



# AIR TRAFFIC CONTROL

## Urgent FAA Actions Are Needed to Modernize Aging Systems

Statement of Kevin Walsh, Director, Information Technology and Cybersecurity

### Testimony

Before the Subcommittee on Aviation Safety, Operations, and Innovation, Committee on Commerce, Science, and Transportation, U.S. Senate

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# GAO Highlights

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Highlights of [GAO-25-107917](#), a testimony before the Subcommittee on Aviation Safety, Operations, and Innovation, Committee on Commerce, Science, and Transportation, U.S. Senate

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#### Why GAO Did This Study

The FAA, within the Department of Transportation, is responsible for the safety and efficiency of over 50,000 flights daily. Air traffic controllers use numerous systems to, among other things, monitor weather, conduct navigation and surveillance, and manage communications. However, over the past several decades, FAA has had challenges with aging ATC systems. These systems will face increased demand given that FAA forecasts air travel will increase, on average, by 6.2 percent annually.

GAO was asked to testify on its September 2024 [report](#) on aging ATC systems. This testimony (1) identifies unsustainable and potentially unsustainable ATC systems, (2) determines the extent to which FAA has ongoing investments to modernize these systems, and (3) determines the progress FAA has made in baselining and implementing selected modernization investments. GAO reviewed FAA's inventory of systems and the results of an FAA 2023 assessment of system sustainability. Additionally, GAO selected 20 modernization investments to assess baselining.

#### What GAO Recommends

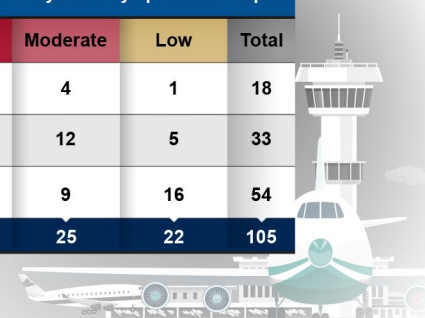
GAO made seven recommendations to FAA. Transportation concurred with six of them and partially concurred with one, which GAO subsequently clarified. In December 2024, FAA officials stated that they do not have any updates on actions to address GAO's recommendations. They plan to provide an update in March 2025.

#### What GAO Found

After a shutdown of the national airspace in 2023 due to an aging air traffic control (ATC) system outage, the Federal Aviation Administration (FAA) conducted an operational risk assessment to evaluate the sustainability of all ATC systems. The assessment determined that of FAA's 138 systems, 51 (37 percent) were unsustainable and 54 (39 percent) were potentially unsustainable. Of the 105 unsustainable and potentially unsustainable systems, 58 (29 unsustainable and 29 potentially unsustainable systems) have critical operational impacts on the safety and efficiency of the national airspace (see figure).

**Federal Aviation Administration (FAA) Air Traffic Control (ATC) System Safety and Efficiency Operational Impact Categories by Sustainment Rating**

Sustainability rating		Number of FAA systems by operational impact			
		Critical	Moderate	Low	Total
A	Unsustainable due to shortages in spares and shortfalls in funding.	13	4	1	18
B	Unsustainable due to shortfalls in funding or capability.	16	12	5	33
C	Potentially unsustainable due to possible shortfalls in funding or capability.	29	9	16	54
<b>Total</b>		<b>58</b>	<b>25</b>	<b>22</b>	<b>105</b>



Sources: FAA 2023 operational risk assessment; serz72/stock.adobe.com (illustration). | GAO-25-107917

FAA had 64 ongoing investments aimed at modernizing 90 of the 105 unsustainable and potentially unsustainable systems; however, the agency has been slow to modernize the most critical and at-risk systems. Specifically, when considering age, sustainability ratings, operational impact level, and expected date of modernization for each system, as of May 2024, FAA had 17 systems that were especially concerning. The investments intended to modernize these systems were not planned to be completed for at least 6 years. In some cases, they were not to be completed for at least 10 years. In addition, FAA did not have ongoing investments associated with four of these critical systems.

Selected ATC modernization investments took years to baseline and progressed slowly. Specifically, as of May 2024, nine of the 11 applicable investments established baselines, and eight of them took over 4 years to do so. The other two investments were initiated over 6 years ago, but had not yet established their baselines. In addition, the nine investments plan to take on average 12 years and 8 months to complete all deployment activities—with some taking as many as 15 to 19 years. A contributing factor to the lengthy implementation schedules is that FAA does not always ensure that investments are organized in manageable segments. This is counter to the Office of Management and Budget and FAA policies that require this approach.

Until FAA takes urgent action to reduce the time frames to replace critical and at-risk ATC systems, it will continue to rely on a large percentage of unsustainable systems to perform critical functions for safe air travel. This reliance occurs at a time when air traffic is expected to increase each year.

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Chair Duckworth, Ranking Member Moran, and Members of the Subcommittee:

I am pleased to participate in today's hearing on the impact of the Federal Aviation Administration's (FAA) aging systems supporting the national airspace and air traffic control (ATC). As an agency of the Department of Transportation, FAA's mission is to promote the safe, orderly, and expeditious flow of air traffic in the national airspace. To ensure FAA's mission is met, air traffic controllers are to manage communications; monitor weather, navigation, and surveillance; and direct aircraft from takeoff to landing. Controllers manage up to 50,000 flights per day. FAA anticipates continued growth and congestion in the airspace, forecasting that air travel will increase annually on average by 6.2 percent.

Over the past several decades, FAA has been experiencing challenges with aging ATC systems. These challenges are due to, among other things, unavailability of parts, reduced technical expertise in outdated technologies, and growth in airspace demand.

My statement today discusses the results of our recently issued report that, among other things, (1) identified FAA's unsustainable and potentially unsustainable ATC systems, (2) assessed the extent to which FAA has ongoing investments to modernize unsustainable and potentially unsustainable systems, and (3) examined the progress FAA has made in baselining and implementing selected modernization investments.<sup>1</sup> Detailed information on the objectives, scope, and methodology for that work can be found in the issued report. In addition, we followed up with Department of Transportation and FAA officials in December 2024 to determine what actions they had taken to implement our recommendations.

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

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## Background

To ensure FAA's mission is met, air traffic controllers rely on numerous complex systems to monitor communications and weather and provide navigation and surveillance services during the various phases of flight. Figure 1 provides a simplified view of air traffic control within the national airspace.

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<sup>1</sup>GAO, *Air Traffic Control: FAA Actions Are Urgently Needed to Modernize Aging Systems*, [GAO-24-107001](#) (Washington, D.C.: Sept. 23, 2024).

**Figure 1: Simplified Overview of Air Traffic Control within the National Airspace**



Sources: GAO based on Federal Aviation Administration information; GAO (airplane, background); AlexZel/stock.adobe.com (buildings); TarikVision/stock.adobe.com (towers). | GAO-25-107917

FAA has had longstanding challenges with maintaining aging ATC systems.<sup>2</sup> According to FAA officials, these challenges are due to the unavailability of parts and retirement of technicians with expertise in maintaining the aging systems. In addition, there has been dramatic growth in airspace demand since the older systems were initially implemented. This has adversely impacted the ability of those systems to continue to support mission needs.

These challenges can impact FAA’s ability to meet its mission. For example, the Notice to Air Missions system, which enables air traffic controllers to provide real-time updates to aircraft crew about critical flying situations relating to issues such as weather, congestion, and safety, is over 30 years old. On January 11, 2023, the system became unavailable to users. To ensure safety, FAA grounded all departing aircraft for about 2 hours to fix the system. The outage caused cancellations of over 1,300 flights and delayed almost 10,000 other flights throughout the day. Some airlines took several days to fully recover.

<sup>2</sup>ATC systems support a variety of air traffic control operations, including navigation, weather, surveillance, communications, and air traffic optimization.

For over 4 decades we have reported on challenges facing FAA's modernization of its ATC systems.<sup>3</sup> In February 1982, FAA released its first comprehensive plan for improving ATC services. At that time, FAA estimated that implementation of this national airspace modernization plan would cost about \$10 billion with full benefits realized by the late 1990s.

As we subsequently reported in several products, FAA faced challenges with this modernization. Due to the many delays and overruns that FAA encountered, we designated FAA's ATC modernization as a new high-risk area in 1995.<sup>4</sup> In doing so, we noted that the estimated cost of the overall modernization had ballooned to \$36 billion, and the largest component had to be dramatically revamped. In continuing to identify FAA modernization as a high-risk area, in 2003 we reported that after 2 decades, FAA's ATC modernization was far from complete. Among the reasons for FAA's performance were that it did not (1) recognize the technical complexity of the effort, (2) realistically estimate the resources required, (3) adequately oversee its contractors' activities, and (4) effectively control system requirements.

In 2003, Congress created the Joint Planning and Development Office to plan for and coordinate a transformation from the current ATC system to the next generation air transportation system (NextGen). NextGen is a multidecade, multibillion-dollar program to increase the safety and efficiency of air travel by transitioning from a ground-based ATC system that uses radar, to a system of systems based on satellite navigation and digital communications.<sup>5</sup> FAA released its initial plan to implement NextGen in 2004.

We have reported that NextGen has had the following challenges: (1) software development complexity, (2) unanticipated system requirements, (3) insufficient stakeholder involvement during system development, and (4) unanticipated events, such as government shutdowns.<sup>6</sup> These challenges have contributed to significant schedule delays. Specifically, while NextGen was initially planned to be completed by 2025, as of November 2023, FAA did not anticipate completing NextGen until at least 2030.

Most recently, in November 2023, we reported that FAA had spent at least \$14 billion on NextGen from fiscal years 2007 through 2022 and expected to spend about \$22 billion in total through 2030.<sup>7</sup> We found that FAA

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<sup>3</sup>GAO, *Examination of the Federal Aviation Administration's Plan for the National Airspace System – Interim Report*, AFMD-82-66 (Washington, D.C.: Apr. 20, 1982).

<sup>4</sup>GAO, *High-Risk Series: An Overview*, HR-95-1 (Washington, D.C.: Feb. 1, 1995). We updated our concerns in subsequent high-risk reports in 1997 through 2007. For example, see GAO, *High-Risk Series: An Overview*, HR-97-1 (Washington, D.C.: Feb. 1, 1997); and *High-Risk Series: An Update*, [GAO-07-310](#) (Washington, D.C.: Jan. 31, 2007). In 2009, we noted that continued focus on ATC systems modernization was warranted as FAA began new modernization efforts. GAO, *High-Risk Series: An Update*, [GAO-09-271](#) (Washington, D.C.: Jan. 22, 2009).

<sup>5</sup>In 2003, the Vision 100—Century of Aviation Reauthorization Act mandated that FAA create and carry out a plan for modernizing its ATC systems. *Vision 100—Century of Aviation Reauthorization Act*, Pub. L. No. 108-176, § 709, 117 Stat. 2490, 2582-2585 (2003).

<sup>6</sup>See examples of reports we have previously issued on NextGen: GAO, *Air Traffic Control Modernization: Progress and Challenges in Implementing NextGen*, [GAO-17-450](#) (Washington, D.C.: Aug. 31, 2017); *Air Traffic Control Modernization: Management Challenges Associated with Program Costs Hinder NextGen Implementation*, [GAO-12-223](#) (Washington, D.C.: Feb. 16, 2012); and *Next Generation Air Transportation System: Progress and Challenges Associated with the Transformation of the National Airspace System*, [GAO-07-25](#) (Washington, D.C.: Nov. 13, 2006).

<sup>7</sup>GAO, *Air Traffic Control Modernization: Program Management Improvements Could Help FAA Address NextGen Delays and Challenges*, [GAO-24-105254](#) (Washington, D.C.: Nov. 9, 2023).

had made mixed progress meeting milestones in its ongoing effort to modernize air traffic management through the NextGen initiative.

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This mixed progress has slowed FAA's NextGen efforts to improve the safety and efficiency of air travel and address growing congestion in the national airspace. For example, FAA met its milestone for deploying more reliable digital communication services at ATC towers. However, it did not deploy initial modernized services to all 20 facilities serving en route flights by its September 2021 milestone.

We also reported that FAA officials and stakeholders stated that the COVID-19 pandemic was a major cause of schedule delays and cost increases, as it required FAA to redo work that had been completed prior to the pandemic. In March 2023, FAA officials estimated the financial impacts of COVID-19 to the NextGen program were \$225 million.

We further reported that while FAA officials noted that another key contributor to the program's mixed progress was that NextGen had a flat budget for several years, we found that the actual budget reported in FAA's congressional budget justification generally aligned with the amounts in the President's budget request. For example, as reflected in FAA's congressional budget justifications for fiscal years 2012 through 2023, FAA's budget requests and actual budget for NextGen—including system deployment—have remained relatively constant at about \$1 billion annually.<sup>8</sup>

Lastly, we found that FAA's efforts to implement NextGen met four leading practices in program management but fell short in fully meeting five other practices. We made four recommendations to address the five deficiencies to improve FAA's management of NextGen. As of November 2024, FAA had not implemented three of the four recommendations.

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## About One-Third of FAA ATC Systems Are Considered Unsustainable

During fiscal year 2023, FAA determined that of its 138 ATC systems, 51 (37 percent) were unsustainable and 54 (39 percent) were potentially unsustainable.<sup>9</sup> Specifically, after the January 2023 shutdown of the national airspace following the Notice to Air Missions outage, FAA officials conducted an operational risk assessment to evaluate the sustainability of all ATC systems.<sup>10</sup> In addition, the assessment was intended to inform where FAA should focus future investments, funding, and risk reduction activities associated with ATC systems.

The officials rated each of the 138 systems by their sustainability levels on a scale of A through E (rating A represented the least sustainable and rating E represented no sustainment issues). Systems with ratings A

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<sup>8</sup>We used the actual budget amount FAA reflected in its congressional budget justification for each fiscal year, but for fiscal year 2022 used the continuing resolution budget amount FAA reported because the actual budget was not yet available at the time the congressional budget justification was developed.

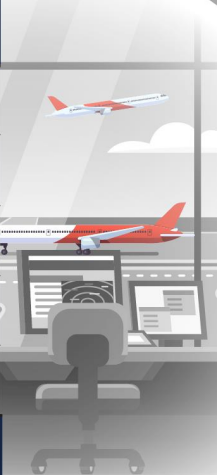
<sup>9</sup>The assessment identified 181 total systems. We excluded 43 of these systems that were classified as the responsibility of the Department of Defense or building facilities.

<sup>10</sup>FAA plans to continue conducting operational assessments of existing ATC systems on an annual basis. As of May 2024, FAA was developing a draft order to formalize this process.

and B are unsustainable and C ratings are potentially unsustainable. Figure 2 summarizes the sustainability ratings of the ATC systems.

**Figure 2: Federal Aviation Administration (FAA) Air Traffic Control (ATC) System Sustainment Ratings**

Rating	Definition of sustainment rating	Number of ATC systems
A	System is considered unsustainable because it has significant shortages in spares, shortfalls in sustainment funding, and little or no technology refresh funding is available.	18
B	System is considered unsustainable because it has significant shortfalls in sustainment funding or capability.	33
C	System is considered potentially unsustainable because it has possible shortfalls in sustainment funding or capability, but technology refresh funding is available.	54
D	System has no sustainment issues, has adequate spares, and sustainment funding.	19
E	System has no sustainment issues; too early for technology refresh.	14
		<b>Total 138</b>



Sources: GAO analysis of FAA 2023 operational risk assessment; iconicbestiary/stock.adobe.com (illustration). | GAO-25-107917

FAA categorizes its ATC systems by criticality. Of the 105 unsustainable or potentially unsustainable ATC systems,

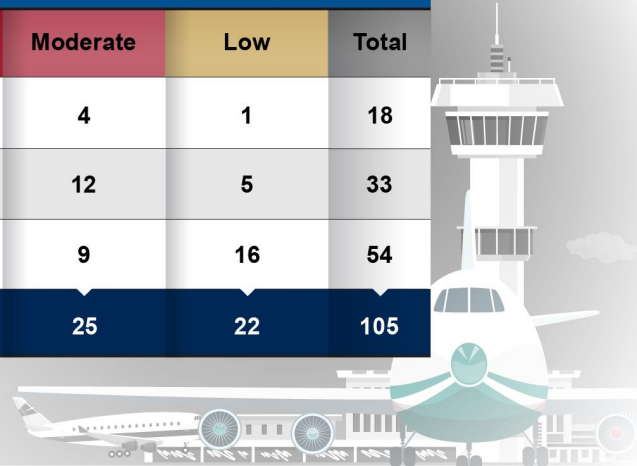
- 29 unsustainable and 29 potentially unsustainable systems have a critical operational impact on the safety and efficiency of the national airspace,
- 16 unsustainable and 9 potentially unsustainable systems have a moderate operational impact on the safety and efficiency of the national airspace, and
- 6 unsustainable and 16 potentially unsustainable systems were mission support systems and were not considered critical.

See figure 3 for a summary of the 105 systems by criticality and sustainability.



**Figure 3: Federal Aviation Administration (FAA) Air Traffic Control (ATC) System Criticality by Sustainment Rating**

Sustainability rating		Number of FAA systems by operational impact			
		Critical	Moderate	Low	Total
A	Unsustainable due to shortages in spares and shortfalls in funding.	13	4	1	18
B	Unsustainable due to shortfalls in funding or capability.	16	12	5	33
C	Potentially unsustainable due to possible shortfalls in funding or capability.	29	9	16	54
<b>Total</b>		<b>58</b>	<b>25</b>	<b>22</b>	<b>105</b>



Sources: FAA 2023 operational risk assessment; serz72/stock.adobe.com (illustration). | GAO-25-107917

Moreover, the ages of the 105 systems vary significantly. Specifically,

- 73 were deployed over 20 years ago, with 40 being deployed over 30 years ago, and six of those deployed over 60 years ago.
- 32 systems were implemented within the past 20 years, with four as recently as 2020.

FAA also reported that of the 105 unsustainable and potentially unsustainable systems, 74 systems (70 percent) face one or more challenges that are historically problematic of aging systems. These challenges include no longer meeting mission needs, difficulty finding spare parts, and limited technical staff with expertise in repairing the aging system. Specifically, the agency reported that 11 systems no longer met FAA mission needs, 62 systems were difficult to maintain due to challenges in finding employees with the requisite knowledge and expertise, and 61 systems involved difficulty in finding spare or replacement parts.

These challenges pose risks to the operations of key ATC systems. According to a February 2024 response from FAA technicians, the top issue facing the agency is system obsolescence and difficulty in finding replacement parts.<sup>11</sup> The response also indicated that inadequate staffing of FAA facilities posed a challenge to maintaining systems because some technicians were responsible for areas spanning hundreds of miles.

<sup>11</sup>In response to discussions with us, the Professional Aviation Safety Specialists (a labor union that represents, among others, national airspace safety inspectors and technicians) used a survey tool to solicit responses to our questions from member FAA employees who maintain the national airspace.

## FAA Has Ongoing Investments to Modernize At-Risk Systems but Did Not Always Establish Near-Term Plans

As of December 2023, the agency had 64 ongoing investments to modernize 90 of the 105 unsustainable and potentially unsustainable ATC systems. Collectively, the systems are intended to be modernized between 2023 through 2038. FAA did not have an associated modernization investment for the remaining 15 systems.

However, FAA has been slow to modernize some of the most critical and at-risk systems. Specifically, when considering age, sustainability ratings, operational impact level, and expected date of modernization or replacement for each system, as of May 2024, FAA had 17 systems that were especially concerning. The 17 systems range from as few as 2 years old to as many as 50 years old, are unsustainable, and are critical to the safety and efficiency of the national airspace. However, the investments intended to modernize or replace these 17 systems are not planned to be completed for at least 6 more years. In some cases, they were not to be completed for at least 10 years.

In addition, of the 15 systems that FAA does not have an associated ongoing modernization investment, four are critical systems and it is unknown when the associated systems will be modernized or replaced. (The remaining 11 systems were of moderate to low operational impact or only potentially unsustainable and not as much of an immediate concern.) Table 1 provides the key factors of the most critical and at-risk ATC systems.

**Table 1: Key Factors of Some of the Most Critical and At-Risk Federal Aviation Administration (FAA) Air Traffic Control Systems (ATC)**

System <sup>a</sup>	Age of system	Sustainability rating <sup>b</sup>	Safety and efficiency operational impact	Completion date for associated modernization investment
System A	30	A: unsustainable	Critical	2035
System B	21	B: unsustainable	Critical	2034
System C	6	B: unsustainable	Critical	2034
System D	30	B: unsustainable	Critical	2031
System E	50	B: unsustainable	Critical	2031
System F	36	B: unsustainable	Critical	2031
System G	25	B: unsustainable	Critical	2031
System H	46	A: unsustainable	Critical	2031
System I	21	A: unsustainable	Critical	2031
System J	28	A: unsustainable	Critical	2031
System K	30	B: unsustainable	Critical	2030
System L	20	B: unsustainable	Critical	2030
System M	7	B: unsustainable	Critical	2030
System N	33	A: unsustainable	Critical	No investment
System O	30	B: unsustainable	Critical	No investment
System P	2	A: unsustainable	Critical	No investment <sup>c</sup>
System Q	30	B: unsustainable	Critical	No investment

Source: GAO analysis of FAA documentation. | GAO-25-107917

<sup>a</sup>This table omits the official names of the 17 systems due to sensitivity concerns. We used generic designations instead.

<sup>b</sup>In 2023 FAA officials conducted an operational risk assessment to evaluate the sustainability of all ATC systems. The officials rated each of the 138 systems by their sustainability levels on a scale of A through E (rating A represented the least sustainable and rating E represented no sustainment issues). Systems with ratings A are considered unsustainable because they have significant sparring shortages, shortfalls in sustainment funding, and little or no technology refresh funding is available. System with ratings B are considered unsustainable because they have significant shortfalls in sustainment funding or capability.

<sup>c</sup>According to FAA officials in May 2024, the agency is taking steps to mitigate priority deficiencies for this system. These efforts are being addressed in operations, rather than through a technical refresh or sustainment investment.

In addition, the key goals of the 2023 operational risk assessment were to identify where FAA should focus future investments, funding, and risk reduction activities associated with ATC systems. FAA officials stated that they used the assessment to determine that the agency had sufficient backup systems and redundancies in place to enable it to avoid a catastrophic incident.

However, according to officials, FAA did not use the results of the 2023 operational risk assessment to prioritize or establish near-term plans to modernize all unsustainable and critical systems identified in its assessment. Specifically, as mentioned previously, FAA has four at-risk systems that do not have any near-term plans for modernization. Officials stated that they did not use the 2023 assessment to prioritize modernization investments because it was not completed in time to inform a 2024 enterprise architecture update.<sup>12</sup> Officials stated that they plan to use the results of the 2024 operational risk assessment to inform future budget decisions and plans for modernization.

Without near-term modernization plans for these systems, critical ATC operations that these systems support may continue to be at-risk for over a decade before being modernized or replaced. Specifically, FAA can take well over a decade to implement modernization investments once initiated. Of the nine investments that we reviewed that had established cost, schedule, and performance baselines, FAA plans to take an average of 12 years and 8 months to complete all deployment activities. In addition, four of these investments plan to take as long as 15 to 19 years to implement. For example, while the Terminal Flight Data Manager modernization investment was initiated in September 2010, as of May 2024, FAA estimated it will not be completed until 19 years later, in February 2030.<sup>13</sup> Similarly, the Common Support Services-Weather system modernization investment was initiated in December 2010, but is not estimated to be completed until April 2026 (over 15 years later).<sup>14</sup>

The FAA Reauthorization Act of 2024 requires that by February 2026, FAA conduct an audit and report to Congress on the results to, among other things, determine the level of risk and impact associated with

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<sup>12</sup>Each year, FAA updates the national airspace enterprise architecture roadmaps that highlight a 15-year view of modernization of the national airspace and a list of investments associated with each roadmap. The roadmaps include acquisition milestones as defined by the FAA acquisition management policy and any interdependencies between the investments. This helps to facilitate planning and scheduling for the approval, funding, acquisition, and deployment of related systems, equipment, or capabilities. Proposed capital investments must be presented to the JRC for review and approval before they begin. Once approved, an investment will be added to the national airspace enterprise architecture and be included in the President's budget submittal to Congress.

<sup>13</sup>The Terminal Flight Data Manager modernization investment is intended to support new services that provide automation to current, manually intensive operations and replaces critical, outdated systems in the national airspace. It shares electronic data among controllers, air traffic managers, aircraft operators, and airports. It also enables stakeholders to more efficiently stage arrivals and departures and manage surface traffic flow. As of May 2024, this investment was in the process of rebaselining, which may impact planned time frames.

<sup>14</sup>The Common Support Services-Weather project is intended to offer weather products for integration into air traffic decision support systems, improving the quality of traffic management decisions and reducing controller workload during severe weather. Products will be provided via a set of common web services for weather, using internationally recognized data access and data format standards.

outdated, unsafe, or unstable legacy systems.<sup>15</sup> The act also requires that the report provide recommendations for system replacements or enhancements.

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However, in the interim, Congress may not have important information on how FAA is mitigating risks related to critical systems. Accordingly, we recommended that FAA report to Congress on how it is mitigating risks of all unsustainable and critical systems that are identified in the annual operational risk assessments. Transportation concurred with our recommendation.

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## Selected Modernization Investments Took Years to Baseline and Progressed Slowly

According to the Office of Management and Budget (OMB), diligently tracking the execution of well-crafted plans can provide early warning of potential problems and enable timely and effective mitigation before problems spiral out of control.<sup>16</sup> Baseline plans act as a guide throughout the life of an investment to provide a basis for measuring performance.<sup>17</sup> In addition, according to FAA acquisition policy, once an investment establishes a baseline, the investment receives additional oversight from the Joint Resources Council (JRC)—FAA’s executive acquisition governance board.

Of the 20 selected investments we reviewed, 11 of the investments were required to establish an acquisition program baseline, and nine of them did so accordingly.<sup>18</sup> However, it often took several years after investment initiation to accomplish this. Specifically, eight of the 11 selected investments took longer than 4 years to establish a baseline. The Next Generation Very High Frequency and Ultra High Frequency Air-to-Ground Communications Phase 2 investment took the longest amount of time at 6 years and 8 months.<sup>19</sup> As another example, the Offshore Automation Phase 1 investment took 5 years and 6 months to establish a baseline.<sup>20</sup> In addition, while the Aeronautical Information Management Modernization Enhancement<sup>21</sup> and FAA Enterprise

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<sup>15</sup>Pub. L. No. 118-63, 138 Stat. 1025 (2024)

<sup>16</sup>OMB, *Information Technology Investment Baseline Management Policy*, M-10-27 (Washington, D.C.: Jun. 28, 2010).

<sup>17</sup>Baseline is defined as the approved costs, schedule, and performance goals for a given investment.

<sup>18</sup>We selected 20 of the 65 investments intended to replace unsustainable and potentially unsustainable ATC systems. Specifically, we selected the 20 investments based on, among other things, the operational impact on the safety and/or efficiency of the national airspace, acquisition type, and lifecycle cost. For each investment, we compiled cost, schedule, and descriptive information from investment planning and oversight documents, such as the acquisition program baselines, execution plans, and quarterly investment metrics from a centralized investment data repository. We performed reliability checks on the data against other data sources, such the IT Dashboard.

<sup>19</sup>The Next Generation Very High Frequency and Ultra High Frequency Air-to-Ground Communications Phase 2 modernization investment is intended to replace and modernize aging and obsolete air-to-ground analog radios that allow direct voice communication with pilots. These radios are to support Voice Over Internet Protocol and meet modern requirements.

<sup>20</sup>The Offshore Automation Phase 1 investment aims to develop system enhancements to increase the productivity, capacity, flight efficiency, safety, and system availability of the offshore sites in Alaska, Hawaii, Guam, and Puerto Rico.

<sup>21</sup>The Aeronautical Information Management Modernization Enhancement 1 modernization investment is expected to consolidate redundant sources of aeronautical data (i.e. navigational aids and notices to air missions) and systems and provide the foundation to expand aeronautical information exchange among existing applications, air traffic management automation systems, and national airspace stakeholders.

Network Services<sup>22</sup> investments were initiated over 6 years ago, as of May 2024, neither had established an approved acquisition program baseline. FAA officials explained that some investments take a while to develop a baseline because of the complexity of the requirements or large number of affected stakeholders.

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As a result, these pre-baselined investments receive limited oversight from the JRC for several years. Specifically, while FAA acquisition policy states that baselined investments are required to attend quarterly oversight meetings with the JRC, these oversight requirements do not exist for investments that have not been baselined.

In April 2024, FAA officials stated that they were in the initial phase of planning to establish greater accountability for investments prior to establishing a baseline. Specifically, officials stated that they are considering providing investments increased oversight when requesting additional resources for investment activities, beyond what was initially allocated, or when pre-baseline milestones are delayed. In May 2024, officials stated that FAA has not taken any further steps toward this goal.

To address the lack of accountability of pre-baselined investment, we made two recommendations:

- FAA should establish a time frame for developing and implementing guidance to increase JRC oversight of pre-baselined investments that require additional resources or time prior to establishing a baseline.
- FAA should ensure that ATC modernization investments establish baselines in an expeditious manner.

Transportation partially concurred with the first recommendation. To clarify our intention and address comments from Transportation, we added contextual language to this recommendation. The agency's planned actions should help meet the intent of our recommendation, if effectively implemented. Transportation concurred with the second recommendation. In December 2024, FAA officials stated that they do not have an update on actions they have taken to address these recommendations. They stated they would provide an update in March 2025.

In addition, we found that selected investments have progressed slowly. As discussed earlier, most of the selected modernization investments we reviewed plan to take many years before first deploying functionality and completing all deployment activities—with some taking as many as 15 to 19 years. Among other things, a key risk of slow system implementations is that the technology may be out of date by the time systems are implemented. For example, a November 2023 National Airspace System Safety Review Team report found that while En Route Automation Modernization was initiated in 2004, it was not delivered until 10 years later.<sup>23</sup> This process led to En Route Automation Modernization being deployed with outdated technology that needed a major technology refreshment within 5 years of implementation.

We have previously reported that segmenting large complex system development and implementation efforts into smaller and more manageable increments has the potential to reduce risk and deliver capabilities more

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<sup>22</sup>FAA Enterprise Network Services modernization investment is intended to provide FAA with modern ethernet/internet protocol telecommunications infrastructure (e.g., cabling) to, among other things, enable highly available and secure voice and data communications and networking capabilities needed to enable critical operations.

<sup>23</sup>National Airspace System Safety Review Team, *Discussion and Recommendations to Address Risk in the National Airspace System* (Washington, D.C.: Nov. 15, 2023).

quickly.<sup>24</sup> Since 2000, OMB has directed agencies to incorporate an incremental development approach into their policies and ensure that investments implement them.<sup>25</sup> Further, since 2012, OMB has required that functionality be delivered to users at least every 6 months.<sup>26</sup> Consistent with OMB's guidance, FAA's

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acquisition management policy states that the JRC is responsible for reviewing and approving investments that are organized as manageable segments.

However, the Council had not ensured that selected investments deliver functionality in manageable segments. For example, the JRC allowed two investments (i.e., Enterprise Information Display System phase 1 and NextGen Weather Processor), to proceed even though neither was organized in manageable segments to deliver functionality incrementally.<sup>27</sup> Specifically, the Enterprise Information Display System phase 1 investment was initiated 8 years ago and had not delivered any functionality to users. Similarly, NextGen Weather Processor was initiated 14 years ago and had yet to deliver any functionality to users.

FAA officials acknowledged that they should do more to identify opportunities to segment investments and deliver functionality to users more rapidly across all ATC system modernization investments. Specifically, in March 2024 the agency established a working group to develop guidance on segmenting investments. However, FAA officials did not provide specific time frames for developing and implementing this guidance.

Accordingly, we recommended that FAA establish a time frame for developing and implementing guidance that the JRC ensures that ATC system modernization investments are organized as manageable segments. Transportation concurred with our recommendation. Similar to the previously discussed recommendations, in December 2024, FAA officials stated that they do not have an update on actions they have taken to address the recommendation. They stated they would provide an update in March 2025.

In summary, FAA's reliance on a large percentage of aging and unsustainable or potentially unsustainable ATC systems introduces risks to FAA's ability to ensure the safe, orderly, and expeditious flow of up to 50,000 flights per day. In our September 2024 report, we emphasized that while FAA has ongoing investments aimed at modernizing aging ATC systems, the agency's progress to modernize some of the most critical and at-risk systems has been slow. As such, in our report we made seven recommendations to FAA aimed at, among other things, improving accountability of the replacement of these systems and reducing the amount of time the agency takes to modernize them. FAA officials were unable to demonstrate any actions they are taking to

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<sup>24</sup>GAO, *Information Technology Reform: Agencies Need to Improve Certification of Incremental Development*, [GAO-18-148](#) (Washington, D.C.: Nov. 7, 2017); and *High Risk Series: An Update*, [GAO-15-290](#) (Washington, D.C.: Feb. 11, 2015).

<sup>25</sup>OMB, *Management of Federal Information Resources*, Circular No. A-130 Revised, Transmittal Memorandum No. 4. OMB's 2012 and 2013 guidance reaffirmed and strengthened these requirements. Executive Office of the President of the United States, OMB, *Analytical Perspectives, Budget of the U.S. Government, Fiscal Year 2014*, (Washington, D.C.: April 10, 2013), p. 354; and OMB, *Contracting Guidance to Support Modular Development* (Washington, D.C.: June 14, 2012).

<sup>26</sup>OMB, FY 2016 IT Budget—Capital Planning Guidance (Washington, D.C.: May 23, 2014); Guidance on Exhibits 53 and 300—Information Technology and E-Government (2013); Guidance on Exhibits 53 and 300—Information Technology and E-Government (2012).

<sup>27</sup>The Enterprise Information Display Systems is intended to replace information display systems that display aircraft, aeronautical, and other types of information that are currently in use at approximately 400 facilities (e.g., air traffic control centers) with about 5,000 display systems. It was initiated in June 2016 and is estimated to be completed in December 2027. The NextGen Weather Processor is intended to replace FAA's aging weather processor systems and provide new capabilities, such as developing a common weather processing platform. This platform uses algorithms to create and display aviation-specific current and predicted weather. It was initiated in December 2010 and is estimated to be completed in April 2026.

address our recommendations; however, expeditious implementation of our seven recommendations will be vitally important to help the agency manage risks while it addresses its unsustainable systems.

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Chair Duckworth, Ranking Member Moran, and Members of the Subcommittee, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

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## GAO Contacts and Staff Acknowledgments

If you or your staff have any questions about this testimony, please contact Kevin C. Walsh, Director of Information Technology and Cybersecurity, at (202) 512-6151 or [walshk@gao.gov](mailto:walshk@gao.gov), or Heather Krause, Managing Director of Physical Infrastructure at (202) 512-2834 or [krauseh@gao.gov](mailto:krauseh@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement.

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**Letter**

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