NSC. USCG officials told GAO they are updating the program's Acquisition Program Baseline and LCCE to account for the ninth NSC, but these updates are not expected until September 2017. The USCG anticipates delivery of the ninth NSC in September 2020, which coincides with the program's revised FOC date. It is unclear how the ninth NSC will affect the program's costs.

Despite receiving funding for the ninth NSC in fiscal year 2016, the program is projected to face a \$1.6 billion funding gap from fiscal year 2017 to fiscal year 2021. However, the funding gap may not be as large as it appears. In April 2015, GAO found that the DHS funding plan presented to Congress did not identify the operations and maintenance funding the USCG plans to allocate for each of its major acquisition programs—including the NSC—and recommended DHS account for this funding in its future report ([GAO-15-171SP](#)). DHS concurred with the recommendation, but has yet to take action.

## Test Activities

In June 2016, the Department of Homeland Security's (DHS) Director, Office of Test and Evaluation (DOT&E) approved the NSC program's revised Test and Evaluation Master Plan (TEMP) in preparation for FOT&E. According to USCG officials, FOT&E will focus on testing all unmet KPPs and resolving deficiencies found during prior testing. The NSC completed its initial operational testing in 2014, and DOT&E subsequently found the NSC operationally effective and suitable. However, the NSC did not fully demonstrate 7 of its 19 KPPs during this testing, including those related to unmanned aircraft and cutter-boat deployment in rough seas. USCG officials indicated that challenges remain in determining a path forward to resolve these KPPs because the USCG and its operational test agent within the U.S. Navy have different interpretations of the cutter boat requirements. In January 2016, GAO recommended the NSC program office clarify the KPPs for the cutter boats, with which the USCG concurred. As of January 2017, the USCG was working on a resolution.

As of August 2016, the USCG was developing the test scenarios that it will use to conduct FOT&E in fiscal years 2017 and 2018. Officials stated that, in January 2017, the NSC will be the first USCG asset to undergo cyber security testing. The USCG expects to complete installation of an unmanned aircraft on the third NSC in December 2016, but it remains unclear when the USCG will demonstrate the unmanned aircraft KPP. In January 2016, GAO also recommended DHS specify when the USCG must complete the NSC's FOT&E and any further actions the NSC program should take following FOT&E. The USCG concurred and in April 2016, DHS issued a memorandum outlining requirements for the program's FOT&E including that it be completed by March 2019. This memorandum also directed the USCG to complete a study no later than December 2017 to determine the root cause of the NSC's propulsion system issues such as high engine temperatures, cracked cylinder heads, and overheating generator bearings that are impacting missions—issues GAO also reported on in January 2016.

## Other Issues

In August 2016, USCG officials told GAO they have been able to mitigate any effects of the program's staffing shortfall with existing staff and were in the hiring process for the program's remaining critical vacancy.

### Program Office Comments

Cost estimates herein are threshold values from the NSC Acquisition Program Baseline and do not reflect current lower estimates based on award amounts for NSCs 7 and 8. The NSC program completed initial operational test and evaluation (IOT&E) in 2014 and continues to work with DHS to complete remaining testing and resolve pending discrepancies. Despite not fully completing all aspects of IOT&E, USCG operations, led by NSCs, seized more cocaine in 2016 than any year prior—more than 416,600 pounds worth over \$5.6 billion. USCG officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Offshore Patrol Cutter (OPC)

United States Coast Guard (USCG)

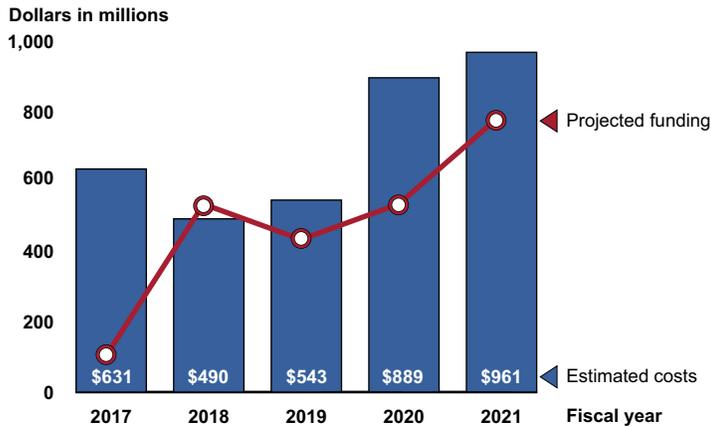


Source: © 2016 Eastern Shipbuilding Group, Panama City, FL.

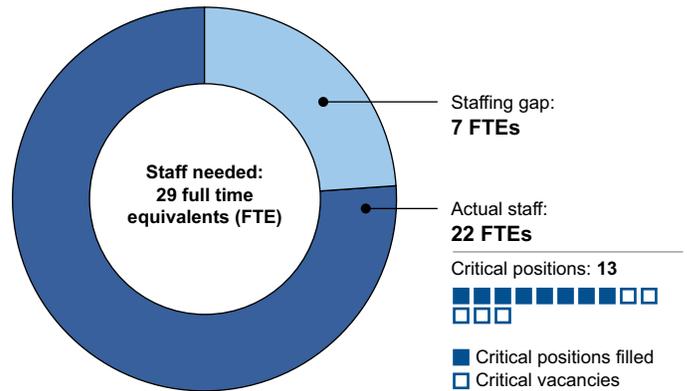
## Program Description

The USCG plans to use the OPC to conduct patrols for homeland security, law enforcement, and search-and-rescue operations. It will be designed for long-distance transit, extended on-scene presence, and operations with deployable aircraft and small boats. The OPC is intended to replace the USCG's aging Medium Endurance Cutters and to bridge the operational capabilities provided by the USCG's Fast Response Cutters and National Security Cutters. The USCG plans to procure 25 OPCs, and it expects to receive the first OPC in 2021. GAO previously reported on the OPC program in March 2016 and June 2014 (GAO-16-338SP, GAO-14-450).

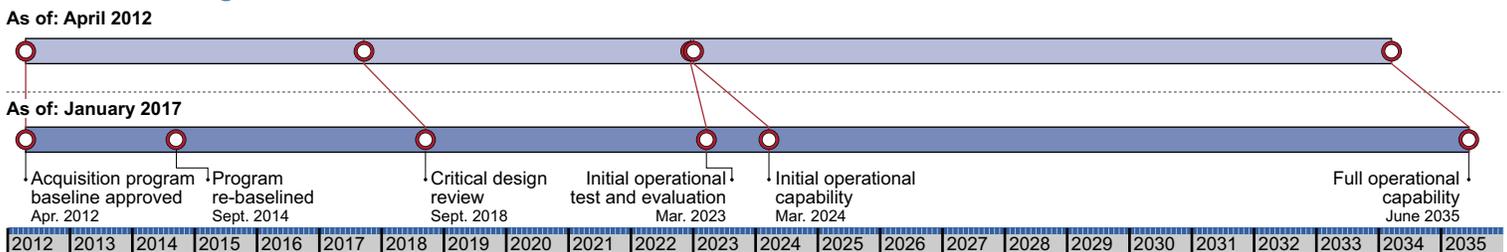
## Projected Funding vs. Estimated Costs



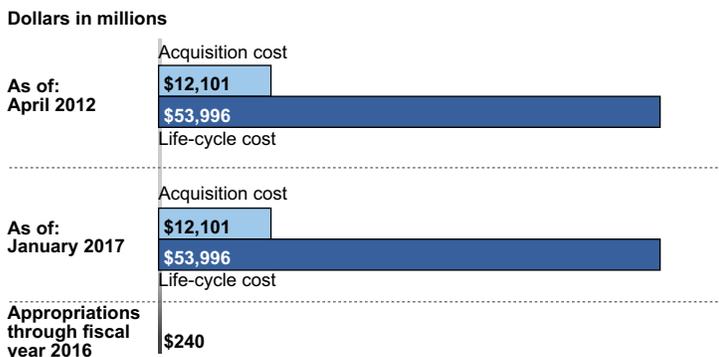
## Program Office Staffing Profile



## Schedule Changes over Time



## Cost Estimate Changes over Time



## Performance

Department of Homeland Security (DHS) leadership has approved six key performance parameters (KPP) for the OPC, establishing goals for the ship's operating range and duration, crew size, interoperability and maneuverability, and ability to support operations in moderate to rough seas. The first OPC has not yet been constructed, so the USCG has not yet demonstrated whether it can meet these KPPs. The USCG plans to use engineering reviews, and developmental and operational tests throughout the acquisition to measure the OPC's performance.

## Acquisition Strategy

The USCG used a two-phased down-select strategy to select a contractor to deliver the OPC. For phase 1, the USCG conducted a full and open competition to select three contractors to perform preliminary and contract design work, and subsequently, in February 2014, the USCG awarded fixed-price contracts to Eastern Shipbuilding, Bollinger Shipyard, and Bath Iron Works. For phase 2, the USCG selected one of the three phase 1 contractors to develop a detailed design of the OPC, and construct no more than the first 11 ships. In September 2016, the USCG awarded the phase 2 contract to Eastern Shipbuilding, worth approximately \$110 million for the detailed design and with separate options for each ship. The options for ships 10 and 11 were unpriced and included in the solicitation as an incentive to convert the contract type from fixed price incentive to firm fixed price. These options will be included in a re-pricing proposal submitted by the contractor for ships 6-9 after delivery of the first ship. According to USCG officials, the USCG will decide whether to exercise the option for ships 10 and 11 based on the contractor's re-pricing proposal for ships 6-9. The USCG plans to re-compete the contract for the remaining 14 or 16 ships.

USCG officials told GAO they are using a warranty similar to that for the Fast Response Cutter (FRC). In March 2016, GAO found that the FRC's warranty improved cost and quality by requiring the shipbuilder to pay to repair defects. The OPC's phase 2 contract includes a 2-year warranty for the lead ship and a 1-year warranty for all other ships that includes provisions that govern defects.

## Program Execution

According to USCG officials, the program is on track to meet the cost and schedule goals in its revised Acquisition Program Baseline, which was approved in September 2014. USCG re-baselined the OPC program to account for schedule slips resulting from delays in awarding the three preliminary and contract design contracts, and a subsequent bid protest that was filed with GAO. GAO denied the protest in June 2014. As a result, from 2012 to 2014, the program's critical design review and initial operational test and evaluation (IOT&E) dates both slipped 12 months. Additionally, the program's initial and full operational capability dates both slipped 15 months. Going forward, USCG officials have stated that additional OPC delays will decrease the USCG's operational capacity because the aging Medium Endurance Cutters will require increased downtime for maintenance and other issues, reducing their availability.

The OPC's acquisition and life-cycle cost estimates have not changed since 2012. However, the acquisition cost estimate had previously increased—GAO found in June 2014 that this estimate had increased by \$4 billion from 2007 to 2012. USCG officials said the increase was largely due to invalid assumptions in the earlier cost estimate, along with schedule delays and inflation. The program is currently projected to have a nearly \$1.2 billion funding gap from fiscal years 2017 to 2021. However, it is unclear whether this assessment of the gap is accurate because the USCG has not updated OPC's cost estimate to reflect the schedule delays experienced after the 2012 cost estimate was approved. In addition, USCG officials said that \$231 million of the OPC's costs over this 5-year period are funded by sources from outside the program. DHS leadership directed the USCG to update OPC's life-cycle cost estimate by March 2017 following award of the phase 2 contract.

GAO previously found that the OPC's existing cost estimate raised questions about the program's affordability. For example, in September 2012, GAO found that the requirements and mission for the National Security Cutter (NSC) and the OPC programs have similarities, but the estimated acquisition unit cost for the OPC was less than half the actual acquisition unit cost for the NSC. At that time, USCG officials recognized that the cost estimate for the OPC was still uncertain since the cutter had yet to be designed. USCG officials also noted that any delays, design issues, or contract oversight problems—all of which were experienced during the procurement of the NSC—could increase the eventual cost of the OPC. In 2012, DHS's Chief Financial Officer also raised concerns that the OPC's costs could grow as other shipbuilding programs' costs have grown in the past, and could ultimately affect the affordability of other USCG acquisition programs. In June 2014, GAO reported that the OPC will absorb about two-thirds of the USCG's acquisition funding from 2018 to 2032, and recommended that the USCG develop a 20-year fleet modernization plan that identifies all acquisitions needed to maintain the current service level, along with trade-offs if the funding needed to execute the plan is not consistent with annual budgets. The USCG concurred with this recommendation but did not identify an estimated date for completing the plan. In September 2016, USCG officials told GAO that significant investments in the NSC and FRC will be phased out by fiscal year 2021 to support the affordability of the OPC as it ramps up production.

## Test Activities

DHS's Director, Office of Test and Evaluation approved the OPC Test and Evaluation Master Plan (TEMP) in October 2011, which the USCG updated to reflect schedule changes resulting from the bid protest. In March 2016, the USCG issued a memo further refining the program's test schedule and detailing plans for cybersecurity testing, among other things. The USCG plans to conduct developmental testing from fiscal years 2017 to 2022 before conducting IOT&E on the first OPC in fiscal year 2023.

## Other Issues

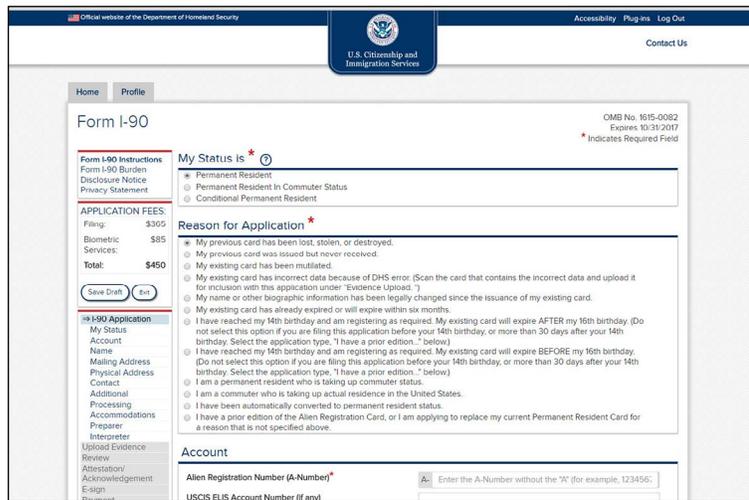
In January 2016, the USCG reported that the program office increased its required staffing level from 20 to 29 full time equivalents (FTE), but still had a staffing gap of 7 FTEs. In August 2016, program officials told GAO that the program had closed its staffing gap to 3 FTEs. The 5 critical vacancies are for additional USCG personnel who will oversee construction and provide management of contract execution at Eastern Shipbuilding's shipyard once phase 2 activities ramp up.

## Program Office Comments

USCG officials provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

# Transformation

## United States Citizenship and Immigration Services (USCIS)

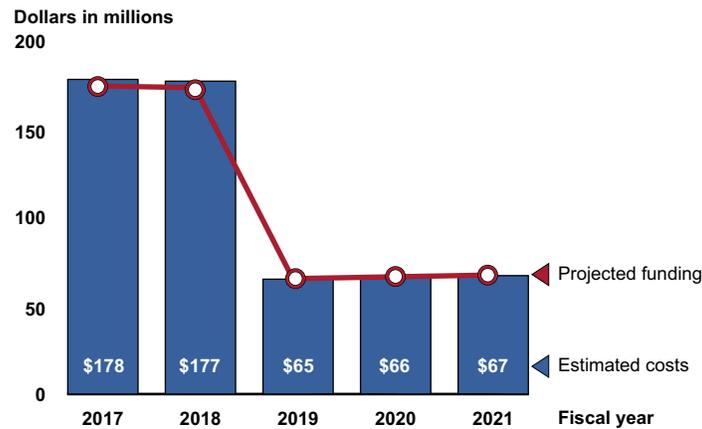


Source: U.S. Citizenship and Immigration Services.

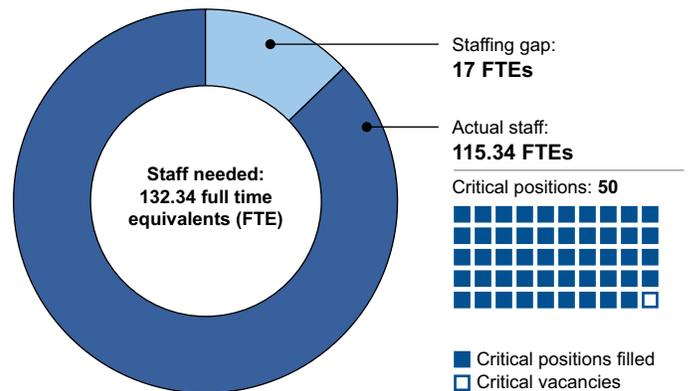
### Program Description

USCIS spans more than 200 offices worldwide, and processes tens of thousands of immigration and citizenship applications each day. The Transformation program was established in 2006 to transition USCIS from a fragmented, paper-based filing environment to a consolidated, paperless environment. However, it struggled to deliver capability for several years, and in 2013, the Department of Homeland Security (DHS) Under Secretary for Management (USM) authorized USCIS to revise its acquisition strategy. According to USCIS, the program is now pursuing a simpler solution based on a new system architecture. However, USCIS cannot use any of the architecture delivered under the old strategy, despite having invested more than \$475 million in its development. GAO previously reported on the Transformation program in March and July 2016 (GAO-16-338SP, GAO-16-467).

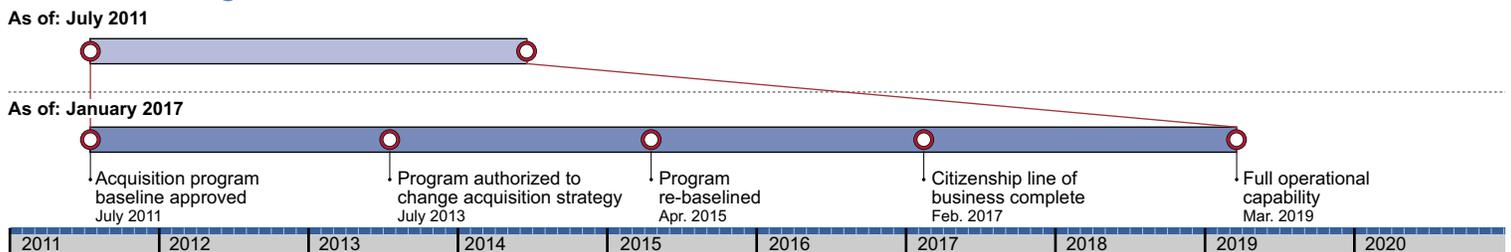
### Projected Funding vs. Estimated Costs



### Program Office Staffing Profile



### Schedule Changes over Time



### Cost Estimate Changes over Time



### Performance

In April 2015, DHS leadership approved a revised set of 8 key performance parameters (KPP) after the program struggled to meet its requirements. USCIS will not be able to fully demonstrate these KPPs until it achieves full operational capability (FOC). In the interim, the program has conducted operational assessments of some deployed functionality. In November 2015, DHS's Director, Office of Test and Evaluation (DOT&E) concluded that the system met 6 of the 7 tested KPPs during an assessment of the product line automating permanent resident card replacement applications. USCIS completed another assessment in March 2016 but, as of January 2017, DOT&E had not assessed these results.

## Acquisition Strategy

In 2008, DHS awarded IBM a task order to deliver the original solution through five software releases. The first release was launched in May 2012, approximately 5 months behind schedule. DHS attributed this delay to its decision to give a single contractor too much responsibility, weak contractor performance, pursuing an unnecessarily complex system, and adopting a development methodology that did not allow DHS to see problems early in the process. To address the delay, the Office of Management and Budget, DHS, and USCIS determined the program should implement a new acquisition strategy, which allowed for an agile software development methodology and increased competition for development work. Under an agile software development methodology, end users, subject matter experts, and testers collaborate with developers, increasing visibility into interim progress. By September 2014, USCIS had awarded four agile development contracts, which expired in September 2016. USCIS told GAO they awarded bridge contracts while the development contracts are re-competed. In April 2015, the Acting Deputy USM formally approved a program re-baseline. Currently, the program plans to deliver capability through 14 releases that correspond to new product lines. Each product line contributes to processing one of four lines of business: Citizenship, Immigrant, Non-immigrant, and Humanitarian.

## Program Execution

From January 2016 to January 2017, the program deployed four product lines for the new system architecture. This brings the total to six product lines deployed since 2015, which collectively deliver functionality that supported approximately 24 percent of the total workload processed by USCIS in fiscal year 2016.

USCIS completed data migration from the old system architecture in March 2016, but subsequently encountered challenges processing all applications as new product lines were transitioned to the new system architecture. In August 2016, the program reverted back to the legacy system for processing one of the Citizenship forms. As a result of the switchover and other technical issues with the case management system, the program did not complete deployment of all the product lines associated with the Citizenship line of business by its September 2016 deadline, resulting in a schedule breach.

In November 2016, USCIS submitted a breach remediation plan to DHS leadership that identified several root causes for the breach. These causes included that the program's schedule did not allow time to gather user feedback or address complexities discovered during development; new requirements were added; and there was no consistent performance requirement from USCIS leadership on what the program was supposed to accomplish for specific product lines. In July 2016, GAO found that USCIS was not following its own policies or leading practices when developing software, including ensuring that software meets expectations prior to deployment and development outcomes are defined. GAO made 12 recommendations to improve Transformation program management. USCIS planned to re-baseline the program to account for the schedule delay and subsequently proposed organizational changes. In December 2016, DHS leadership directed USCIS to stop planning and development for new product lines, update its breach remediation plan and acquisition documentation, and brief leadership on the program's revised approach by February 2017.

The program's yearly cost estimates appear to match its funding plan from fiscal years 2017 through 2021, but it is actually projected to have a sizable surplus. USCIS uses revenue from premium processing fees to fund the Transformation program. USCIS expected to carry over \$468 million in premium processing revenue into fiscal year 2017, and USCIS expects it will still have \$327 million in unobligated funds at the end of fiscal year 2021.

## Test Activities

In March 2016, the program completed its third operational assessment since adopting its new system architecture. The assessment evaluated a software release deployed in 2015 that was intended to help USCIS customers submit immigrant visa payments. In May 2016, the program's operational test agent (OTA)—a private industry firm—determined that the product line had an overall low risk and should continue to be developed and deployed in accordance with program plans. However, the operational assessment only tested a minor subset of the system's FOC capability. As of January 2017, DHS's DOT&E had not independently validated these results. The OTA subsequently conducted a fourth operational assessment intended to inform DHS leadership's acceptance of the Citizenship line of business. However, according to program officials, the OTA extended the observation period for this assessment once the program breached the Citizenship line of business completion deadline. These officials said the assessment will be completed in 2017, and DOT&E plans to assess the results prior to DHS's acceptance of the Citizenship line of business. Going forward, the program plans to conduct similar operational assessments several more times through March 2019, when the program plans to achieve FOC.

## Other Issues

In January 2016, USCIS reported that the program added approximately 30 full time equivalents (FTE), but still had a staffing gap of 17 FTEs. In August 2016, program officials said they had filled some vacant positions, including a division chief, but had several new vacancies for support staff and one project lead. However, program officials did not attribute any negative effects as a result of staffing shortfalls.

## Program Office Comments

Since its introduction in March 2015, the enhanced system architecture has taken in over 2.7 million cases and USCIS also introduced four forms. USCIS continues to modernize the processes based on internal user feedback and input. USCIS is reassessing the program goals and schedule and will re-baseline the program in fiscal year 2017. USCIS officials also provided technical comments on a draft of this assessment, which GAO incorporated as appropriate.

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# Appendix II: Objectives, Scope, and Methodology

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The objectives of this audit were designed to provide congressional committees insight into the Department of Homeland Security's (DHS) major acquisition programs. We assessed the extent to which (1) DHS's major acquisition programs are on track to meet their schedule and cost goals, (2) major acquisition programs are making progress in meeting key performance parameters (KPP), and (3) DHS has taken actions to strengthen implementation of its acquisition policy and to improve major acquisition program outcomes. To answer these questions, we reviewed 26 of DHS's 71 major acquisition programs, including 24 that we reviewed in 2016.<sup>1</sup> We reviewed all 16 of DHS's Level 1 acquisition programs—those with life-cycle cost estimates (LCCE) of \$1 billion or more—that had at least one project, increment, or segment in the Obtain phase—the stage in the acquisition life cycle when programs develop, test, and evaluate systems—at the initiation of our audit. Additionally, to provide insight into some of the factors that can lead to poor acquisition outcomes, we reviewed 10 other major acquisition programs—including 5 Level 1 programs beyond the Obtain phase and 5 Level 2 programs that have LCCEs between \$300 million and \$1 billion—that we or DHS leadership had identified were at risk of not meeting their cost estimates, schedules, or capability requirements.<sup>2</sup> We have reported on many of these programs in our past work. As part of our scoping effort, we met with representatives from DHS's Office of Program Accountability and Risk Management (PARM), DHS's main body for acquisition oversight, to determine which programs (if any) were facing difficulties in meeting their cost estimates, schedules, or capability requirements. The 26 selected programs were sponsored by eight different components, and they are identified in table 7, along with our rationale for selecting them.

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<sup>1</sup>GAO, *Homeland Security Acquisitions: DHS Has Strengthened Management, but Execution and Affordability Concerns Endure*, [GAO-16-338SP](#) (Washington, D.C.: Mar. 31, 2016). We did not assess the National Protection and Programs Directorate's Homeland Advanced Recognition Technology program in [GAO-16-338SP](#). Additionally, we previously reviewed the Customs and Border Protection's Multi-Role Enforcement Aircraft (MEA) and Medium Lift Helicopter (UH-60) as a part of the Strategic Air and Marine Program; we reviewed the MEA and UH-60 programs in individual assessments this year because DHS designated both acquisitions as separate and distinct Level 1 programs in July 2016. We did not include DHS's Homeland Security Information Network in this review because, as we found in March 2016, this program achieved full operational capability in January 2016.

<sup>2</sup>During the course of our review, DHS elevated the Transportation Security Administration's Technology Infrastructure Modernization program from a Level 2 to a Level 1 acquisition.

**Table 7: Rationale for Selecting DHS Major Acquisition Programs for Assessment**

<b>Component</b>	<b>Program</b>	<b>Level 1 program in the Obtain phase at the initiation of our audit</b>	<b>At risk of not meeting cost estimates, schedule, or capability requirements</b>
Customs and Border Protection (CBP)	Automated Commercial Environment (ACE)	X	—
	Integrated Fixed Towers (IFT) <sup>a</sup>	—	X
	Land Border Integration (LBI)	—	X
	Medium Lift Helicopter (UH-60)	X	—
	Multi-Role Enforcement Aircraft (MEA)	X	—
	Non-Intrusive Inspection (NII) Systems Program	—	X
	Tactical Communications (TACCOM) Modernization	—	X
	TECS (not an acronym) Modernization <sup>a</sup>	—	X
Federal Emergency Management Agency (FEMA)	Logistics Supply Chain Management System (LSCMS) <sup>a</sup>	—	X
Immigration and Customs Enforcement (ICE)	TECS (not an acronym) Modernization <sup>a</sup>	—	X
National Protection and Programs Directorate (NPPD)	Continuous Diagnostics & Mitigation (CDM)	X	—
	National Cybersecurity Protection System (NCPS)	X	—
	Homeland Advanced Recognition Technology (HART)	X	—
	Next Generation Networks Priority Services (NGN-PS)	X	—
Science and Technology Directorate (S&T)	National Bio and Agro-Defense Facility (NBAF)	X	—
Transportation Security Administration (TSA)	Electronic Baggage Screening Program (EBSP)	X	—
	Passenger Screening Program (PSP)	X	—
	Technology Infrastructure Modernization (TIM) <sup>a, b</sup>	—	X
U.S. Coast Guard (USCG)	C4ISR <sup>c</sup>	X	—
	Fast Response Cutter (FRC)	—	X
	H-65 Conversion/Sustainment Projects (H-65)	X	—
	Long Range Surveillance Aircraft (HC-130H/J)	X	—
	Medium Range Surveillance Aircraft (HC-144A & C-27J)	X	—
	National Security Cutter (NSC)		
	Offshore Patrol Cutter (OPC)	X	—

**Appendix II: Objectives, Scope, and Methodology**

Component	Program	Level 1 program in the Obtain phase at the initiation of our audit	At risk of not meeting cost estimates, schedule, or capability requirements
U.S. Citizenship and Immigration Services (USCIS)	Transformation	X	—

Legend: X = yes; — = no

Source: GAO analysis of Department of Homeland Security (DHS) data. | GAO-17-346SP

<sup>a</sup>Level 2 program.

<sup>b</sup>During the course of our review, DHS elevated the TIM program to a Level 1 program.

<sup>c</sup>C4ISR is an acronym for Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance.

To determine the extent to which DHS’s major acquisition programs are on track to meet their schedule and cost goals, we collected key acquisition documentation for each of the 26 programs, including all Acquisition Program Baselines (APB) approved at the department level since DHS’s current acquisition policy went into effect in November 2008. DHS policy establishes that all major acquisition programs should have a department-approved APB, which establishes a program’s critical cost, schedule, and performance parameters, before they initiate efforts to obtain new capabilities. All 26 programs had one or more department-approved APB since November 2008. We used these APBs to establish the initial and current cost and schedule goals for the 26 programs. We then developed a data collection instrument to help validate the information from the APBs. Specifically, for each program, we pre-populated a data collection instrument to the extent possible with the schedule and cost information we had collected from the APBs and our 2016 assessment (if applicable) to identify cost growth and schedule slips, if any, since the program’s initial baseline was approved. We shared our data collection instruments with officials from the program offices to confirm or correct our initial analysis and to collect additional information to enhance the timeliness and comprehensiveness of our data sets. Additionally, in June 2016, we collected program schedule and cost data from DHS’s Investment Evaluation, Submission, and Tracking (INVEST) System, which is the department’s system for information on its major acquisition programs. We compared the information obtained through the program offices’ data collection instrument responses and the INVEST system to our 2016 assessment (if applicable) or the programs’ most recent department-approved APB to identify schedule and cost changes, if any, since January 2016—the data cut-off date of our 2016 assessment. We then met with program officials to identify causes and effects associated with any identified schedule slips and cost growth. Subsequently, we drafted preliminary assessments for each of the 26

programs, shared them with program and component officials, and gave these officials an opportunity to submit comments to help us correct any inaccuracies, which we accounted for as appropriate (such as when new information was available). We also met with senior acquisition oversight officials to share observations about trends and issues across the portfolio. Through this process, we determined that our data elements were sufficiently reliable for the purpose of this engagement.

In addition, we compared the cost data we collected for each of the 26 programs to DHS's funding plans to identify any projected funding gaps—a challenge that increases the likelihood that acquisition programs will not meet their schedule or cost goals. Specifically, we compared current yearly cost estimates from department-approved LCCEs, INVEST, or program office updates to the funding plan presented in the Future Years Homeland Security Program (FYHSP) report to Congress for fiscal years 2017-2021, which presents 5-year funding plans for each of DHS's major acquisition programs, to assess the extent to which a program was projected to have a funding gap from fiscal year 2016 through fiscal year 2021. These calculations also accounted for any fiscal year 2016 carryover funds, but did not include other funds that programs brought into fiscal year 2016 from sources such as re-programming, fees, and other reimbursable expenses. This analysis was consistent with the methodology we used in our 2016 annual assessment, which allowed us to make comparisons to our March 2016 findings.<sup>3</sup> We shared our analysis with officials from the program offices and components to confirm or correct our calculations. We subsequently identified actions DHS had taken or planned to take to address projected program funding gaps by reviewing key documentation, such as certification of acquisition funding memorandums for programs that had completed an Acquisition Decision Event (ADE) in 2016 and DHS's resource allocation policies and processes. We also met with program officials to identify causes and effects associated with any projected funding gaps, and interviewed senior financial officials from DHS headquarters to discuss actions they had taken to implement our prior recommendations on addressing program affordability issues.<sup>4</sup>

To determine the extent to which DHS's major acquisition programs are making progress in meeting their KPPs, we reviewed DHS's acquisition

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<sup>3</sup>[GAO-16-338SP](#).

<sup>4</sup>For example, see [GAO-16-338SP](#), [GAO-15-171SP](#), [GAO-14-332](#).

policy and guidance, as well as key acquisition documentation for all 26 programs, including APBs and operational requirements documents approved at the department level since DHS's current acquisition policy went into effect in November 2008. An operational requirements document provides a number of performance parameters, including the KPPs, which must be met by a program to close an existing capability gap and provide a useful capability to the operator. We used these documents to establish the KPPs for the 26 programs. We included these KPPs in our pre-populated data collection instrument along with the status of each programs' KPPs collected through our 2016 assessment (if applicable) to identify changes, if any, in the programs' KPPs over time. We shared our data collection instruments with officials from the program offices to confirm or correct our initial analysis and to collect additional information to enhance the timeliness and comprehensiveness of our data sets. We also collected test reports and any letters of assessment from DHS's Director, Office of Test and Evaluation (DOT&E), which assess system performance during operational testing. Operational testing is intended to identify whether a system can meet its KPPs and provide an evaluation of the operational effective and suitability of a system in an operationally realistic environment. For the purposes of our review, we defined operational testing as initial or follow-on operational test and evaluation events, operational assessments, and limited user tests. We used the programs' APBs, data collection instruments, and other documents to identify whether the programs had deployed new capabilities to operators. We then reviewed the programs' test reports and DOT&E letters of assessment to determine what KPPs were tested and whether the system met all of the KPPs tested. We relied on information provided by the program offices, such as in the data collection instrument responses in instances where programs did not have test reports and DOT&E letters of assessment, or if these documents did not explicitly assess programs' KPPs. We considered a program's KPP met if it achieved, at a minimum, the threshold value outlined in the programs' APB or operational requirements document. We assessed DHS's acquisition policy, guidance, and practices against GAO's acquisition best practices for managing acquisition programs.<sup>5</sup> We also met with officials from the program offices to identify reasons why KPPs had not yet been demonstrated, and interviewed senior officials from DHS headquarters about the program's performance breach policy and requirements definition processes.

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<sup>5</sup>GAO, *Best Practices Using a Knowledge-Based Approach to Improve Weapon Acquisition*, [GAO-04-386SP](#) (Washington, D.C.: January 2004).

To determine the extent to which DHS has taken actions to improve major acquisition program outcomes and to strengthen implementation of its acquisition policy, we reviewed DHS's acquisition policy and guidance, including current and prior versions of the Acquisition Management Directive Instruction 102-01-001; acquisition decision memorandums issued in calendar year 2016; and key acquisition documentation for major acquisition programs, such as APBs, LCCEs, operational requirements documents, as well as breach notifications and remediation plans. We used the acquisition policy and guidance to identify changes made by DHS in 2016, such as establishing new oversight initiatives or revisions to existing policies. We then used the acquisition decision memorandums and program documentation to assess DHS's implementation of its acquisition policy in 2016. Specifically, for programs that received DHS approval for an ADE in 2016, we compared the acquisition documentation approved by DHS leadership for that event to the documentation requirements in DHS's acquisition policy. In addition, we reviewed program breach notifications, breach remediation plans, and acquisition decision memorandums for each of the programs that reported a breach in calendar year 2016 against DHS's acquisition policy. We assessed DHS's acquisition management policies, guidance, and practices against the *Standards for Internal Control in the Federal Government*.<sup>6</sup> Lastly, we interviewed acquisition management officials from DHS headquarters to obtain their perspectives on how new and ongoing acquisition management initiatives are intended to improve program outcomes, as well as key management decisions.

We conducted this performance audit from May 2016 through April 2017 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 that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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<sup>6</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

# Appendix III: Comments from the Department of Homeland Security



U.S. Department of Homeland Security  
Washington, DC 20528

**Homeland  
Security**

March 20, 2017

Michele Mackin  
Director, Acquisition and Sourcing Management  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20548

Re: Management's Response to Draft Report GAO-17-346SP, "HOMELAND SECURITY ACQUISITIONS: Earlier Requirements Definition and Clear Documentation of Key Decisions Could Facilitate Ongoing Progress"

Dear Ms. Mackin:

Thank you for the opportunity to review and comment on this draft report. The U.S. Department of Homeland Security (DHS) appreciates the U.S. Government Accountability Office's (GAO) work in planning and conducting its review and issuing this report.

The Department is pleased to note GAO's acknowledgement that all 26 programs reviewed had an approved Acquisition Program Baseline (APB). We are also appreciative of GAO's recognition that DHS has strengthened the implementation of its acquisition policy by, for example, focusing on program staffing needs, requiring programs to obtain Departmental approval of key acquisition documents, and revising the process for when programs breach their cost goal schedules or Key Performance Parameters (KPP). The Department is committed to continuing efforts to mitigate the risk of poor acquisition outcomes and strengthen DHS's investment decisions.

The draft report contained three recommendations with which the Department concurs. Attached find our detailed response to each recommendation.

Again, thank you for the opportunity to review and comment on this draft report. Technical comments were previously provided under separate cover. Please feel free to contact me if you have any questions. We look forward to working with you again in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim H. Crumpacker".

Jim H. Crumpacker, CIA, CFE  
Director  
Departmental GAO-OIG Liaison Office

Attachment

**Attachment: DHS Management Response to Recommendations  
Contained in GAO-17-346SP**

GAO recommended that the Secretary of Homeland Security direct the Under Secretary for Management to:

**Recommendation 1:** Require that major acquisition programs' technical requirements are well defined and key technical reviews are conducted prior to approving programs to initiate product development and establishing APBs, in accordance with acquisition best practices.

**Response:** Concur. DHS's Office of Program Accountability and Risk Management (PARM) will lead a study to assess how to better align Systems Engineering Life Cycle reviews with the Acquisition Life Cycle documentation and decision events. As a first step toward this study, PARM has initiated contact with other federal agencies to understand how they have implemented GAO's best practices in this area. Upon completion of the study, DHS will implement revisions to policy as appropriate for the Department. Estimated Completion Date (ECD): December 31, 2018.

**Recommendation 2:** Specify that acquisition decision memorandums are to clearly document the rationale of decision made by DHS leadership, such as, but not limited to, the reasons for allowing programs to deviate from the requirement to obtain department approval for certain documents at [Acquisition Decision Events] ADEs and the results of considerations or trade-offs.

**Response:** Concur. DHS agrees that it is important to clearly document the rationale for decisions made by the Chief Acquisition Officer in Acquisition Decision Memoranda (ADM), particularly if there is a deviation from policy. PARM has begun expanding the ADMs resulting from the ADEs and Program Reviews so that they include enhanced information in the background section. Also, all future ADMs resulting from ADEs will address the status of the acquisition documentation. Guidelines for writing ADMs that reflect these additional requirements were added to the most recent revision of the PARM Component Lead Handbook, signed March 13, 2017. In addition, the guidance was presented to the PARM Component Leads in a briefing on March 14, 2017.

We request that GAO consider this recommendation resolved and closed.

**Recommendation 3:** Specify at what point minimum standards for KPPs should be met, and clarify the performance data that should be used to assess whether or not a performance breach has occurred.

**Response:** Concur. DHS agrees that KPP threshold values should be met and verified no later than the Initial Operational Test and Evaluation conducted prior to Acquisition Decision Event 3 (ADE-3). Going forward, programs that have not met a KPP by ADE-3 will be required to declare a performance breach and to submit a remediation plan assessing and documenting the root cause of the breach, along with how and when the breach will be resolved prior to the ADE-3. The breach may be resolved either by revising the Operational Requirements Document (ORD), if the KPP is no longer deemed necessary, or fixing the deficiency and describing the

2

additional testing required to verify that the KPP has been met. The program will remain in breach until the ORD has been revised and approved or the KPP has been proven in testing. Guidelines for performance breaches were added to the most recent revision of the Component Lead Handbook, signed March 13, 2017; in addition, the guidance was presented to the PARM Component Leads in a briefing on March 14, 2017. The information will also be presented at the Component Acquisition Executive Staff Forum on March 21, 2017.

We request that GAO consider this recommendation resolved and closed.

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# Appendix IV: GAO Contact and Staff Acknowledgments

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## GAO Contact

Michele Mackin, (202) 512-4841 or [mackinm@gao.gov](mailto:mackinm@gao.gov)

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## Staff Acknowledgments

In addition to the contact listed above, Richard A. Cederholm (Assistant Director), Katherine Trimble (Assistant Director), Aryn Ehlow (Analyst-in-Charge), Peter Anderson, Mathew Bader, Steven Bagley, Jason Berman, Carissa Bryant, Andrew Burton, Erin Butkowski, Lisa Canini, Jenny Chow, Adam Couvillion, John Crawford, Lorraine Ettaro, Laurier R. Fish, Laura Gibbons, Betsy Gregory-Hosler, Yvette Gutierrez, Leigh Ann Haydon, Kirsten Leikem, Sarah Martin, John Mickey, Erin O'Brien, Alexis Olson, Katherine Pfeiffer, John Rastler, Sylvia Schatz, Jillian Schofield, Charlie Shivers III, Roxanna Sun, Lindsay Taylor, and Hai Tran made key contributions to this report.

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# Related GAO Products

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*Homeland Security Acquisitions: Joint Requirements Council's Initial Approach Is Generally Sound and It Is Developing a Process to Inform Investment Priorities.* [GAO-17-171](#). Washington, D.C.: Oct. 24, 2016.

*Homeland Security Acquisitions: DHS Has Strengthened Management, but Execution and Affordability Concerns Endure.* [GAO-16-338SP](#). Washington, D.C.: Mar. 31, 2016.

*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.

*TSA Acquisitions: Further Actions Needed to Improve Efficiency of Screening Technology Test and Evaluation.* [GAO-16-117](#). Washington, D.C.: Dec. 17, 2015.

*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.

*Homeland Security Acquisitions: Major Program Assessments Reveal Actions Needed to Improve Accountability.* [GAO-15-171SP](#). Washington, D.C.: Apr. 22, 2015.

*Homeland Security Acquisitions: DHS Should Better Define Oversight Roles and Improve Program Reporting to Congress.* [GAO-15-292](#). Washington, D.C.: Mar. 12, 2015.

*Coast Guard Acquisitions: Better Information on Performance and Funding Needed to Address Shortfalls.* [GAO-14-450](#). Washington, D.C.: June 5, 2014.

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*Homeland Security Acquisitions: DHS Could Better Manage Its Portfolio to Address Funding Gaps and Improve Communications with Congress.* [GAO-14-332](#). Washington, D.C.: Apr. 17, 2014.

*Homeland Security: DHS Requires More Disciplined Investment Management to Help Meet Mission Needs.* [GAO-12-833](#). Washington, D.C.: Sept. 18, 2012.

*Department of Homeland Security: Assessments of Selected Complex Acquisitions.* [GAO-10-588SP](#). Washington, D.C.: June 30, 2010.

*Department of Homeland Security: Billions Invested in Major Programs Lack Appropriate Oversight.* [GAO-09-29](#). Washington, D.C.: Nov. 18, 2008.

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