U.S. DEPARTMENT OF TRANSPORTATION

OFFICE OF INSPECTOR GENERAL

FAA Needs To Strengthen Its Management Controls Over the Use and Oversight of NextGen Developmental Funding

FAA

Report No. AV2018030

March 6, 2018

U.S. DEPARTMENT OF TRANSPORTATION
OFFICE OF INSPECTOR GENERAL

Highlights

FAA Needs To Strengthen Its Management Controls Over the Use and Oversight of NextGen Developmental Funding

Requested by the Chairman and Ranking Member of the House Committee Transportation and Infrastructure and its Aviation Subcommittee

Federal Aviation Administration | AV2018030 | March 6, 2018

What We Looked At

Since fiscal year 2008, Congress has appropriated over $7 billion for the Federal Aviation Administration's (FAA) Next Generation Air Transportation System (NextGen) to meet FAA's goals of modernizing the National Airspace System. This includes over $1.7 billion for NextGen developmental projects. FAA manages these projects through the project level agreements (PLAs)—an internal control mechanism for documenting the agreed-upon work and managing project execution. The House Committee on Appropriations directed our office to examine how these investments are managed and what outcomes have been achieved to improve the Nation's air transportation system. Accordingly, our audit objectives were to assess FAA's procedures for (1) selecting and justifying projects that received developmental funding and (2) overseeing the execution and measuring the outcomes of projects. We also reviewed FAA's overall oversight framework for these areas.

What We Found

FAA's annual budget process provides broad controls for selecting and justifying developmental projects, but the Agency has lacked effective management controls in its PLA process. For example, 12 of the 22 PLAs we sampled did not align with FAA's high-priority NextGen investment decisions, primarily because they were for support or implementation work. Furthermore, a lengthy PLA approval process led to FAA often funding projects without approved PLAs and contributed to difficulty obligating funds to developmental projects. FAA had not defined which types of projects are eligible for developmental work and lacked standard operating procedures for PLAs until 2016, 8 years after beginning to use PLAs. FAA's Office of NextGen also had not effectively executed and measured the outcomes of NextGen developmental projects, including tracking expenditures by PLA and obtaining deliverables for PLA projects. Finally, FAA has lacked a clearly established framework for managing the overall oversight of developmental projects and addressing persistent problems.

Our Recommendations

We provided six recommendations to improve FAA's management and oversight of NextGen developmental funding. FAA concurred with two, partially concurred with one, and non-concurred with three recommendations. We are requesting that FAA reconsider its responses for these three recommendations.

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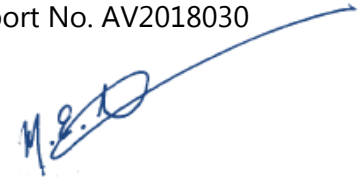
Memorandum

Date: March 6, 2018

Subject: ACTION: FAA Needs To Strengthen Its Management Controls Over the Use and Oversight of NextGen Developmental Funding | Report No. AV2018030

From: Matthew E. Hampton
Assistant Inspector General for Aviation Audits



To: Federal Aviation Administrator

Since fiscal year 2008, Congress has appropriated over $7 billion for the Federal Aviation Administration's (FAA) Next Generation Air Transportation System (NextGen) to meet FAA's goals of modernizing and transforming the National Airspace System (NAS). This includes over $1.7 billion for NextGen developmental projects, funded through the Facilities and Equipment (F&E) account, commonly referred to as the capital account.[1] These projects are part of a process of developing, testing, and demonstrating that FAA uses to limit risks when evaluating new air traffic management concepts. FAA manages these projects through the use of Project Level Agreements (PLAs)—an internal control mechanism for documenting the agreed upon work between the Office of NextGen and the organization performing the work (e.g., the Air Traffic Organization (ATO)) and for managing project execution to ensure that projects remain within their approved scope and budget.

We received several hotline complaints with documents alleging serious problems and abuse related to FAA's management of NextGen developmental funds. In addition, the House Committee on Appropriations directed our office to examine how these investments are managed and what specific outcomes have been achieved to improve the Nation's air transportation system.[2] Accordingly, our audit objectives were to assess FAA's procedures for (1) selecting and justifying projects that received developmental funding, and (2) overseeing the

[1] The Facilities and Equipment account contains five separate budget activities to further identify the purpose of the funding. The over $1.7 billion represents funding for Engineering, Development, Test and Evaluation included under FAA's budget activity one.
[2] House Report 114-129, May 27, 2015.

execution and measuring the outcomes of projects. As part of our audit, we also reviewed FAA's overall oversight framework for these areas.

To conduct our work, we performed detailed analyses of a random sample of 22 out of 343 PLAs (6 percent) approved during fiscal years 2009 to 2015, covering each of FAA's 11 portfolios and valued at approximately $195 million, or about 12 percent of approximately $1.7 billion. We also analyzed FAA's financial records and related program documents. The results of our sample findings allowed us to make projections on the number, percentage, and initial value of PLAs that were noncompliant with internal procedures.

We conducted our work in accordance with generally accepted Government auditing standards. Exhibit A contains further details on our scope and methodology, exhibit B lists the organizations we visited or contacted, and exhibit C provides a list and description of PLAs sampled.[3]

We appreciate the courtesies and cooperation of FAA representatives during this audit. If you have any questions concerning this report, please call Matthew E. Hampton, Assistant Inspector General for Aviation Audits, at (202) 366-0500.

cc: The Secretary
DOT Audit Liaison, M-1
FAA Audit Liaison, AAE-100

[3] We selected a statistical sample of 22 PLAs that included a wide range of project types, including demonstration projects and enhancements to existing air traffic systems.

Results in Brief

FAA's annual budget process provides broad controls for selecting and justifying developmental projects, but the Agency has lacked effective management controls in its PLA process, which is intended to further refine project scopes and justifications after Congressional approval.

For example, while we found that the process for selecting and justifying projects is generally driven by NextGen plans, 12 of the 22 PLAs we sampled did not align with FAA's high-priority NextGen investment decisions, primarily because they were for support or implementation work.[4] As a result, it is unclear why FAA selected these as developmental projects. FAA has also not defined which types of projects are eligible for developmental funding. Furthermore, due to a lengthy process, FAA often funded projects without approved PLAs. Specifically, FAA provided funds prior to PLA approval about 32 percent of the time over a 5-year period, and based on our statistical sample we projected that the Agency obligated an estimated $370 million to projects prior to final approval.[5] In addition, FAA has also had difficulty obligating funds to developmental projects, with available funds exceeding $500 million for most years. These problems occurred in part because the Agency lacked effective planning and final standard operating procedures for the PLA process until 2016, 8 years after beginning to use PLAs. As a result, while FAA had controls in place for aligning funding with budgetary requirements, it did not have controls to ensure that projects were properly scoped and funds were targeted to the highest priority developmental needs.

FAA's Office of NextGen has not effectively executed and measured the outcomes of NextGen developmental projects.

For example, prior to fiscal year 2015, FAA's Office of NextGen did not have adequate processes for tracking expenditures by PLA—an important internal control to oversee how the Agency spent project funds. Further, the Office of NextGen used more than $130 million over a 6-year period to cover administrative and general program support costs without a formal procedure. Although FAA allows the use of funding for support costs, based on our statistical sample we projected that FAA spent $58 million in excess of the amount FAA usually assessed for these purposes.[6] In addition, FAA's Office of NextGen has not

[4] Supporting activities address safety, environmental and energy considerations and infrastructure.
[5] Our $370 million estimate has a precision of +/-$159 million at the 90-percent confidence level.
[6] Our $58 million estimate has a precision of +/-$36 million at the 90-percent confidence level.

effectively tracked and obtained deliverables for PLA projects.[7] From our sample of 22 PLAs, we identified 9 PLAs with deliverables that were late or missing.[8] At one point in 2013, FAA identified 640 deliverables valued at $109 million missing from the Office of NextGen. Although FAA took action to recover missing deliverables, 119 remained missing or late, covering a 6-year period.[9] This occurred in part because FAA had not established effective tools to help managers track PLA deliverables.[10] FAA also does not evaluate whether a project met its intended goals for advancing NextGen during the project close-out process. As a result, FAA's Office of NextGen lacks important information to make decisions on whether or not to continue funding projects; thus, FAA risks requesting funds for projects that may no longer be needed.

FAA has also lacked a clearly established framework for managing the overall oversight of NextGen developmental projects and addressing persistent problems.

Past efforts to provide oversight of PLAs have been ineffective due to several factors, including lack of leadership stability, organizational changes that resulted in unclear roles and responsibilities, lack of involvement from key managers,[11] and lack of accountability from top senior officials to address key weaknesses found in the PLA process.[12] In addition, although FAA has performed internal reviews of the process, these efforts received only mixed support from senior management, were not finalized, or failed to resolve key issues. For example, although FAA stated that it addressed recommendations from a 2012 internal review, including improving timeframes for developing PLAs, our work shows that lengthy timeframes for approval—often in excess of 100 days—remained an issue. In addition, several boards and groups established to provide high-level oversight of NextGen have either had limited review of developmental projects or been disbanded. For example, FAA ended an executive stakeholders' forum established specifically as a governance mechanism for developmental projects in 2016 after only three meetings. This lack of stability has limited the effectiveness of FAA's management and oversight of developmental projects.

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[7] Key deliverables are acquired to advance NextGen operational concepts and prepare capabilities for acquisition (e.g., technical reports or analyses).
[8] Missing deliverables could mean that the Office of NextGen did not receive the deliverables via the Agency's information sharing database, deliverables were overdue, or were considered no longer needed. Contractual deliverables and contract administration is handled outside of the PLA process.
[9] Of the 119 missing or late deliverables, 61 are from the original 640.
[10] To better track deliverables, FAA has been working to improve its system.
[11] In 2016, FAA established procedures for a new PLA scoping meeting to include a wider group of Agency officials.
[12] The former Associate Administrator for NextGen began to address problems with the PLA process in 2015.

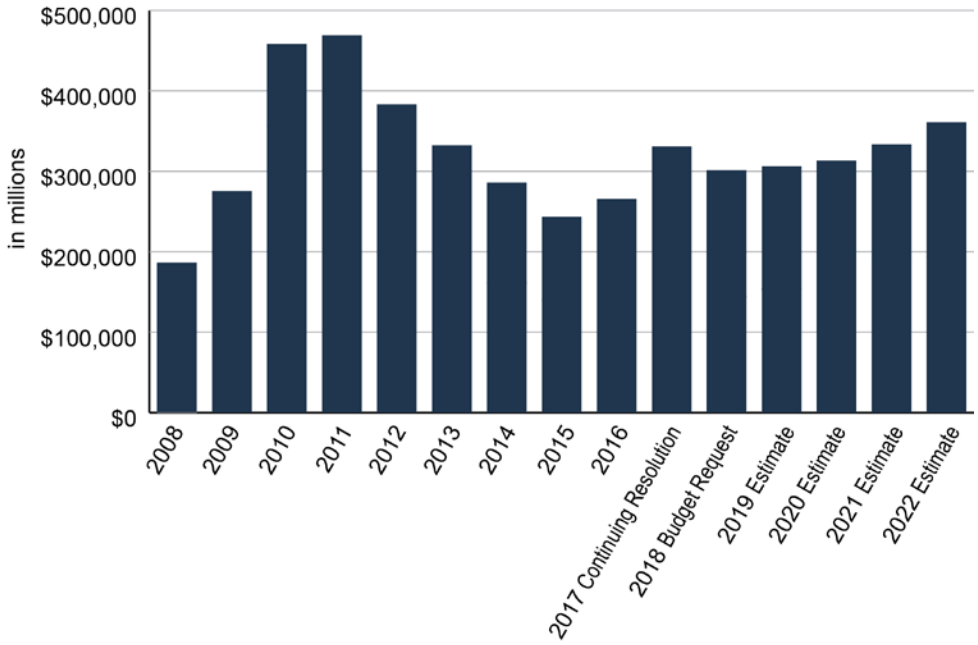
We recognize in our report improvements made by FAA during the course of our audit, and are providing six recommendations to further improve FAA's management and oversight of NextGen developmental funding.

Background

NextGen is a multibillion-dollar transportation infrastructure project aimed at modernizing our Nation's aging air traffic system. FAA's NextGen pre-implementation (developmental) projects are intended to explore new concepts and evaluate alternative solutions to current issues in the NAS, thus reducing uncertainty and risks associated with NextGen programs. According to FAA, a typical pre-implementation (developmental) activity would be to mature (i.e., further develop) operational requirements, based on known shortfalls, resulting in a final investment decision.

FAA funds NextGen developmental work using Research, Engineering, and Development (RE&D) and F&E funds. As shown in figure 1, FAA has conducted a considerable amount of developmental work in the F&E capital account. Figure 1 shows trends in funding and planned investments through 2022.

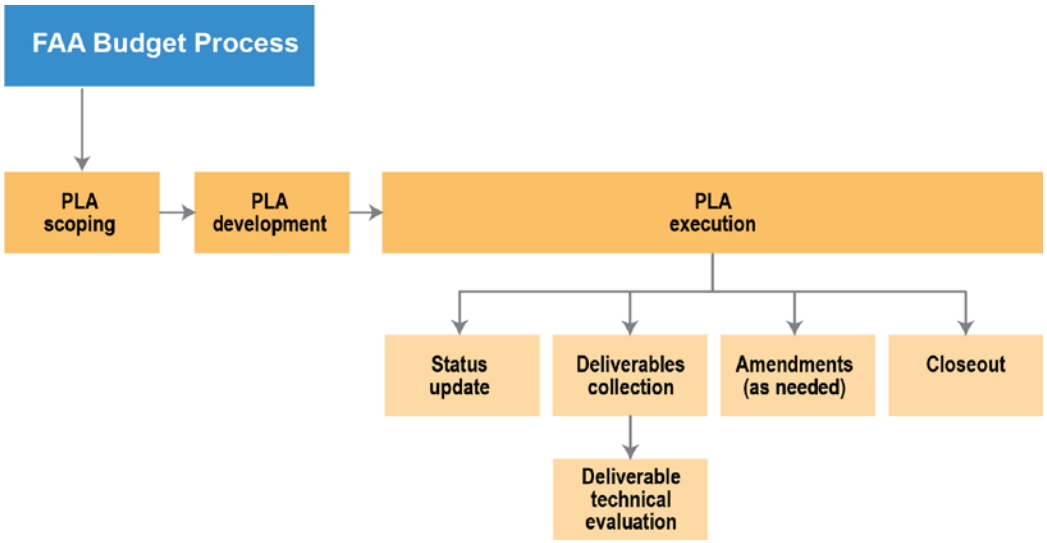
Figure 1. Past and Planned F&E (Activity 1) NextGen Developmental Funding for Fiscal Years 2008 to 2022 (in millions)



Source: FAA's budget data from fiscal years 2008 to 2018 and estimates through 2022. This represents developmental funds controlled by the Office of NextGen and Activity 1 funds managed by other FAA lines of business.

In 2008, to manage the integration of NextGen systems and capabilities across FAA lines of business, the Agency established the NextGen Integration and Implementation (I&I) Office within the ATO. In 2008, this office began managing developmental projects through the use of PLAs. See figure 2 for a high-level roadmap of FAA's PLA process from scoping to execution.

Figure 2. FAA's PLA Process



Source: OIG analysis of FAA's October 2016 PLA Standard Operating Procedures

In 2011, FAA moved the NextGen organization out of the ATO and established the Office of NextGen, which began to focus on portfolio management to establish a more integrated approach to NextGen. Currently, there are a total of 11 NextGen portfolios, including 3 with supporting activities.[13] FAA's pre-implementation work is represented across these portfolios. As of September 2015, FAA had signed 343 PLAs for pre-implementation activities, valued at $1.7 billion. In a typical year, the Office of NextGen sponsors approximately 50 pre-implementation projects.

[13] NextGen portfolios consist of eight portfolios for developing and deploying new capabilities and three portfolios with supporting activities addressing safety, environmental and energy considerations, and infrastructure.

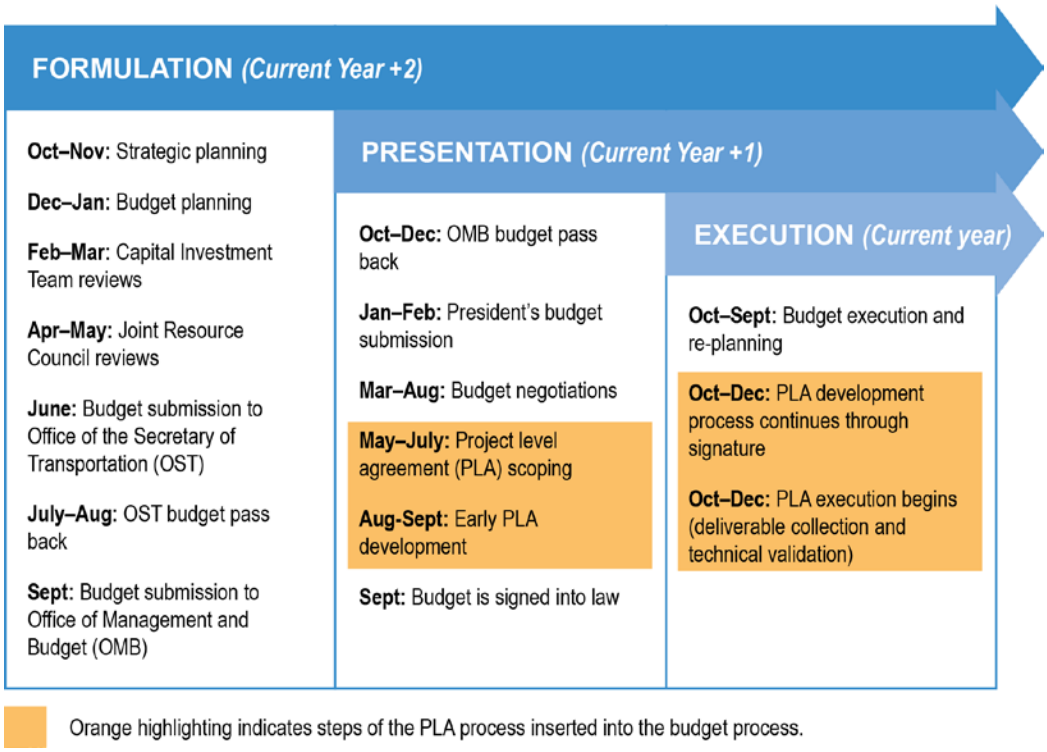
FAA Has a Process To Manage the Selection and Justification of NextGen Developmental Projects but Needs To Strengthen Its Management Controls

FAA has established broad controls for selecting and justifying developmental projects, but the Agency has lacked effective management controls in its PLA process, which is intended to further refine project scopes and justifications after Congressional approval. Specifically, although FAA relies on the budget process for selecting and justifying developmental projects, FAA's PLA project selection is not driven solely by high-priority NextGen investments. FAA has also not clearly defined which projects are eligible for funding or established a clear process for involving key stakeholders in funding decisions. In addition, FAA frequently funded projects prior to approving their final scopes and budgets due in part to lengthy PLA approval times and a lack of a formal policies and procedures. Despite FAA's practice of funding PLAs before securing their approval, the Agency has had difficulty obligating developmental funds.

FAA Relies on the Capital Budget Process To Select and Justify Developmental Projects

FAA selects and justifies developmental projects through its capital—or F&E—budget process, where program officials submit requests for funding with justifications concerning cost, schedule, and anticipated qualitative or quantitative benefits. Budgets are submitted 2 years in advance of the year FAA begins to execute the projects (see figure 3).

Figure 3. FAA NextGen Budget Process



Source: OIG analysis of FAA's PLA Standard Operating Procedures

As shown in figure 3, the budget process starts with planning. Resource planning documents[14] are submitted annually by FAA lines of business (e.g., the ATO) to a team of senior managers, called the Capital Investment Team (CIT).[15] The CIT reviews these requests and makes funding recommendations to the Joint Resources Council (JRC)[16] for approval, which then formalizes the annual budget request that is ultimately reviewed and approved by the Department of Transportation (DOT) and the Office of Management and Budget (OMB) and then forwarded to Congress for final approval and enactment.

Our work found that FAA had controls in place for aligning funding with budgetary requirements. We did not identify any instances where FAA obligations for developmental funding exceeded amounts authorized by Congress, or that

[14] Resource Planning Documents (RPD) outline program funding needs and are required for all F&E projects, including developmental projects.
[15] The Capital Investment Team (CIT) includes representatives across FAA lines of business such as budget and finance and representatives of the air traffic and other FAA organizations.
[16] The JRC approves all major acquisition projects at key decision points. The JRC formalizes the annual budget request that is forwarded to the Office of Management and Budget and Congress.

FAA redirected funds beyond allowable limits of its authority. However, the Agency has lacked effective management controls in its PLA process.

PLA Project Selection Is Not Solely Driven by FAA's NextGen High-Priority Investments

NextGen guidance requires FAA managers to specify in PLAs how projects tie to FAA's strategic plans,[17] including related investment decision points of an acquisition program or project. While we found that the process for selecting and justifying projects is generally driven by the Agency's NextGen plans at a very high level, 12 of the 22 PLAs we sampled did not tie to FAA's high-priority investment decision points. Specifically, we found that:

- Five of the PLAs were for support activities, such as upgrades to NextGen testing labs, that did not directly align with high-priority decision points or investments. Based on our sample, we estimate that these support activities represent $391 million[18] of FAA's developmental work.

- Six of the PLAs were for implementation work that would not be considered "developmental" in nature, such as those that have reached final investment decisions and programs typically funded with operations funding, such as performance-based navigation (PBN).[19] In addition, one was for a demonstration project[20] that was only loosely connected to FAA's strategic plans. Based on our sample, we estimate that $573 million[21] was associated with implementation work or demonstrations that were only loosely connected to FAA's strategic plans.

[17] These plans include the Capital Investment Plan, NextGen Segmented Implementation Plan, and NextGen Implementation Plan.
[18] Our $391 million estimate has a precision of +/- $273 million at the 90-percent confidence level. FAA provided us with conflicting information related to actual amounts for support activities—first $348.5 and later $117.7 million—in response to our draft report. We were unable to verify and reconcile the differences between the two figures due to the difficulty in tracking PLAs and inconsistent information provided by FAA regarding which portfolios and solution sets actually represent support work.
[19] The Office of NextGen also refers to projects as "pre-implementation" that were funded under other budget activities (i.e., 2, 3, and 4). Budget Activity 2 is for modernization of air traffic control facilities and equipment; Activity 3 is modernization of non-air traffic control facilities and equipment; and Activity 4 is support for air navigation facilities.
[20] This demonstration project was for new performance-based flight procedures in Dallas, TX; however, FAA's strategic plan did not include this location in its plan.
[21] Our $573 million estimate has a precision of +/- $307 million at the 90-percent confidence level.

We recognize that some PLA work may not necessarily tie to an investment decision point. However, we found that over half of the developmental projects we randomly sampled did not clearly tie to FAA's investment decisions. Such inconsistency in assigning projects increases the risk that FAA selected certain projects over others that may have more directly aligned with its high-priority investment decisions. Moreover, using developmental funds for support or implementation work, particularly when other budget line items exist specifically for some of these efforts, may unnecessarily reduce overall developmental efforts and does not clearly communicate the resource needs and types of work needed to advance NextGen to Congress and stakeholders.

FAA Has No Formal Definition of "Pre-Implementation" Work

To better align its developmental work with planned outcomes included in FAA's NextGen plans, the Agency restructured its developmental work to align with the 11 NextGen portfolios beginning in fiscal year 2015. However, FAA has not defined which types of projects are eligible for developmental funding. This is in part because the terminology FAA uses to categorize projects does not tie directly to budget activities. Specifically, FAA describes developmental projects only as "pre-implementation" work. However, FAA has no formal definition of "pre-implementation" and it is not included in the Agency's Acquisition Management System (AMS) policy or budget guidance. This has resulted in the use of developmental (i.e., Budget Activity 1) funds for projects that are not developmental in nature. Unclearly or inaccurately categorizing how the Agency spends its developmental funds limits Congress, the Department, and other stakeholders' ability to adequately assess FAA's requirements for research and development, support activities, and execution of NextGen capital projects.

In June 2016, the House Appropriations Committee expressed concern about this issue and directed FAA to include in future budget requests established programs, such as PBN, under Budget Activity 2, rather than "pre-implementation" Activity 1.[22] The Agency addressed this issue in F&E budget requests by moving programs/projects, including PBN, from Activity 1 to Activity 2.

However, this action did not fully address the issue because there were other projects in which FAA used developmental funds for implementation work. We found FAA performed implementation (as opposed to pre-implementation) work

[22] House Report 114-606, June 7, 2016.

in 6 of the 22 PLAs we sampled. For example, FAA stated in its budget request that the scope of work for a fiscal year 2011 PLA for automation risk mitigation valued at $22 million was for a 1-year study on technical challenges associated with integrating data into existing automation systems; however, it was actually for implementation activities such as finalizing a software release for existing systems controllers use to manage air traffic.

FAA Has Lacked Policies and Procedures for Involving Key Internal Stakeholders in Funding Decisions and Establishing Priorities

The PLA development process—and distribution of funding—has lacked formal policies and procedures with respect to how decisions are made, funding is shifted among projects, and priorities are established. According to documents we analyzed and FAA personnel we spoke with, these decisions were being made without fully involving or obtaining input from those directly responsible for overseeing projects and lacked coordination with those responsible for developing and maintaining the overall blueprint for managing the NAS, known as FAA's Enterprise Architecture.

FAA has also lacked policies regarding who can be involved in the selection and justification process and how to document decisions. Previously, a group of high-ranking NextGen officials known as the NextGen Budget Team (NBT)[23] made recommendations on which projects should receive funding and at what level. The NBT could also make decisions to shift funds among projects (an action permitted within Congressionally-established limits).[24] The NBT included the FAA Chief Scientist, who is involved in numerous steps of the PLA process.[25] However, the NBT had no formal charter, governance, or records of decisions. An absence of documentation of such decisions, including those involving the Chief Scientist, can give rise to challenges to the integrity of the evaluation process and the rationale for the decisions that FAA made. According to *Standards for Internal*

[23] NBT members were the Chief Scientist, the Enterprise Portfolio Manager, and the Senior Vice President for NextGen and Operations Planning.

[24] After budget appropriation, congressionally defined rules allow FAA to augment or reduce a program's funding up to $5 million or 10 percent, whichever is less. FAA must obtain Congressional approval for any proposed reprogramming of funds that exceeds these limits.

[25] The steps of the PLA process in which the Chief Scientist is involved include planning and scoping, performing initial reviews for technical and financial viability, making recommendations about funding before and after Congressional approval, and managing individual projects.

Control in the Federal Government,[26] all transactions and other significant events need to be clearly documented, and the documentation should be readily available for examination.

Without checks and balances, including records of decision and proper input from others, the risk of mismanagement increases. According to an FAA senior management official on the NBT, the group was disbanded in 2014 due to concerns regarding visibility into how it made recommendations on project scopes and funding levels. In 2016, FAA established procedures for a new PLA scoping meeting to include a wider group of Agency officials. However, it is unclear whether this will be effective in resolving past issues.

Furthermore, there is only limited independent outside review performed during FAA's decision-making process on PLAs to ensure that the Agency is pursuing the most promising solutions to the highest priority issues. In contrast, for projects funded through the research, engineering, and development (RE&D) account, which has a much smaller funding profile—about $57 million on average annually[27] for NextGen projects as compared to $215 million annually for developmental projects funded through the capital account—FAA considers input from universities, corporations, user groups, and trade associations through the RE&D Advisory Committee (REDAC).[28]

According to FAA officials, the Agency seeks independent input into the prioritization of its NextGen projects through collaboration with the REDAC and the NextGen Advisory Committee (NAC).[29] However, our review of REDAC meeting minutes for fiscal years 2009 to 2015 showed that while FAA briefed the REDAC on NextGen initiatives, the extent to which the REDAC was involved in making decisions or recommendations concerning FAA's NextGen pre-implementation work was very limited and high level. Furthermore, the REDAC has not been tasked by FAA to formally evaluate FAA's NextGen portfolios of developmental projects. In the case of the NAC, we have reported in the past[30] that FAA has worked with industry to establish NextGen priorities based on recommendations from the NAC. Though FAA seeks input from the NAC on establishing priorities for near-term initiatives, individual PLA projects are not

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[26] GAO, *Standards for Internal Controls in the Federal Government*, GAO-14-704G, September 2014.
[27] In addition to RE&D for NextGen or air traffic management, FAA spends another $100 million of RE&D funds on average annually for aviation safety and environmental research.
[28] FAA's RE&D Advisory Committee is a congressionally mandated advisory committee that provides advice and recommendations to FAA on the Agency's research program.
[29] The NAC, established in September 2010, is a Federal advisory committee that provides advice on policy-level NextGen issues facing the aviation community in modernizing the aviation system.
[30] *Planning for High-Priority NextGen Capabilities Underway, but Much Work Remains for Full Realization of Benefits*, (OIG Report Number AV2015012), November 20, 2014. OIG reports are available on our website at http://www.oig.dot.gov/.

scrutinized to determine whether FAA is pursuing the most promising solutions or issues that may warrant additional developmental work.

Weaknesses in FAA Procedures for Scoping and Developing PLAs Have Contributed to Approval Delays, Funding Risks, and Low Obligation Rates

While approved budgets provide the overall control for developmental funding, FAA's procedures for scoping and developing PLAs prior to execution are intended to account for changes that occur in the 2 years between when funds are requested and received. As noted by the Deputy Assistant Administrator for NextGen, documentation submitted during the budget process may be suitable for budget formulation and top-level execution, but these documents are not designed to serve as program management mechanisms to manage integrated projects like NextGen.

However, for 7 years, FAA had no standard operating procedures for formulating these program management documents, including procedures for scoping and developing PLAs. FAA's Office of NextGen established the PLA process in 2008, but did not establish standard operating procedures for the process (e.g., development of the project scope, release of funds to conduct the work, collection of deliverables, and close-out) until April 2015 and did not complete final procedures until October 2016—8 years after beginning to use PLAs.

Effective internal controls, such as standard operating procedures, are necessary to help managers achieve a program's objectives on an ongoing basis.[31] According to FAA, the lack of formal standard operating procedures caused overall confusion for PLA participants and significant inconsistencies in the development and execution of PLAs and the collection and validation of deliverables. In addition to these internal control weaknesses, we found that FAA had difficulties in obligating developmental funds.

Weaknesses we identified included:

- **Lengthy PLA development, review, and approval times.** From fiscal years 2009 to 2014, the average time required for scoping, negotiating, and signing a PLA was over 100 days, with some taking more than 300 days. In August 2010, FAA began tracking performance metrics to

[31] GAO, *Standards for Internal Controls in the Federal Government*, GAO-14-704G, September 2014.

reduce the number of days from PLA draft to signature; however, the Agency continued to face challenges. FAA officials stated that the causes for the lengthy approval process varied, including uncertainties over annual appropriations and disagreements between the Program Management Office and the Office of NextGen concerning the scope of work for individual PLAs. In fiscal year 2015, to reduce approval delays, FAA established a goal of 90 days from the initial PLA draft to approval. Since that time, FAA has realized improvements in the overall development time. However, according to a July 2016 FAA report, of the 53 PLAs planned for fiscal year 2016, 19 (35.8 percent) of these had delays. For example, the Office of NextGen approved four PLAs as late as 10 months into the fiscal year; six were still under development, six were not yet started, and three were awaiting final approval.

- **Incremental funding of projects without an approved PLA.** To keep projects on track during the PLA approval process, in 2010 FAA's Office of NextGen adopted a practice of providing incremental funding to projects prior to final PLA approval. Although allowed, this practice increases risk because a project has not yet gone through the fully vetted PLA process. In our sample of 22 PLAs, we found 15 PLAs in which $30 million was not only authorized, but also obligated before the PLA was approved. Based on our sample, we estimate that FAA obligated $370 million[32] (21 percent) for PLA projects before final approval of the PLA.

  Information maintained by FAA regarding all PLAs confirms our sample finding that the Agency frequently issued incremental funding prior to a final signed PLA, with 156 approved requests from fiscal year 2010 to 2015 totaling $294.5 million (44 percent) of $673.5 million for 109 PLAs and amendments.[33] These PLAs represent about 32 percent of the total PLA universe, and the incremental funding requests represent 17 percent of the $1.7 billion universe. Most of the incremental funding issued in fiscal year 2015—17 of 23 (74 percent)—were instances of FAA allocating funds that otherwise would have expired that year.[34]

  Most notably, we found 21 instances where projects received 100 percent of their PLA funding—totaling $76.4 million—prior to a final signed PLA. For example, in fiscal years 2014 and 2015, FAA issued incremental funding of $8.4 million (100 percent of the final PLA value) to support

[32] Our $370 million estimate has a precision of +/-$159 million at the 90-percent confidence level.
[33] This information is based on our review of the Office of NextGen's list of incremental funding requests.
[34] Specifically, FAA has 3 years to spend F&E funds. FAA must return any unused funds to the Treasury.

investment analysis work related to terminal air traffic control facilities,[35] but did not sign the final PLA until over 13 months after the initial 2014 authorization was issued. As of August 2016, FAA approved incremental funding for 21 of 46 PLAs in fiscal year 2015 and 8 of 53 PLAs in fiscal year 2016.

- **Insufficient justification for incremental funding.** Without a signed PLA, funding requests have been and are currently being submitted for approval with varying levels of justifications. Prior to fiscal year 2013, requests were primarily informal email requests with limited justification. To improve its process, the Office of NextGen implemented a template in fiscal year 2013, which included an area for providing justification, amount of funds requested, work to be performed, and approval signatures. Although FAA provided documentation for 133 of the 156 incremental funding requests, justifications varied in detail. For example, the justification for 11 of the 17 fiscal year 2015 requests that involved expiring funds—valued at $19.2 million—was only to avoid the loss of expiring funds, with no further justification.

  Although FAA took steps to address this issue, we found problems persisted. In September 2014, the former Assistant Administrator for NextGen directed that the use of incremental funding would be the exception and would require his approval. Also, in 2014, FAA's Office of NextGen committed to specifying the exception conditions under which requests for incremental funding would be granted. However, FAA has not adopted any formal criteria or procedures that specify these conditions.

- **Low obligation rates.** FAA has had difficulty obligating funds to developmental projects. As shown in table 1, in each fiscal year since 2008, first-year obligation rates for developmental funds have steadily declined from 86 to 29 percent, while available funds exceeded $500 million for most of the same period, with a high of $655 million.

[35] This PLA funded a range of studies on terminal facility automation capabilities and exchanging data.

Table 1. Obligation Amounts and Rates for Developmental (Activity 1) Funding, Fiscal Years 2008–2015 (in millions)

Fiscal Year	Approved Amount	First Year Obligations/Rates	Prior Year Unobligated Amounts	Available Funds*
2008	$188.17	$161.73 (86%)	$7.93	$196.10
2009	$277.83	$191.60 (69%)	$23.22	$301.06
2010	$460.84	$298.66 (65%)	$87.25	$548.10
2011	$475.38	$258.06 (54%)	$179.12	$654.51
2012	$384.10	$185.55 (48%)	$264.85	$648.95
2013	$335.06	$142.66 (43%)	$261.85	$596.91
2014	$288.61	$121.19 (42%)	$221.00	$509.61
2015	$122.79	$35.82 (29%)	$185.32	$308.11

* Note: For the capital account, FAA has 3 years to obligate funds due to the long-term nature of these projects. "Available funds" represent a combination of the annual appropriation and unobligated funds from prior fiscal years. This represents funds controlled by both the Office of NextGen and other FAA lines of business.

Source: OIG analysis of FAA accounting data

According to FAA officials, obligation delays are due to budget uncertainties, the lengthy PLA approval process, and interdependencies among PLAs. As shown by our work, the lengthy approval process was caused, in part, by the lack of management controls over the PLA process. However, another contributing factor for low obligation rates can also be that a program is not being managed effectively, such as a lack of adequate planning for which projects should be performed and a clearly defined scope of work. Although no Federal regulation exists for required obligation rates, the Department of Defense (DoD) has developed a benchmark of 90 percent in the first year of availability for its Research, Development, Testing and Examination funds.[36] While we have not

[36] Similar to FAA, DoD's Research, Development, Test, and Evaluation account consists of applied scientific research, system development, feasibility studies, design and engineering, product improvements, hardware/software integration, and production qualification testing; however, these funds only have 2 years of availability.

examined obligation rates for DoD, according to its guidance, programs that consistently do not execute their funds at the benchmarked level for several years are likely to see their funding reduced.

While the PLA is an important control mechanism to improve management of FAA's developmental efforts, lengthy PLA development, funding of projects prior to PLA approval, insufficient justification in incremental funding, and low rates of obligations all impact the effectiveness of developmental funding. During the course of our audit, FAA finalized its standard operating procedures for PLAs, including ones targeted at improving the scoping and development of PLAs prior to execution. Full implementation of these PLA procedures is especially important given that the Office of NextGen's role is to integrate NextGen efforts but it is structurally organized outside and apart from FAA's Program Management Office (PMO), which is inside the ATO. The PMO is responsible for managing many of the PLA projects and the ATO is responsible for developing and implementing research and development initiatives. Thus, the PLA becomes an important controlling mechanism for managing and coordinating developmental efforts between these offices.

FAA's Execution and Measurement of Outcomes for NextGen Developmental Projects Need Improvement

FAA has not effectively overseen the execution of NextGen developmental projects and measured outcomes for these projects. For example, FAA did not have adequate processes for tracking PLA expenditures and executing the use of project funds for administrative and general program support activities. In addition, FAA has not sufficiently monitored milestones or obtained project deliverables, which range from demonstration projects to technical reports. Furthermore, the Agency has not established a process for measuring the outcomes of PLAs, making it difficult to evaluate whether individual projects are advancing NextGen initiatives.

FAA Lacked Processes To Adequately Track Expenditures for Developmental Projects

In 2015 and 2016, FAA lacked adequate processes for managing expenditures for PLAs, including tracking approved amounts to what was actually spent; amending

documents to capture key changes, such as in contractors or anticipated costs; and shifting project funds to administrative and general program support activities. We identified the following issues:

- **Inconsistent and incomplete information on PLA expenditures.** Although FAA requires that PLA project managers review spending on PLA projects, the Agency lacked effective processes for tracking expenditures within a particular PLA. As a result, for the PLAs we reviewed, it was difficult to track approved amounts to what was actually spent on any particular NextGen project. This was because the PLAs were notional and only high-level plans. This was also identified as a key issue by FAA's Office of Budget and Programs Capital Budgets Division in a 2014 review. Furthermore, we could not link what was spent on specific deliverables (e.g., technical reports and analyses) in connection to the PLA by reviewing data in FAA's accounting system.

  To address these deficiencies, FAA added a unique identifier in 2015 to each PLA to improve traceability of funds. However, our review of PLAs developed under this new process has shown that FAA has not consistently implemented this improvement. We determined that two of the five PLAs we sampled in fiscal year 2015 had inaccurate financial information. For example, the PLA for Multi-Function Phased Array Radar[37] listed the wrong budget sub-line item and the wrong unique project identification number, thus limiting a portfolio manager's ability to accurately trace financial transactions for this particular PLA.

- **Use of appropriated funds for administrative and general program support activities.** As of December 2015, the Office of NextGen used more than $130 million from fiscal years 2009 through 2015 in developmental funds to cover administrative and general program support costs—called Program Management Assessment (PMA) fees[38]—without establishing formal standard operating procedures. FAA established formal standard operating procedures in April 2016—8 years after first assessing these fees. These funds are over and above the funding the Office of NextGen receives for administrative support in its annual budget.

[37] Multi-Function Phased Array Radar (MPAR) is a potential alternative based on radar technology originally developed and used by the Department of Defense, which can provide aircraft and unmanned aircraft system surveillance along with weather data. It does not rotate like conventional radar, so it is capable of much higher update rates, providing greater precision.

[38] PMA fees are used to pay contractors to perform a variety of general program support activities, including communication, financial management, long-term planning, and technical analysis.

Prior to establishing the standard operating procedures, Office of NextGen officials told us they had an unwritten procedure to either apply a 1- or 5-percent fee to NextGen capital programs, depending on where the program was in the acquisition lifecycle.[39] However, we identified instances where fees exceeded 5 percent. For example, the Office of NextGen assessed PMA fees of $5.6 million (42 percent) of the $13.2 million that Congress appropriated to complete work related to Trajectory Based Operations.[40] In our sample of 22 PLAs, we found 8 that had excess project management fees assessed in the amount of $5 million. Based on our finding, we estimate that $58 million[41] or 3.5 percent of project management fees were assessed in excess of the Office of NextGen's PMA standard operating procedures. Although there is no statutory limit, assessing program management fees greater than those defined by FAA's procedures does not represent good stewardship of Federal funds or good business practices.

According to FAA officials, the $130 million it used for administrative and general program support costs is in line with overhead cost for a program of this size and magnitude. However, FAA did not establish controls governing the use of this funding. If FAA had established written procedures for assessing PMA fees earlier, the Agency would have been in a better position to detect and project its program support needs in annual budget requests to Congress.

- **Transferring funds to avoid expiring appropriations.** FAA transferred funds from specific programs outlined in annual appropriations to administrative and general program support activities during their 3rd year of availability to avoid losing them. Between fiscal years 2009 and 2013, FAA moved $28.8 million in expiring funds from project accounts into PMA accounts. According to an FAA official in the Office of NextGen's Financial Management Services Division, any 3rd-year unobligated funds can be designated as PMA as long as the project has met all of its requirements. While there are no statutory restrictions with regards to shifting unobligated funds when they are set to expire, shifting funds limits transparency for stakeholders. As a result, Congress and OMB are not fully aware of FAA's needs for technical support and its execution of developmental projects. Although FAA recently established standard

[39] The Acquisition Management System is a process organized into a series of acquisition phases and decisions used to execute its acquisition management policy.
[40] Trajectory based operations focuses on the use of time to more precisely managing aircraft from departure to arrival with the expected benefits of reduced fuel consumption, lower operating costs, and reduced emissions.
[41] Our $58 million estimate has a precision of +/-$36 million at the 90-percent confidence level.

operating procedures for PMAs, the procedures do not address this practice.

FAA's Office of NextGen Has Not Been Effectively Monitoring and Obtaining Project Deliverables

FAA's Office of NextGen did not adequately monitor project milestones or obtain PLA deliverables. From our sample of 22 PLAs, we identified 9 PLAs with 20 deliverables that are categorized as late or missing, and 4 PLAs with deliverables still in progress, including 1 from fiscal year 2012. These PLAs include projects to improve the spacing of aircraft based on time, the consolidation of weather information into single source, and the implementation of new satellite-based procedures in airspace around airports. According to FAA, these delinquent deliverables occurred in part because NextGen office personnel relied heavily on other lines of business, such as the ATO, to review and approve PLA deliverables without validating that they were received, reviewed by a technical expert in the NextGen office, and recorded for future use.

In a 2013 internal review, FAA determined that 640 PLA deliverables were missing from FAA's Office of NextGen database. For example, in May 2013, an FAA official sent a memorandum to senior leadership identifying missing deliverables that were overdue by 3 years related to a new controller automation tool, the Relative Position Indicator (RPI). Despite these missing deliverables, FAA continued to spend money in 2013, the same year that the Agency ultimately abandoned the tool.[42] Other missing deliverables related to key NextGen transformational programs and priorities included a plan for testing the use of Virtual Tower Technology[43] valued at $2.5 million, confirmation of software for the NextGen Weather Processor valued at $3.2 million, and certification approvals for aircraft equipping with FAA's new surveillance technology, the Automatic Dependent Surveillance-Broadcast (ADS-B) system,[44] valued at $3.9 million.

Although FAA has worked to recover these deliverables, we found that as of January 2017, there were 119 missing and late deliverables. Of these, FAA officials stated that they were only accounting for the 58 late deliverables from 2016 to

[42] *FAA Has Not Effectively Deployed Controller Automation Tools that Optimize Benefits of Performance-Based Navigation* (OIG Report Number AV2015081), August 20, 2015.
[43] Virtual tower is a NextGen concept that uses local ground surveillance, communications, and navigation equipage to allow controllers in a distant facility to monitor and manage traffic.
[44] ADS-B is a satellite-based surveillance technology that combines the use of satellites, aircraft avionics, and ground-based systems to provide more accurate information about aircraft location for pilots and air traffic controllers.

2017, as they had decided to write off 61 still missing from 2010 and 2011. For the 61 old deliverables, according to Agency officials, the time and effort needed to track them down would not be cost effective.

Moreover, we identified weaknesses with FAA's process for recovering deliverables, including:

- **Inaccuracies in FAA's tracking of deliverables.** The Office of NextGen noted that a PLA deliverable of 50 prototype runway lamps was missing from its database as of May 2, 2016. However, by contacting the program office, we determined FAA actually received the lamps in 2013. According to FAA, the Agency was only delinquent on updating its records management system because the program office had received the prototype lamps. However, this points to a weakness in the Office of NextGen's ability to timely and effectively assess the program's outcome and ensure that the Agency actually received what the Office of NextGen funded.

- **Unrecovered deliverables.** In several cases, FAA's Office of NextGen attempted to obtain missing deliverables but eventually elected to end the search and close them out via memorandum instead. For example, FAA used several memorandums to close out missing multi-year program plans, and therefore no longer accounts for them as missing even though they were never completed. According to FAA, outdated plans are not needed now; however, these plans were funded and would have been instrumental in planning future work at the time they were targeted for completion.

These problems occurred in part because FAA lacks effective tools to help managers track PLA projects. Although FAA has implemented three tools[45] in the last 8 years designed to capture and track the progress of NextGen activities and milestones, none of the systems were successful. This was in part because FAA did not require their use. Instead, managers chose to use ad hoc methods, such as emails and Excel spreadsheets, to track and manage their projects. In addition, FAA reported to Congress that the Agency follows Project Management Body of Knowledge[46] guidelines for overseeing developmental projects; however, the NextGen Office and program managers told us they did not use these standards

[45] Project Management Tool, Integrated Master Schedule, and the Knowledge Services Network.
[46] The Project Management Body of Knowledge or PMBOK provides project professionals with the fundamental practices needed to achieve organizational results in the practice of project management.

when managing PLA funds. In 2015, to address these deficiencies, FAA began to track overdue deliverables within the Knowledge Services Network (KSN).[47]

While we recognize that official acceptance of these items may occur outside of the Office of NextGen, given the size, complexity, and integrated nature of projects that are being developed as part of NextGen, late or missing deliverables are a significant concern. By not tracking and obtaining deliverables on a consistent basis, the Office of NextGen is limiting its ability to measure the outcomes of projects when assessing progress and making decisions on whether or not to continue funding and adjust the scope of future NextGen efforts.

FAA Is Not Effectively Evaluating Whether Completed PLA Projects Have Advanced NextGen Goals

FAA has lacked information to effectively measure the overall outcomes of its developmental work and evaluate whether the work has advanced NextGen goals. To better track its accomplishments, in 2014, FAA's Capital Budget Division recommended that the Agency review its accomplishments at project level rather than the program level. FAA did not complete this review, but instead provided us with a high-level mapping of project outcome timelines developed specifically for our audit to document what was accomplished.[48] According to FAA's timeline, PLA projects have resulted in eight new system capabilities or procedures.[49]

However, the results for use of the new technology in the operational environment have been mixed for some of these eight capabilities. For example, as we reported in 2015,[50] FAA has not effectively implemented Time Based Flow Management, an automated decision support tool to help controllers at high-altitude facilities space and sequence aircraft, which has limited benefits from new, more efficient flight procedures called PBN. Additionally, as we reported in 2014,[51] FAA's Metroplex program to implement new PBN procedures

[47] The KSN serves as a repository for documenting deliverables, progress reports, presentations, the action tracker, and other information.
[48] The Agency completed its first mapping of project outcomes for our office in July 2015 with an update submitted in April 2016.
[49] These include implementing new PBN flight procedures for Metroplex, deploying the air traffic controller decision support tool Time Based Flow Management, and implementing Wake Recategorization.
[50] *FAA Has Not Effectively Deployed Controller Automation Tools That Optimize Benefits of Performance-Based Navigation* (OIG Report Number AV2015081), August 20, 2015.
[51] *FAA Faces Significant Obstacles in Advancing the Implementation and Use of Performance-Based Navigation* (OIG Report Number AV2014057), June 17, 2014.

in busy metropolitan areas has experienced delays and has not yet realized its expected benefits.

Other outcomes of development work reported by FAA include final investment decisions, technology transfers to other lines of business within FAA, and demonstrations or flight tests for some projects. While these are important milestones in development, we found some projects remain in development for many years without reaching implementation. For example, FAA has been developing Terminal Flight Data Manager, a tool to help controllers manage runway and taxiway operations as well as introduce electronic flight strips, for 8 years since fiscal year 2009. FAA did not reach a final investment decision until the third quarter of fiscal year 2016, and does not expect to implement the technology at the first airport tower until fiscal year 2020.

While FAA's Office of NextGen performs quarterly management reviews of programs each fiscal year to assess project status, it has only recently defined a close-out/exit process for PLA projects. However, FAA's close-out procedures do not require the Agency to evaluate whether a project met its goals for advancing NextGen or determine whether follow-on work is required. FAA lacks a method to document the work that was accomplished and how it has helped to advance NextGen—and therefore does not take this information into account when making future funding decisions.

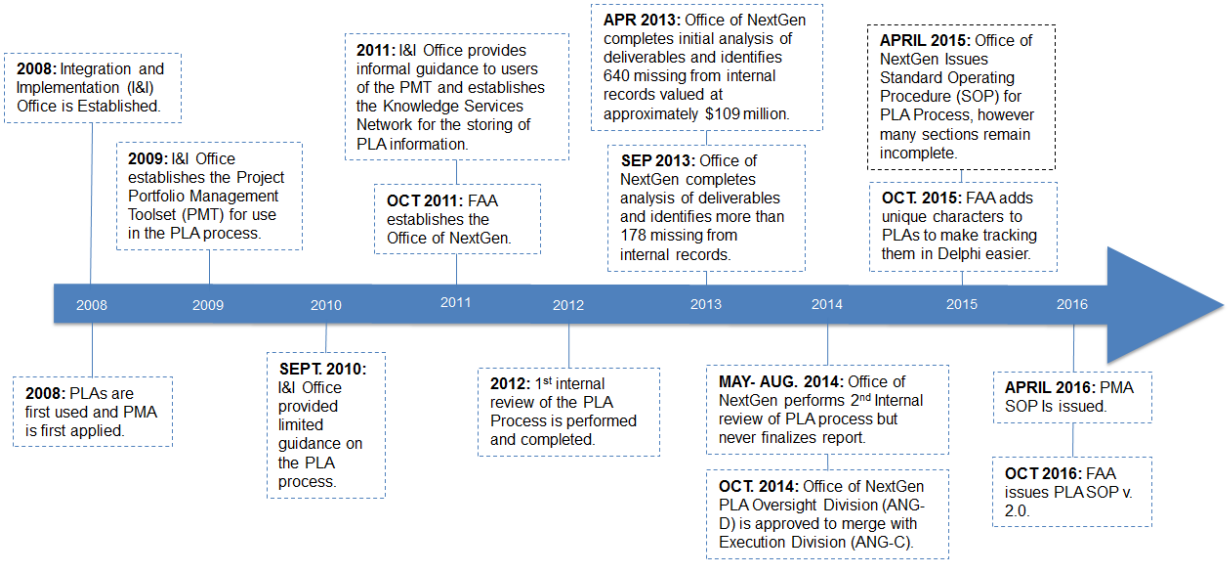
FAA Has Taken Steps To Improve Oversight of NextGen Developmental Projects but Still Lacks an Effective Framework for Oversight

Since 2008, FAA has taken steps to provide oversight of the selection, justification, execution, and measurement of outcomes for developmental projects through the Office of NextGen and multiple oversight boards and groups. However, the Office of NextGen's oversight has been ineffective, and problems have persisted due to several factors, such as the instability of the Office of NextGen, unclear roles and responsibilities, and other issues. In addition, several NextGen boards and groups established to provide oversight have either had limited review of developmental projects or been disbanded.

Past Efforts by the Office of NextGen To Provide Oversight of PLAs Have Been Ineffective

The Office of NextGen provides general oversight of all NextGen-related projects. As shown in figure 4, FAA has made several attempts to provide oversight and improve the PLA process since PLAs were first issued in fiscal year 2008.

Figure 4. Timeline of Events Related to the Office of NextGen's Project Level Agreement Oversight, 2008–2016



Source: OIG analysis of FAA data

Despite these efforts, our review identified concerns with the stability of the Office of NextGen, which was a contributing factor to the ineffective execution of PLAs and impacted the oversight of developmental projects. Over a third of the 70 FAA officials and program managers we interviewed expressed concern with PLA management and oversight (see figure 5). For example, frequent turnover with core oversight personnel and leadership was expressed as a concern. The Office of NextGen was involved in two reorganizations, one of which was due to high turnover and unstable leadership resulting in a realignment of executive, managerial, and other employees in 2013. Also, program managers recounted having to spend large amounts of time training new solution set coordinators on their roles and responsibilities for tracking and monitoring PLAs. According to program managers we interviewed, this lack of continuity and high turnover adversely impacted the Office of NextGen's ability to provide effective oversight. To address this issue, FAA created teams of portfolio managers in fiscal year 2015.

Figure 5. Key Issues Identified in Interviews

- Lack of involvement of key managers and visibility regarding decisions
- Lack of accountability at the top levels for correcting longstanding PLA issues until 3 years after problems were first identified
- Lack of experience and unclear roles and responsibilities for Office of NextGen personnel responsible for managing PLA projects
- Frequent turnover within core oversight personnel and leadership
- Frequent realignments without clear delineations of roles and responsibilities

In addition, the major realignments within the Office of NextGen resulted in unintended consequences, such as unclear roles and responsibilities. For example, FAA created the NextGen NAS Lifecycle Integration Office[52] in 2013 in response to a congressional mandate to provide NextGen oversight.[53] In October 2014, FAA ordered the merger of this oversight office with the Office of Advanced Concepts and Technology Development to create the newly established Portfolio Management and Technology Development Office, which is also responsible for managing a significant amount of the work performed under PLAs, thus creating a situation where the same office is performing and

[52] The NextGen NAS Lifecycle Integration Office was intended to be a centralized organization with a NAS-wide focus for instituting changes, minimizing the risk of cost overruns and delays in delivering significant NextGen programs, improving the flow of communication, and increasing understanding of priorities.
[53] FAA Modernization and Reform Act of 2012, sec 812.

overseeing PLA work.[54] According to FAA, this is not a problem because the Office of NextGen's Management Services Office also signs PLAs after ensuring that correct financial information is documented and in line with appropriations. However, FAA's Portfolio Management and Technology Development Office performs other key aspects of oversight beyond just monitoring funding, such as tracking the status of deliverables and overall outcomes of projects.

In recent years, FAA has undertaken internal efforts to address weaknesses in the PLA process and improve its oversight. However, these efforts received mixed support from senior management, were not finalized, or failed to resolve key issues. For example:

- **2012 Internal Review.** The Office of NextGen conducted an internal review that made 12 recommendations to reduce PLA process implementation time, among other actions. In October 2012, FAA claimed 4 of the 12 recommendations had been completed, including improving timeframes for developing PLAs. However, we found that lengthy timeframes for developing PLAs remained an issue. FAA addressed the remaining eight recommendations largely when the Agency issued its PLA standard operating procedures in April 2015, 3 years after the problems were first identified.

- **2013 Review of Deliverables.** FAA Office of NextGen officials performed a review of PLA deliverables and attempted to collect deliverables that were late, missing, or never completed. However, as we noted earlier in this report, many of the identified missing deliverables have still not been collected, although FAA considers them resolved.

- **2014 Internal Review.** At the direction of the Assistant Administrator for NextGen, FAA conducted an internal review in 2014 to examine the PLA process related to NextGen developmental investments. The draft report's findings and recommendations highlighted deficiencies in FAA's oversight framework and management structure, internal control processes, and financial management of PLA investments. For example, the draft report identified issues including the lengthy PLA process, missing deliverables, and low first-year obligation rates. As shown in exhibit D, we identified similar issues during our review.

  Written comments on the internal draft and our interviews showed this was a controversial report. High-level management within the Office of NextGen was critical of the methodology and accuracy of information;

[54] The merger of the Advanced Concepts and Technology Development Office and NAS Lifecycle Integration Office was made effective in February 2015.

therefore, the report was never finalized. However, FAA officials stated that the report revealed some shortcomings in the PLA process that catalyzed a need to revise the processes to strengthen oversight. While FAA officials have taken some actions to improve the PLA process, they told us that because these were only draft reports, no action would be taken to fully address the recommendations. For example, FAA has not implemented an improved oversight and governance mechanism. In our view the fact that the report was not finalized sent a mixed message as to whether FAA management was fully committed to addressing the problems.

Boards and Groups FAA Established To Oversee NextGen Are Limited With Regard to Developmental Projects, and Some Were Disbanded

FAA has lacked a clearly established framework for managing the overall oversight of NextGen developmental projects. Unlike major acquisition programs that have formal cost and schedule baselines, NextGen developmental projects have flexible cost and schedule parameters and do not receive the same level of oversight as established programs. FAA has had several different boards and groups to manage high-level oversight of its developmental projects; however, this oversight has lacked consistency and clarity with respect to how decisions are made, funding is shifted among projects, and priorities are established. We found some boards and groups had been disbanded and all had limitations (see table 2).

Table 2. Status of FAA Boards and Groups That Oversee NextGen Projects

Board Name	Duties	Limitations
Joint Resources Council (JRC)*	Approves all major acquisition projects at key decision points. Formalizes the annual budget request that is forwarded to OMB and Congress.	Developmental projects that are not part of major acquisitions receive limited oversight from the JRC.
NextGen Management Board (NMB)*	According to FAA policy, the NMB provides oversight of NextGen projects prior to final investment decisions. Approves new capabilities, makes recommendations to terminate or amend concepts.	Operates as a high-level policy advisory board rather than reviewing programs in detail.
NextGen Review Board (NRB)	Subordinate to the NMB. Intended to provide management and technical work for NMB.	Disbanded. According to an FAA official, the group previously reviewed the NextGen budget, but it only lasted a couple of years.
NextGen Budget Team (NBT)	According to internal policy, NBT is a high-level team that represents the Office of NextGen on all budget-related activities.	Disbanded. Never had a charter, meeting minutes not collected, no formal records of decisions issued.
Capital Investment Team (CIT)*	Reviews and makes budget recommendations on developmental projects. Establishes and maintains prioritization of all ongoing and proposed investment programs. Assesses the budget impact of new programs, formulates the annual budget and prepares it for submission.	While briefings we reviewed showed that developmental projects were discussed by the CIT, interviews with personnel involved in the process disclosed that developmental projects received inconsistent attention.
NextGen Executive Stakeholders Forum	Created by the Assistant Administrator for NextGen as a governance mechanism and to add transparency for developmental projects.	FAA held three meetings at the beginning of fiscal year 2016, and meetings were then planned quarterly. FAA did not develop a formal charter and did not record meeting minutes. FAA has now disbanded this forum.

*Board or group is identified in the Acquisition Management System.

Source: OIG analysis of FAA data

While FAA had established a governance mechanism specifically for developmental projects through the NextGen Executive Stakeholders Forum, the Agency abandoned this group after three meetings. Consequently, the Office of

NextGen currently has no high-level board or group providing input on developmental projects.

Conclusion

NextGen is expected to fundamentally change air traffic management to meet the future needs of air travel. To reach these goals, FAA performs developmental work leading up to a full-scale acquisition or program implementation to evaluate and test new concepts for advancing NextGen. Strong and effective oversight and management are key to maintaining proper stewardship of taxpayer dollars invested in these efforts. While FAA has taken steps to improve its internal controls for developmental projects, significant weaknesses remain in the Agency's transparency, accountability, and oversight of these projects and problems have proven persistent for a number of years. Until FAA improves and fully implements its processes, the Agency will remain challenged in ensuring that its developmental programs effectively and efficiently advance NextGen goals and modernize the NAS.

Recommendations

To improve FAA's management and oversight of Project Level Agreements (PLA), we recommend that the Federal Aviation Administrator:

1. Define the projects that are considered pre-implementation (developmental) in the Agency's budget guidance and Acquisition Management System policy and validate that developmental projects align with the definition and are funded under the appropriate budget activity.

2. Develop and implement a quality control checklist with criteria for determining when the use of incremental funding prior to PLA approval is permissible.

3. Develop and implement a control for enforcing the Program Management Assessment (PMA) limits on the assessment of program management fees for various administrative and contract support specified in the Agency's standard operating procedures.

4. Update PMA standard operating procedures to include a control that ensures project requirements are met before transferring expiring funds into the PMA account.

5. Amend the PLA close-out process to include the statement of outcomes and statement that work was concluded or if follow-on work is required.

6. Establish and implement a mechanism for providing oversight of developmental funding, to include records of decisions regarding selecting, justifying, and measuring the outcomes of PLAs to ensure FAA is funding the highest priority work.

Agency Comments and OIG Response

We provided FAA with our draft report on November 2, 2017, and received its response on December 18, 2017, which is included as an appendix to this report. FAA concurred with recommendations 4 and 5 and provided appropriate actions and completion dates. We consider these recommendations resolved but open pending completion of the planned actions. FAA partially concurred with recommendation 1, but we are asking for additional information to verify that FAA's actions meet the intent of our recommendation. FAA did not concur with recommendations 2, 3, and 6, and we are requesting that FAA reconsider its response for these recommendations.

For recommendation 1, FAA stated that it has completed actions to define pre-implementation (developmental) projects by aligning budget submissions with the appropriate budget activities and expanding the budget summary (section 3B) to clearly identify pre-implementation projects. However, it is not clear how FAA plans to include the definition of pre-implementation in its budget guidance for managing NextGen funding, as we recommended. We acknowledged in our report that FAA has adjusted budget line items to better align work with its intended purpose, as directed by the House Appropriations Committee. However, without a definition of what constitutes pre-implementation work included in Agency guidance, a risk remains for developmental funds to be used for implementation work, as illustrated by the examples in our report. In addition, FAA stated that it does not agree with our recommendation related to modifying the Acquisition Management System (AMS) policy because the Agency considers budget policy to be outside the scope and purpose of AMS. We continue to believe that "pre-implementation" should be better articulated and defined; however, after further review and consideration, we agree that the definition does not necessarily have to be in AMS policy as long as the definition in FAA's budget guidance specifies what phases and types of projects in the acquisition life-cycle are allowed to be financed with developmental funds. Accordingly, we request that FAA provide additional information regarding how it plans to update its budget guidance to include the definition of pre-implementation prior to closing this recommendation.

FAA did not concur with recommendation 2, stating that we did not identify a reason why incremental funding of PLAs is problematic. We disagree. As noted in our report, frequently providing incremental funding without approved PLAs that contain final scope, cost, expected deliverables, and milestones increases risk that intended outcomes will not be achieved. FAA also identified this practice as a problem and determined that incremental funding should be the exception and require approval at the Assistant Administrator for NextGen level. Further, FAA decided that there was a need to provide guidance to its staff specifying the exception conditions under which requests for incremental funding would be granted. However, FAA has not yet established formal guidance to its staff regarding incremental funding. Therefore, the intent of our recommendation is to help ensure incremental funding continues to be the exception and is adequately justified by FAA management in the rare instances when used. Accordingly, we request that FAA reconsider its response to this recommendation.

FAA did not concur with recommendation 3, stating that it does not believe that an additional control for program management assessment (PMA) fee limits is needed because all financial management actions are currently handled within existing regulatory constraints. FAA also stated that our report appears to incorrectly apply fiscal requirements upon an internal FAA fee and that adding a further process would inaccurately apply grant or contract principles to the PLA process. We disagree. We evaluated FAA's use of PMAs against the Agency's own internal procedural guidance, which limits assessing fees to either 1 or 5 percent depending on where the project falls under the acquisition lifecycle—not any other requirements. As we reported, FAA was not effectively monitoring and enforcing its internal procedural limits, as we found numerous instances where FAA exceeded these limits. FAA formalized its PMA standard operating procedures in April 2016, but it did not include specific steps for monitoring and enforcing these limits. In its response, the Agency stated that it will continue to monitor thresholds in accordance with standard operating procedures. This monitoring would be one step in meeting the intent of our recommendation to implement a control to ensure the Agency meets its own internal procedural limits. Accordingly, we request that FAA reconsider its response to this recommendation.

FAA did not concur with recommendation 6, stating that the Agency's capital budgeting process already documents all records of decisions related to the Agency's budget allocation process. According to FAA, the Agency's budget process develops priorities and ensures that funding requests are in alignment with the priorities. However, our concern is not only about the annual budget justification process but also how FAA provides oversight and stewardship of multi-year development efforts after Congress has appropriated funds for the Agency. As noted in our report, problems with developing an effective method for overseeing development efforts have persisted despite Agency efforts, and

additional corrective action is needed. Specifically, we found that the Office of NextGen lacked formal policies and procedures with respect to how decisions are made, funding is shifted among projects, and priorities are established. Further, as we reported, several boards and groups that were established to provide high-level oversight of NextGen have either had limited review of developmental projects or have been disbanded. Given that development projects do not receive the same level of oversight as established acquisition programs—or FAA's Research, Engineering, and Development portfolio—we continue to believe an additional oversight mechanism is needed beyond the Capital Investment Team to ensure FAA is funding the highest priority work. This would also help ensure the Capital Investment Team has all information on developmental projects, including project outcomes, when making decisions. As such, we request that FAA reconsider its response for this recommendation.

In its formal response, FAA also expressed additional concerns with some of the report's content, which we address as follows:

- **Low obligation rates and incremental funding.** FAA stated that the report's discussion of slow obligation of funds on development projects is inaccurate and misplaced and perhaps out of scope of the PLA discussion. We disagree. The information contained in our report regarding obligation amounts and rates is from FAA. The overall funding level and specific investments among NextGen portfolios directly relate to PLA processing and our review. Furthermore, understanding the linkages between budget priorities and project selection, plans, and other performing organizations' work and use of developmental funds is consistent with our audit objectives. In addition, as noted in our report, FAA stated that the delay in PLA processing was one contributing factor for significantly declining obligation rates.

- **Use of Contract Principles.** FAA contends that we applied grant or contract requirements to the PLAs we reviewed. However, we recognize that PLAs are not contracts or grants, and we used principles in FAA's internal standard operating procedures and the *Standards for Internal Control in Federal Government* as the basis for our findings, not contract principles. In addition, FAA contends that PLAs only guide the scope of work. However, PLAs are an important internal control document governing the release of funds to performing organizations after finalizing the scope, expected deliverables, and estimated project milestones. Furthermore, FAA's standard operating procedures specifically state that the benefits of following these procedures include increasing the likelihood that PLA work will achieve its desired outcomes.

- **Sample size.** FAA stated that our sample was too narrow and did not proportionately represent all NextGen portfolios and pre-implementation

work. This is not the case. OIG's Senior Statistician statistically selected our sample and included projects from each of FAA's 11 portfolios. We used a sample design that is widely used in auditing when the goal is to estimate a dollar value.[55] Our sample covers about 12 percent of the $1.7 billion universe. Furthermore, FAA stated that some developmental work would never be connected to high-priority decision points. As noted in our report, some PLA work may not necessarily directly tie to investment decision points, but we found more than half of the PLAs were not developmental in nature because they were for support or implementation work. Using a significant amount of developmental funds for support or implementation work, particularly when other budget line items exist specifically for some of these efforts, may unnecessarily reduce overall developmental efforts and does not clearly communicate the resource needs and types of work needed to advance NextGen to Congress and stakeholders.

- **Deliverables.** FAA reiterated its view that the more than 600 deliverables valued at over $109 million unaccounted for within the Office of NextGen's records represented nothing more than an administrative breakdown in archiving historical documents. However, the Office of NextGen's sustained lack of management attention and disregard for these deliverables over the span of a number of years is a significant concern. It limits the ability of this office to measure the outcomes of projects when assessing progress and making decisions on whether or not to continue funding and adjust the scope of future NextGen efforts.

- **Purpose of developmental funds.** FAA stated that our report takes issue with F&E capital funds being used for pre-implementation (developmental) work. However, we take no issue with F&E funds used for developmental work. We included this information only as a statement of fact that FAA uses both RE&D and F&E funds for developmental work and has conducted a considerable amount of this type work in its F&E capital account. We included this information in the report's background section to show significance and to aid in understanding the report's findings.

We remain committed to working with FAA to identify opportunities to further improve its management controls and oversight of NextGen developmental projects and welcome further discussion with the Agency regarding our findings in this report.

[55] This design is known as a stratified probability proportional to size with replacement sample where size was the total value of a PLA. This design gives every dollar an equal chance of selection within a stratum, and thereby selects more of the higher valued PLAs while still keeping the selection random.

Actions Required

We consider recommendations 4 and 5 resolved but open pending completion of planned actions. We consider recommendations 1, 2, 3, and 6 open and unresolved. In accordance with DOT Order 8000.1C, we request that FAA provide, within 30 days of this report, additional information for recommendation 1 as well as a revised response for recommendations 2, 3, and 6, as detailed above.

Exhibit A. Scope and Methodology

We conducted this audit between July 2015 and November 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. Our audit objectives were to assess FAA's procedures for (1) selecting and justifying projects that received developmental funding, and (2) overseeing the execution and measuring the outcomes of projects. As part of our audit, we also reviewed FAA's overall oversight framework for these areas.

To assess FAA's process for selecting and justifying projects that received developmental funding, we analyzed a randomly selected sample of Project Level Agreements (PLAs) to determine the work's connection to FAA strategic plans. We compared each PLA against FAA's Enterprise Architecture, the NextGen Segmented Implementation Plan (NSIP), the NextGen Implementation Plan (NGIP), and the Capital Investment Plan (CIP) to determine if and how effectively the stated plans and outcomes aligned with these strategic planning documents. We reviewed program documents specific to the PLA and work that was completed, reviewed meeting minutes from key oversight boards, and conducted interviews with program officials in both the Office of NextGen and offices of the organizations performing the work outlined in each PLA. We reviewed FAA's Acquisition Management System procurement process to determine where work outlined in each sample PLA was in the formal acquisition lifecycle at the time the PLA was developed.

To assess FAA's oversight and execution of these projects, we developed a methodology to effectively match each PLA to the associated Delphi financial transactions it governed. Our methodology took into account the dates each PLA was signed, the Delphi Project ID, the CIP number, and or a combination of data points from each PLA that could uniquely associate each document with the appropriate financial record set. Because the PLAs and their supporting processes are internal controls implemented by FAA for managing execution of the budget, we were able to compare them to the Government Accountability Office's *Standards for Internal Control in Federal Government* and determine their effectiveness. We reviewed FAA provided financial records used to track incremental funding requests, and developed a methodology to determine the total number of funding requests approved, as well as the amount and percentage of funding provided prior to formal agreement between parties. We reviewed the list of expected deliverables for each of the sampled PLAs to determine if they were accounted for. These numbers were aggregated and

summarized to determine statistical projections for the universe of work performed under these agreements. To determine the effectiveness of the PLA's program schedule, we reviewed FAA's knowledge sharing database to determine if PLA deliverables were delinquent. We reviewed the PLA spend plans and compared them to the expenditures documented in the Delphi records, but were unable to develop a methodology to link final expenditures for each deliverable. Ultimately, we determined that a review of the individual contracts for each PLA would be required, which was out of scope for this audit.

We interviewed program officials associated with each PLA to gain their perspective on oversight, program execution, program management tools used and their effectiveness. We reviewed existing Standard Operating Procedures to determine if, based on our sample work, they could prevent issues and maintain effective controls for areas of concern identified prior to their development and implementation.

To determine FAA's oversight framework, we reviewed Agency procurement policies, budget processes, governance board charters and meeting minutes, and internal procedures. We compared these documented and undocumented processes against relevant program and financial records to determine if programs governed through the PLA process were in compliance with these internal policies.

The scope of our work was limited to the work outlined within the sampled PLAs from fiscal years 2009 to 2015; the associated program, planning, and funding documents; and financial records. Our interview work was limited to the program officials associated with this work, the Office of NextGen, and the Office of Capital Budgets and Planning. In those instances where program officials were no longer employed by FAA, we made attempts to interview them, if available.

We obtained a list with 401 NextGen PLAs that had a total value of $1.92 billion for fiscal years 2009 to 2015 from FAA. We then excluded RE&D PLAs, PLAs with a value of $0, and PLAs that had a blank in the value field. We stratified the remaining 343 PLAs in the universe with a total value of $1.68 billion into 2 strata where Stratum 1 had 305 PLAs from fiscal years 2009 to 2014, and Stratum 2 had 38 PLAs from fiscal year 2015. We selected 17 out of 305 from Stratum 1, and 5 out of 38 from Stratum 2, for a total sample size of 22 PLAs with a total value of $195 million, which was 11.6 percent of the universe. We selected PLAs within each stratum with probability proportional to size with replacement where size was the value of a PLA. Our sample design allowed us to project our findings to the universe at the 90-percent confidence level.

Exhibit B. Organizations Visited or Contacted

Office of NextGen

Office of the Assistant Administrator for NextGen

Office of the Deputy Assistant Administrator for NextGen

Office of the Chief Scientist for NextGen

NextGen Management Services Office

NextGen NAS Systems Engineering Integration Office

NextGen Portfolio Management and Technology Development Office

William J. Hughes Technical Center

Office of Finance and Management

The Office of Budget and Programs

Office of Investment Planning and Analysis

Office of Acquisition and Business Services

Air Traffic Organization

ATO Program Management Organization

ATO Air Traffic Services

ATO Mission Support Services

Office of Policy, International Affairs, and Environment

Office of Environment and Energy

Aviation Safety

Office of Accident Investigation and Prevention

Exhibit C. Sampled Project Level Agreements (Fiscal Years 2009–2015)

Project	PLA Value	FY	Description
Separation Management–Wake Turbulence Mitigation for Departures	$2,857,724	2013	Demonstration of Wake Turbulence Mitigation for departures at San Francisco International Airport, George Bush Intercontinental Airport, and Memphis International Airport
Trajectory Management–RNAV/RNP Terminal Area Demonstration	$400,000	2010	Develop draft RNP routes for two runways and develop draft report on changes needed for TMA at Dallas Love Field
Separation Management–Approaches, Ground-Based Augmentation System	$6,175,000	2009	Alternative analysis to develop Local Area Augmentation System (LAAS) as a replacement for aging Instrument Landing Systems. Work halted after FAA realized that commercial truck drivers with satellite jammers interfered with the LAAS signal.
Navigation Procedures Implementation NAV Lean	$5,340,813	2014	Implementation of several NAV Lean recommendations, including database consolidation, electronic transfer of data, and the online portal
NextGen Integration and Evaluation Capability (NIEC), Integration, Development, & Operations Analysis Capability	$3,850,000	2011	To upgrade lab facilities and capabilities for NextGen demonstration projects
Airborne Rerouting	$11,000,000	2014	Focused on writing code for the airborne re-routing capability implementation into the En Route Automation Modernization System
Flight and State Data Management–Surface/Tower/Terminal Systems Engineering	$16,950,000	2010	To analyze and assess concepts for using data and flight information to enable more efficient and safer movement and control of air traffic in the airport terminal area
Operations Performance Assessments	$2,350,000	2012	NextGen benefits modeling, performance assessment, economy-wide benefits, weather data tools analysis and data

Project	PLA Value	FY	Description
Trajectory Management-Surface Tactical Flow #2–Enhanced Data Exchange for Airport Surface Data Distribution	$4,750,000	2010	Establishes a continuously-evolving, interconnected communication network approach to delivering airport surface data to external aviation stakeholders
Trajectory Management–Time Based Flow Management Work Package 3	$2,185,000	2012	Segment 3 of TBFM – Optimized profile descents during time-based metering, integration of surface data, initial steps towards dynamic metering, terminal spacing and sequencing and expansion of integrated departure/arrival capability to additional locations
Integration, Development & Operations Analysis Capability (NIEC)	$2,333,039	2013	NIEC is the NextGen Lab at the Tech Center. The PLA is the annual PLA to fund the lab.
Weather Forecast Improvements	$15,041,800	2011	To move the NextGen Weather Processor through Initial and Final Investment Decisions, funding all the required documents
Separation Management–Automation Risk Mitigation	$22,000,000	2011	Automated radar terminal system updates in preparation for ADS-B implementation
TBO–Operations Concept Validation–Validation Modeling	$9,500,000	2010	Studies on transition from the current role of pilots and controllers to future roles with NextGen automation
Trajectory Management –En Route (Point-in-Space Metering)	$22,591,000	2010	PLA had two objectives: fund TBFM Final Investment Decision work and conduct Integrated Enterprise System gap analysis to determine if TBFM's trajectory modeler could be integrated into other systems
Flight and State Data Management–Common Status & Structure Data	$11,300,000	2010	Developing processes and procedures for digitally managing Special Activity Airspace and constraint information from facility Letters Of Agreement, SOPs, airport runway configuration and status, and facility equipment status
Common Support Services–Weather (CSS-Wx)	$10,503,000	2012	Focused on aggregating all weather products into a common weather product, developing an open source standard for all weather products, and then delivering those products over System Wide Information Management (SWIM)

Project	PLA Value	FY	Description
EMS & Advanced Noise/Emissions Reduction	$5,225,000	2015	Environmental Management System (EMS) is focused on updating the EMS system with solutions to reduce emission, fuel burn, and noise impacts.
NextGen PBN–Metroplex Area Navigation (RNAV)/Required Navigation Performance (RNP)	$19,157,000	2015	Supports multiple Metroplex Teams: Northern Cal and DC Post-implementation Phase; Southern Cal and Cleveland/Detroit Evaluation phase; Phoenix, Denver, and Florida Design & Procedure Development Phase
New ATM Requirements—Multi-Function Phased Array Radar	$6,365,000	2015	Surveillance alternatives analysis. The PLA is focused on developing Multi-Function Phased Array Radar capability as a potential alternative to current radar. The effort is a joint effort between FAA, the National Oceanic and Atmospheric Administration, the Department of Defense, and the Department of Homeland Security.
New ATM Requirements–AAtS (Aircraft Access to SWIM) Amendment to fiscal year 2013 PLA	$900,000	2015	Complete analysis of concept; develop operational requirements, initial benefit analysis, and a technology transfer plan
ASIAS	$14,250,000	2015	Implementation of additional Aviation Safety Information Analysis & Sharing (ASIAS) program capabilities
Total (22 PLAs)	**$195,024,376**		

Exhibit D. OIG Analysis of Hotline Complaints and FAA Internal Review Draft Report Results

Allegation	Source	OIG Comment
Despite concerns that projects lack clear understanding of purpose, scope, cost to completion, success criteria, integration, or timelines, the NextGen budget team continued to direct execution of significant F&E funding.	January 2015 Hotline Complaint	As noted in our report, we determined that PLAs contained some of these elements such as purpose, scope, cost and timelines; however, a lack of good planning resulted in lengthy PLA approval times which then led to funding projects without final approved scopes and budgets, difficulties tracking actual expenditures to outcomes that advanced NextGen, and a lack of effective project management tools to monitor PLA deliverables. The NextGen Budget Team made recommendations on which projects received funding and their level of funding without transparency with respect to how decisions are made, funding is shifted among projects, and priorities are established.
Undocumented transfer of funds.	January 2015 Hotline Complaint	As noted in our report, we determined that the transfers of PMA fees were documented in FAA's accounting system but the rationale for decisions was not documented. There were no records of decision.
Senior leaders promoted an environment of hostility, fear, and reprisal toward those who point out mismanagement.	January 2015 Hotline Complaint	We did not include this allegation in our scope due to pending administrative proceedings and potential litigation.
NextGen funds misdirected toward unrelated programs in violation of appropriations rules (e.g., SE2020 was allocated $14.3 million NextGen funds to cover a program shortfall).	June 2015 Hotline Complaint	We found no evidence that FAA misdirected these funds. We determined that FAA often moved funds, including shifting project money to a Program Management Assessment (PMA) account used to cover administrative and general program support costs without a formal procedure. We also determined that FAA redirected these funds to cover other efforts, such as the Systems Engineering (SE2020) shortfall in fiscal year 2012. However, we found no evidence that FAA redirected these funds beyond allowable limits or its authority.

Allegation	Source	OIG Comment
Unclear whether 2011 NextGen-funded study of air traffic controller selection, test, and hiring criteria was used in making changes in controller screening adopted by FAA, although the $5.3 million study should have been completed in 2012.	September 2015 Hotline Complaint	We could not clarify how the 2011 study was used. We determined that FAA only had a draft copy of the study in its Office of NextGen deliverables database, and program officials were unable to find a final version of the study.
Lack of accountability within FAA and unwillingness to properly hold responsible those that continue to make irresponsible decisions are at the core of the mismanagement of expectations, programs, and results within FAA.	February 2016 Letter	As noted in our report, we determined that there was lack of accountability from top senior officials to address key weaknesses found in the PLA process until 2015. These weaknesses include lengthy PLA development, funding of PLAs prior to FAA approval, insufficient justification for PLA funding, and low rates of obligations. In addition, FAA has undertaken internal efforts to address weaknesses in the PLA process and improve its oversight. However, these efforts received mixed support from senior management, were not finalized, or failed to resolve key issues.
Lacking any substantive or credible plans; program commitments and milestones remain vague and often disappear or are conveniently replaced with achievements that are unrelated to NextGen investments.	February 2016 Letter	We did not directly address these broad allegations in the current audit but have reported previously on problems associated with the execution of NextGen plans, schedule and performance shortfalls, and difficulties with shifting from planning of NextGen to its implementation.[56]
NextGen Management Board operates without a clear charter or discretionary authority and thus has been ineffective managing the NextGen investment.	February 2016 Letter	We determined that the NextGen Management Board had an outdated charter for several years. FAA updated the charter in 2015 in response to an OIG recommendation; however, the new charter does not match roles and responsibilities according to AMS guidance.
Review of annual budget submissions shows that tens and hundreds of millions have often remained available, uncommitted, and unused across fiscal years even in the midst of budget sequestration.	February 2016 Letter	As noted in our report, we determined FAA had difficulty obligating funds to developmental projects. In each fiscal year from 2009 through 2015, first-year obligation rates for developmental funds steadily declined while available funds exceeded $500 million for most of the same period, with a high of $655 million.

[56] OIG reports are available on our website at http://www.oig.dot.gov/.

Allegation	Source	OIG Comment
Provision of incremental funding in lieu of approved PLAs. In some cases full funding is provided before PLA is approved.	May 2014 Internal Review	As noted in our report, we determined that FAA often issued incremental funding before PLA approval. We also confirmed 21 instances totaling $76.4 million where 100 percent funding was provided prior to PLA approval.
The PLA process is tedious and lengthy.	May 2014 Internal Review	As noted in our report, we determined that FAA experienced lengthy PLA approval times; the average time required for scoping, negotiating, and signing a PLA was over 100 days, with some taking more than 300 days. Beginning with fiscal year 2015, FAA began tracking this more closely and has reduced the time. However, as of July 2016, delays were still occurring with some PLAs.
For PLAs from fiscal year 2010 to 2012, there was a total of 178 missing deliverables valued at $49.2 million. These missing deliverables were either never completed or never transferred to FAA and were deemed likely never recoverable.	May 2014 Internal Review	As noted in our report, we determined that FAA's Office of NextGen did not adequately monitor project milestones or obtain PLA deliverables. As of January 2017, the Office of NextGen documented that 119 deliverables were either missing or late. Of these, FAA only accounted for 58 late deliverables from 2016 to 2017 and not the 61 missing that they decided to write-off from 2010 and 2011. In other cases, FAA's Office of NextGen elected to close out unrecovered deliverables via memorandum.
Difficult to track PLA obligations. In March 2014, the finance organization deemed the PLA process to be lengthy and recommended transitioning to a multi-year planning approach. It found it was very difficult to separate obligations under a PLA from other obligations under the same project code. A clear relationship between budget sub-line items and executed PLAs is not straightforward and requires transparency. To illustrate, a budget sub line item may fund one PLA or several PLAs. And, multiple budget sub-line items may fund a singular PLA.	May 2014 Internal Review	As noted in our report, we determined that it was difficult to track approved amounts to what was actually spent on any particular NextGen project. To address this deficiency, in 2015, FAA added a unique identifier to each PLA to improve traceability of funds. However, we still found errors on fiscal year 2015 PLAs. FAA has begun to use more multi-year plans.
FAA was slow to obligate money particularly in the first year of availability.	May 2014 Internal Review	As noted in our report, we determined that in each fiscal year since 2009, first-year obligation rates for developmental funds have steadily declined from 86 percent in fiscal year 2008 to 29 percent in fiscal year 2015.

Allegation	Source	OIG Comment
PLAs did not have a clear relationship to each other, high-priority decision points in the Enterprise Architecture (EA) or the Integrated Master Schedule. Could not find a clear line between PLAs and future acquisitions; difficulty establishing how deliverables in the PLA create value towards achieving EA goals.	May 2014 Internal Review	As noted in our report, we determined, from our sample of 22 PLAs, 12 did not tie to high-priority investment decision points because they were for support and implementation work or demonstrations that did not clearly tie to plans. FAA lacks a method to document the work that was accomplished and how it has helped to advance NextGen—and therefore does not take this information into account when making future funding decisions.
Unclear decision making to support developmental project prioritization. Inability to discern clear objectives for success at the PLA level. Difficulty establishing key relationships amongst yearly PLAs and those that ran parallel; limited PLA insight into project success criteria, end goals and/or exit criteria. Inability to interpret relationship between budget sub-line item names, work performed in the PLA, and success criteria.	May 2014 Internal Review	As noted in our report, we determined that developmental project decision-making lacked transparency and documentation with respect to how decisions are made, funding is shifted among projects, and priorities are established. We also determined that FAA's close-out procedures do not require the Agency to evaluate whether a project met its goals for advancing NextGen or whether follow on work is required.
Many contractors are not identified by name. They are identified by contract vehicles that don't provide visibility as to who did the work or subcontracted beyond the prime. Many PLAs list "To Be Determined"/unspecified vendors in the spend plan.	May 2014 Internal Review	As noted in our report, we determined that the PLA spend plans often cited "To Be Determined" or vendors that later did not perform the work. We also determined that on some occasions, the spend plans did cite contract vehicles instead of anticipated vendors as well.

Note: To maintain the complainants' confidentiality in accordance with the Inspector General Act of 1978, the January 2015 Hotline Complaints, June 2015 Hotline Complaint, September 2015 Hotline Complaint, and February 2016 Letter will not be released with this report.

Exhibit E. List of Acronyms

AAtS	Aircraft Access to SWIM
ADS-B	Automatic Dependent Surveillance-Broadcast
AMS	Acquisition Management System
ASIAS	Aviation Safety Information Analysis & Sharing
ATO	Air Traffic Organization
CIP	Capital Investment Plan
CIT	Capital Investment Team
CSS-Wx	Common Support Services–Weather
DOT	Department of Transportation
EMS	Environmental Management System
FAA	Federal Aviation Administration
F&E	Facilities and Equipment
GAO	Government Accountability Office
I&I	Integration and Implementation
JRC	Joint Resources Council
KSN	Knowledge Services Network
LAAS	Local Area Augmentation System
MPAR	Multi-Function Phased Array Radar
NAC	NextGen Advisory Committee
NAS	National Airspace System
NBT	NextGen Budget Team
NextGen	Next Generation Air Transportation System
NGIP	NextGen Implementation Plan
NIEC	NextGen Integration and Evaluation Capability
NMB	NextGen Management Board
NRB	NextGen Review Board
NSIP	NextGen Segment Implementation Plan
OIG	Office of Inspector General
OMB	Office of Management and Budget

PBN	Performance-Based Navigation
PLA	Project Level Agreement
PMA	Program Management Assessment
PMBOK	Project Management Body of Knowledge
PMT	Project Portfolio Management Toolset
RE&D	Research, Engineering and Development
REDAC	Research, Engineering, and Development Advisory Committee
RNAV	Area Navigation
RNP	Required Navigation Performance
RPD	Resource Planning Document
RPI	Relative Position Indicator
SE-2020	System Engineering 2020
SOP	Standard Operating Procedure
SWIM	System Wide Information Management
TBFM	Time-Based Flow Management
TMA	Traffic Management Advisor

Exhibit F. Major Contributors to This Report

ROBIN **KOCH**	PROGRAM DIRECTOR
COLETTA **TREAKLE**	PROGRAM MANAGER
DOMINIQUE **LIPSCOMB**	SENIOR ANALYST
JAMES **OVELMEN**	SENIOR ANALYST
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AUDRE **AZUOLAS**	SENIOR TECHNICAL WRITER
PETRA **SWARTZLANDER**	SENIOR STATISTICIAN
AMY **BERKS**	SENIOR COUNSEL

Appendix. Agency Comments

Federal Aviation Administration

Memorandum

Date: December 18, 2017

To: Matthew E. Hampton, Assistant Inspector General for Aviation Audits

From: H. Clayton Foushee, Director, Office of Audit and Evaluation, AAE-1

Subject: Federal Aviation Administration's (FAA) Response to Office of Inspector General (OIG) Draft Report: FAA Needs To Strengthen Its Management Controls Over the Use and Oversight of NextGen Developmental Funding

While the OIG draft report states at the outset that FAA's Project Level Agreements (PLAs) are an internal control mechanism below the budget line item level, rather than a contract vehicle that obligates funding, the report and recommendations mischaracterize the PLAs and appear to apply grant and contract principles to the PLAs, which are legally and otherwise not subject to such requirements. The draft report also draws inaccurate and contradictory conclusions regarding the FAA's budget formulation process and its relationship to PLA funding methodology. Many of the statements in the report could be clarified by changing the terminology to reference the underlying contracts rather than the PLAs. While the Report acknowledges process improvements implemented by the FAA since 2015, prior to, and during the audit, it focuses upon conditions that existed from 2009 to 2015 only. The draft report does not recognize the quantifiable benefits realized in the PLA management process, including a 71 percent reduction in the average PLA development time from 2013 to 2016, as well as improved PLA deliverable tracking and scoping. FAA disagrees with much of the draft report content:

- The report's discussion of slow obligation of funds on development projects in this report regarding PLAs is inaccurate and misplaced and perhaps out of scope of the PLA discussion. As discussed, the PLAs do not obligate funds to outside parties, but are for internal planning purposes. FAA always receives multi-year rather than annual funding for its Facilities & Equipment (F&E) and Research, Engineering and Development (RE&D) accounts, similar to other complex programs across the Federal government. The reason for this is so that programs can have longer to make important funding decisions and execute internal controls and budget planning (i.e. the PLA process) before obligating funds to outside parties via contracts, as the case is here. Additionally, it is not clear why incremental funding in this case would be inappropriate.
- The report recognizes the F&E Capital Planning process as the mechanism through which the FAA selects and justifies developmental (pre-implementation) projects, as well as the rest of the F&E budget expenditures. However, OIG effectively places discretionary grant or contract requirements on the PLAs. The FAA disagrees because PLAs are only

an internal agreement between FAA organizations for execution of projects that have been approved for funding during the F&E budget formulation process and/or were allocated funding in Congressional appropriations. The FAA already has a formal process for reviewing F&E budget requests at the individual Capital Investment Plan level via the annual Capital Investment Team (CIT) reviews and Joint Resources Council (JRC) approval. The FAA's F&E budget process aligns the FAA's strategic vision on the Enterprise Architecture with the agency's F&E budget request. The JRC produces a formal record of its final determination on the F&E budget request.

- The OIG conducted a random sample of NextGen PLAs that lead to an assessment that "PLA project selection is not solely driven by FAA's high-priority decision points." The FAA believes that the OIG's scope and methodology is too narrow, having only sampled 22 of 343 PLAs. Moreover, the 22 PLAs chosen do not proportionately represent the NextGen Budget portfolios and are not representative of all NextGen pre-implementation work. Due to the sampling, six of the 22 PLAs, selected from the System Development and System Safety Management portfolios, capture activities that the FAA categorizes in its F&E budget documentation as support activities. Therefore, these activities would never be connected to "high-priority decision points," as the OIG states in its report. All these activities clearly align to work that was requested in the FAA's F&E budget documents and appropriations from Congress. The remaining 16 PLAs can all be tied to FAA plans and key investments, as seen in the Enterprise Architecture, NAS Segment Implementation Plan and FAA F&E budget documents.
- In critiquing the PLAs, the draft report alleges that at one point in time, the FAA had over 600 missing deliverables with an assigned value of over $109 million. While the FAA fully acknowledges that it had an administrative breakdown in archiving historical documents, PLAs are not contract vehicles. All programs oversaw their contracts and ensured that contractual deliverables were received and validated. Executing program offices managed vendor performance and ensured the FAA received full value for all funding, which has been fully accounted for in the audit.
- The report takes issue with funds used for pre-implementation (developmental) work. As a legal matter, F&E funds are provided for NextGen Operations & Planning and RE&D funds are provided for research, engineering, and development and there is overlap in the purpose for which such funds are provided. FAA manages pre-implementation funding under the F&E budget process due to Congressional mandates. In the fiscal year (FY) 1999, Appropriation and House Conference Report, Congress moved pre-implementation work from the RE&D to the F&E account citing that "the Committee believes that, because these activities fit closely with follow-on activities funded in F&E, management could be improved if they were funded together in F&E."

The FAA concurs with recommendations 4 and 5 and plans to implement recommendation 5 by March 31, 2018, and recommendation 4 by August 31, 2018.

We partially concur with recommendation 1 and have ensured that future F&E budget submissions, including the FY 2018 submission, are properly aligned with the appropriate budget activity. FAA has expanded the F&E Budget Summary in section 3B of the FAA budget to clearly identify the pre-implementation projects and considers this portion of the recommendation complete. The FAA

does not agree that the Acquisition Management System (AMS) Policy should be modified to define the projects that are considered pre-implementation. The AMS does not document any budget policy or considerations, so any such modification would be outside the scope and purpose of the AMS. PLAs are not contracts and are not treated as such under the AMS. Further documenting such information in two independent sources increases the risk of inconsistency.

The FAA does not concur with recommendation 2 because the OIG has not identified a reason that incremental funding of PLAs is problematic. PLAs do not obligate funding so contract funding principles do not apply to these vehicles. PLAs, as an internal execution process, only guide the scope of work. Contracting actions and obligations are overseen by the project/program managers. Recommendation 2 appears to be technically incorrect as stated and FAA requests clarification. If OIG means funding of NextGen contracts prior to PLA approval, it should state this.

The FAA does not concur with recommendations 3 and 6. We non-concur with recommendation 3 because we do not believe that an additional control on Program Management Assessment limits is required due to the fact that all financial management actions are currently handled within existing regulatory constraints. The OIG report appears to incorrectly place outsider user fee or other fiscal requirements upon an internal FAA fee. In compliance with regulatory requirements, the agency will continue to monitor thresholds in accordance with standard operating procedures and will continue to reallocate funding across budget line items consistent with its statutory authority. As discussed above, adding further process would artificially apply grant or contract principles to the internal PLA process. Regarding recommendation 6, the FAA's F&E capital budgeting process already documents all records of decision related the agency's budget allocation process. The FAA's budget development process develops agency priorities and ensures that all funding requests are in alignment with these priorities.

We appreciate this opportunity to respond to the OIG draft report. Please contact H. Clayton Foushee at (202) 267-9000 if you have any questions or require additional information.

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