

GAO Highlights

Highlights of [GAO-24-107001](#), a report to congressional committees

Why GAO Did This Study

The FAA, within the Department of Transportation, safely manages over 50,000 flights daily. Air traffic controllers use a myriad of systems to, among other things, monitor weather, conduct navigation and surveillance, and manage communications. However, over the past several decades, FAA has been experiencing challenges with aging ATC systems. These challenges are due to, among other things, availability of parts, growing airspace demand, and expanding mission needs. FAA anticipates continued growth and forecasts that air travel will increase, on average, by 6.2 percent annually.

Due to concerns about growing air traffic demands and aging systems, GAO was asked to review FAA's modernization of outdated systems that support air traffic controller operations. The specific objectives in this report were to (1) identify unsustainable and potentially unsustainable ATC systems, (2) determine the extent to which FAA has ongoing investments to modernize unsustainable and potentially unsustainable systems, (3) determine the progress FAA has made in baselining and implementing selected modernization investments, and (4) assess the extent to which FAA is effectively overseeing the implementation of selected ATC modernization investments.

To address these objectives, GAO reviewed FAA's inventory of ATC systems and the results of an FAA 2023 assessment of system sustainability. Additionally, GAO reviewed a list of ATC modernization investments and compared the actions FAA took in response to the 2023 assessment.

View [GAO-24-107001](#). For more information, contact Kevin Walsh at (202) 512-6151 or walshk@gao.gov or Heather Krause at (202) 512-2834 or krauseh@gao.gov

AIR TRAFFIC CONTROL

FAA Actions Are Urgently Needed to Modernize Aging Systems

What GAO Found

After a shutdown of the national airspace in 2023 due to an aging air traffic control (ATC) system outage, Federal Aviation Administration (FAA) conducted an operational risk assessment to evaluate the sustainability of all ATC systems. The assessment determined that of its 138 systems, 51 (37 percent) were unsustainable and 54 (39 percent) were potentially unsustainable (see figure 1).

Figure 1: 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
		Total 138

Sources: GAO analysis of FAA 2023 operational risk assessment; iconicbestiary/stock.adobe.com (illustration). | GAO-24-107001

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 2).

Figure 2: Federal Aviation Administration (FAA) Air Traffic Control (ATC) System Safety and Efficiency Operational Impact Categories by Sustainment Rating

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

Sources: FAA 2023 operational risk assessment; serz72/stock.adobe.com (illustration). | GAO-24-107001

FAA has 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 are not planned to be completed for at least 6 years, and in some cases, they will not be completed for 10 to 13 years. In addition, FAA does not have ongoing investments associated with four of these critical systems and thus it is unknown when the associated systems will be modernized (see table 1).

GAO also selected 20 modernization investments to determine the progress made in baselining and implementing the investments. GAO selected the investments based on, among other things, the operational impact on the safety and/or efficiency of the national airspace, acquisition type, and lifecycle cost.

Finally, GAO selected three investments for closer review based on their sustainability ratings and lifecycle cost estimates. GAO then assessed each of the three investments' oversight documentation. GAO also assessed documentation of general practices of FAA's acquisition oversight council. GAO compared this documentation to requirements from FAA and OMB.

What GAO Recommends

GAO is making seven recommendations to FAA to: (1) report to Congress on how it is mitigating risks of all unsustainable and critical systems that are identified in the annual operational risk assessments, (2) establish a time frame for developing and implementing guidance to increase oversight of pre-baselined investments that require additional resources or time prior to establishing a baseline, (3) ensure that ATC modernization investments establish baselines in an expeditious manner, (4) establish a time frame for developing and implementing guidance that ensures that ATC system modernization investments are organized as manageable segments, (5) ensure consistent reviews by the oversight council of all high-risks facing ATC modernization investments, (6) require that the program offices for three selected systems and the FAA oversight council each ensure that the acquisition management documentation are finalized prior to the council approving the investments to proceed to future phases of the investments' lifecycles, and (7) document approval of the business case for the three selected investments before submission to OMB and the IT Dashboard.

Transportation concurred with six of GAO's recommendations and partially concurred with one, which GAO clarified to address the department's comment.

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

System ^a	Age of system	Sustainability rating ^b	Safety and efficiency operational impact	Completion date for associated 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 ^c
System Q	30	B: unsustainable	Critical	No investment

Source: GAO analysis of Federal Aviation Administration (FAA) data. | GAO-24-107001

^aThis table omits the official names of the 17 systems due to sensitivity concerns.

^bIn 2023 FAA officials conducted an operational risk assessment to evaluate the sustainability of all ATC systems. The officials rated each system by their sustainability levels on a scale of A through E (rating A represented the least sustainable and rating E represented no sustainment issues).

^cAccording to FAA officials, the agency is taking steps to mitigate priority deficiencies for this system.

The results of the 2023 operational risk assessment were intended to prioritize investment decisions. However, FAA did not prioritize or establish near-term plans to modernize unsustainable and critical systems based on its operational assessment. Until FAA reports to the Congress on how it is addressing all critical systems, Congress will not be fully informed on how FAA is mitigating the risks of these systems.

Moreover, while FAA policy indicates that pre-baselined investments receive limited oversight, many of the 20 selected investments that were required to establish a cost, schedule, and performance baseline have been slow to accomplish this. Specifically, the 11 applicable investments took an average of 4 years and 7 months to establish their baselines. In addition, one investment took 6 years and 8 months, and, as of May 2024, two others that were initiated over 6 years ago had not established their baselines. FAA officials acknowledged the gaps in accountability and stated that they were in the initial phase of planning to establish greater accountability. Until FAA establishes a time frame for developing and implementing guidance to increase oversight of pre-baselined investments that require additional resources or time, the agency will continue to experience protracted lengths of time in establishing investment baselines. In addition, until investments establish baselines in an expeditious manner, the agency will be unable to diligently track the execution of plans or mitigate risks.

Lastly, FAA has not consistently provided oversight of ATC modernization investments. Specifically, FAA's acquisition oversight council had not ensured that investments deliver functionality in segments. In addition, while the council held quarterly reviews for investments, it did not consistently monitor high risks. Moreover, for three selected investments, GAO found that the council reviewed some, but not all, required documentation prior to approving investments to proceed to the next lifecycle phase. Lastly, FAA oversight officials did not annually approve the business cases for the three investments, before submitting them to the Office of Management and Budget (OMB) and the federal IT investment transparency website (IT Dashboard). This limits FAA's ability to mitigate cost and schedule overruns, increases the risk of system failures, and reduces informed decision making.