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Subcommittee on Aviation Operations, Safety, and Security  
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# **Progress and Challenges in Meeting Expectations for NextGen**

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Chairwoman Cantwell and Members of the Subcommittee:

Thank you for inviting me here today to testify on the Federal Aviation Administration's (FAA) progress and challenges in developing the Next Generation Air Transportation System (NextGen)—a multibillion-dollar transportation infrastructure project aimed at modernizing our Nation's aging air traffic system. Since the effort began almost a decade ago, we have reported on longstanding challenges and barriers that have limited FAA's progress in delivering NextGen capabilities, such as the Agency's inability to set realistic plans, budgets, and expectations, and clearly identify benefits for stakeholders.

The FAA Modernization and Reform Act of 2012 (the act) included 24 provisions intended to help FAA better manage NextGen. In addition, in September 2013, the NextGen Advisory Committee (NAC)—a joint Government-industry committee—delivered a report at FAA's request with recommendations for prioritizing NextGen activities.

My testimony today will focus on FAA's progress in (1) implementing NextGen-related provisions of the act, (2) responding to NextGen priorities recommended by the NAC, and (3) minimizing risks in implementing critical automation systems.

## **IN SUMMARY**

FAA has implemented or is on target to implement more than half of the act's 24 NextGen-related provisions, including appointing a Chief NextGen Officer. However, FAA has yet to meet provisions intended to accelerate the development of critical NextGen technologies, including a key element of the Automatic Dependent Surveillance Broadcast (ADS-B) program—a cornerstone technology for FAA's goals to transform air traffic management. FAA's inability to meet these provisions and deliver NextGen capabilities is due to underlying programmatic challenges, such as the lack of an executable plan for coordinating among multiple programs, unresolved complex technical and operational issues, and ineffective collaboration with industry. FAA is also in the early stages of responding to the NAC's recommended investment priorities for advancing NextGen, including establishing performance-based navigation (PBN). Consistent with our work, the NAC confirmed the importance of PBN, which can provide significant near-term benefits to airspace users. However, obstacles such as a lack of updated controller policies and procedures make it uncertain when users can expect these benefits. Finally, FAA continues to face technical, cost, and schedule risks with its efforts to modernize or replace air traffic control automation systems that are fundamental to achieving NextGen benefits.

## MORE THAN HALF OF THE ACT'S NEXTGEN MODERNIZATION PROVISIONS HAVE BEEN IMPLEMENTED

As we testified in February 2014,<sup>1</sup> FAA has made progress implementing the act's NextGen provisions. As of June 2014, FAA has implemented or is on target to implement 16 of 24 NextGen-related provisions—including 3 provisions intended to advance new air traffic procedures and technologies and increase accountability. Specifically:

- In May 2012, FAA established a program that uses third parties to develop and test advanced navigation procedures at five mid-sized airports.
- In October 2012, the Agency completed a multi-agency NextGen Integrated Work Plan that defines the responsibilities of partner agencies—such as the Department of Defense and the National Aeronautics and Space Administration—for conducting NextGen-related research.
- In June 2013, FAA appointed its Deputy Administrator as the Chief NextGen Officer. The Deputy Administrator will oversee FAA's NextGen modernization efforts, including coordinating NextGen budgetary and planning activities across the Agency's lines of business and with partner agencies.<sup>2</sup>

Despite this progress, FAA and the Department have not implemented key provisions that are intended to accelerate the development of NextGen technologies and achieve the full range of NextGen benefits. Most notably, FAA has not carried out important provisions related to accelerating ADS-B—the foundation for shifting from today's ground-based radar to NextGen's satellite-based systems. Although FAA has mandated that all airspace users purchase and install *ADS-B Out*—onboard avionics for broadcasting flight information to controllers and FAA ground systems—it has not issued a mandate for *ADS-B In*,<sup>3</sup> which enables the display of the broadcast information in the cockpit. Moreover, the Department has not established a public-private incentive program to encourage users to install NextGen avionics equipment on aircraft.

The act directed FAA to begin a rulemaking process for *ADS-B In*, with the goal of mandating the new technology by 2020 for aircraft operating in capacity-constrained airspace. However, technical requirements for *ADS-B In* continue to evolve, raising questions about whether the technology will be available by 2020. A report<sup>4</sup> by the

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<sup>1</sup> *FAA's Implementation of the FAA Modernization and Reform Act of 2012 Remains Incomplete* (OIG Testimony No. CC-2014-010), February 5, 2014. OIG reports and testimonies are available on our Web site at <http://www.oig.dot.gov/>.

<sup>2</sup> Recognizing the need to better position the Agency to execute NextGen, FAA announced a major reorganization in 2011. Specifically, FAA appointed an Assistant Administrator for NextGen, who reports directly to the FAA Deputy Administrator, and established a new Program Management Office.

<sup>3</sup> *ADS-B In* technology provides pilots with information transmitted from ADS-B ground stations as well as other aircraft. If an operator chooses to equip an aircraft with ADS-B In avionics, a compatible display is needed to view the information.

<sup>4</sup> "A Report from the ADS-B In Aviation Rulemaking Committee to the FAA," September 30, 2011.

*ADS-B In* Aviation Rulemaking Committee cautioned that the air-to-air<sup>5</sup> applications for *ADS-B In* were not mature and that the costs and benefits were uncertain. The report also stated that FAA lacks well-defined policy, equipment standards, certification and operational approval guidance, procedures, and ground automation—all prerequisites for a successful rulemaking effort. As a result, it is uncertain when FAA will be in position to mandate *ADS-B In* and enhance airport capacity.

While FAA explores options for NextGen rulemaking initiatives, the Agency has taken some near-term actions to advance ADS-B. FAA is providing funding for airlines to purchase ADS-B equipment, and has entered into partnerships with several U.S. airlines to develop and demonstrate *ADS-B In* applications and procedures. For example, US Airways plans to install ADS-B systems in 20 Airbus A330 aircraft to assess the use of cockpit displays in maintaining proper spacing between aircraft on arrivals. FAA expects some elements of the demonstrations to be completed in 2017.

As we reported in February 2014,<sup>6</sup> FAA's failure to meet congressional and industry expectations for NextGen is largely due to a number of barriers, such as the lack of an executable plan for coordinating among multiple programs, unresolved complex technical and operational issues, and ineffective collaboration with industry. FAA's NextGen plans—which initially estimated completion by 2025 at a cost of \$40 billion—lack sound strategies for implementing a system that could handle three times more traffic while reducing FAA's operating costs. Moreover, FAA's organizational culture—which is highly operational, tactical, and safety-oriented—has been slow to embrace NextGen's transformational vision. Gaps in leadership have further undermined the Agency's efforts to advance NextGen. These weaknesses have contributed to stakeholders' skepticism about NextGen's feasibility and airspace users' reluctance to invest in costly equipment.

The extent to which FAA realigns and consolidates the Nation's air traffic control facilities will be another important component of the Agency's NextGen efforts. In compliance with the act, in December 2013, FAA provided Congress with a plan for consolidating and realigning its air traffic facilities. The plan, developed collaboratively with the National Air Traffic Controller Association and Professional Aviation Safety Specialists, institutes a new process for evaluating and recommending realignments of its terminal facilities. However, the plan is less comprehensive than the Agency's previous plans that we reviewed in 2012,<sup>7</sup> as it does not include a process for realigning and consolidating facilities that manage high-altitude traffic.<sup>8</sup> Regardless, as we recommended in 2012, it will be important for the Agency going forward to establish

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<sup>5</sup> Air-to-air as it relates to ADS-B refers to communication of flight information between two or more *ADS-B In*-equipped aircraft to improve situational awareness while in flight.

<sup>6</sup> *Addressing Underlying Causes for NextGen Delays Will Require Sustained FAA Leadership and Action* (OIG Report No. AV-2014-031), February 25, 2014.

<sup>7</sup> *The Success of FAA's Long-Term Plan for Air Traffic Facility Realignments and Consolidations Depends on Addressing Key Technical, Financial, and Workforce Challenges* (OIG Report No. AV-2012-151), July 17, 2012.

<sup>8</sup> En route centers guide airplanes flying at high altitudes through large sections of airspace.

sound metrics to determine whether facility realignments and consolidations will result in measurable cost savings, operational efficiencies, and productivity enhancements.

## **FAA IS WORKING WITH INDUSTRY TO IMPLEMENT HIGH-PRIORITY NAC RECOMMENDATIONS BUT CHALLENGES REMAIN**

The success of FAA's efforts to implement NextGen depends on the Agency's ability to set priorities, deliver benefits, and maintain stakeholder support. To address some of these challenges, FAA is working with industry to implement the prioritized NextGen capabilities recommended by the NAC, which include performance-based navigation (PBN)<sup>9</sup> due to its great potential for providing near-term benefits to airspace users. Although FAA has important PBN efforts under way, the Agency faces obstacles that make it uncertain when airspace users can expect widespread benefits.

### **FAA Is Working With Industry To Develop a Plan With Milestones for Implementing Prioritized NextGen Capabilities**

In July 2013, FAA requested that the NAC<sup>10</sup> review the Agency's NextGen implementation plans and recommend investment priorities, citing uncertainty around funding for NextGen projects. The NAC delivered its report in September 2013 and identified industry's top NextGen priorities based on planned benefits and implementation readiness.

Consistent with our work, the NAC ranked PBN as the top activity that FAA should continue regardless of its budget situation. Introducing new PBN procedures, such as Area Navigation (RNAV) and Required Navigation Performance (RNP),<sup>11</sup> is critical to achieving near-term NextGen benefits, including more direct flight paths, improved on-time aircraft arrival rates, greater fuel savings, and reduced aircraft noise. Other activities that top the NAC's list include unlocking closely spaced parallel runway operations, enhancing airport surface operations through data sharing, and developing capabilities for merging and spacing aircraft to increase PBN use. These priorities are in line with prior NAC recommendations and a Government-industry task force.<sup>12</sup>

FAA is working jointly with industry to develop milestones for implementing the prioritized capabilities, which require operators to make changes to their aircraft and flight operations centers, as well as provide additional pilot training. Specifically, FAA

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<sup>9</sup> PBN is a blanket term for more precise GPS-based navigation methods that allow optimal routing in all phases of flight.

<sup>10</sup> The NAC is a Federal advisory committee that develops recommendations for NextGen portfolios with an emphasis on the midterm (through 2018). The NAC includes representation from affected user groups, including operators, manufacturers, air traffic management, aviation safety, airports, and environmental experts.

<sup>11</sup> RNAV is a method of navigation in which aircraft use avionics, such as Global Positioning Systems, to fly any desired flight path without the limitations imposed by ground-based navigation systems. RNP is a form of RNAV that adds on-board monitoring and alerting capabilities for pilots, thereby allowing aircraft to fly more precise flight paths.

<sup>12</sup> In 2009, an FAA-commissioned RTCA task force made 32 recommendations to advance NextGen and stated that focusing on delivering near-term operational benefits, rather than major infrastructure programs, would help gain industry confidence in FAA's plans and encourage users to invest in NextGen. RTCA, Inc. is a private, not-for-profit corporation that functions as a Federal advisory committee.

and the NAC have established “integrated” work groups to identify specific locations for delivery, timelines for implementation, metrics for measuring benefits, and cost estimates for each of the capabilities. The work groups have been meeting since April 2014 and are working toward an interim report in July 2014, followed by a master implementation plan in October 2014 that will include commitments from both FAA and industry for the next 1 to 3 years.

However, reaching these commitments may prove difficult as airspace users focus on “capabilities,” while FAA focuses on programs and infrastructure. Airspace users also want near-term operational benefits but FAA’s delays in defining NextGen benefits have deepened industry’s reluctance to invest. Moreover, FAA has not always provided a clear understanding of how it will manage and execute implementation and what it will take to deliver these efforts—particularly in managing complex interdependencies among programs, such as PBN and controller automation systems, to minimize risk.

According to FAA officials, the Agency does not plan to adjust its budgets since the current capital funding level will accommodate these investment priorities without trade-offs at this time. We will continue to monitor FAA’s efforts with setting NextGen priorities in our ongoing review of the Agency’s progress in responding to the NAC’s recommendations.<sup>13</sup>

### **FAA Faces Obstacles in Implementing New PBN Flight Procedures To Optimize Near-Term Benefits**

As it works to develop milestones for implementing the NAC’s priority capabilities, particularly PBN, FAA will need to continue its efforts to implement recommendations we made to address barriers identified by our office, FAA, and the NAC. Although FAA has introduced more than 100 RNP procedures at large airports, preliminary data<sup>14</sup> indicate that RNP use is low, particularly at busy airports, such as those in the New York City area. Notably, at the 14 large airports<sup>15</sup> where FAA has implemented advanced PBN procedures with curved approaches to runways,<sup>16</sup> only about 2 percent of eligible airline flights<sup>17</sup> actually used them.

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<sup>13</sup> OIG Audit Announcement, “Review of FAA’s Response to the NextGen Advisory Committee’s (NAC) Recommendations on NextGen Priorities,” February 27, 2014.

<sup>14</sup> FAA tasked MITRE to obtain and analyze data to measure the use of PBN procedures and quantify their benefits. MITRE Corporation manages a research and development center for FAA, the Center for Advanced Aviation System Development.

<sup>15</sup> The 14 large airports are Baltimore-Washington International, Chicago Midway, Denver International, Fort Lauderdale International, Hartsfield-Jackson Atlanta International, JFK International and LaGuardia in New York, Memphis, Minneapolis/St. Paul International, Newark Liberty, San Francisco, Seattle-Tacoma, and Dulles and Reagan National in Washington, DC.

<sup>16</sup> Curved approaches to runways improve the use of airspace by allowing aircraft to avoid critical areas of terrain or conflicting airspace, thus increasing capacity.

<sup>17</sup> An eligible flight is one in which (1) the aircraft was authorized to fly the RNP procedure and (2) the flight was in a position to join the procedure.

Several obstacles have undermined FAA's efforts to increase use of PBN procedures. For example, according to a March 2012 FAA internal study and a June 2013 NAC report,<sup>18</sup> controllers at busy metroplex locations lack automated tools to manage mixed operations—that is, merging aircraft using straight-in approaches with those on curved paths. Other reported obstacles include the lack of clearly defined operational goals for designing PBN procedures, outdated controller procedures, and the lack of standard training for pilots and controllers. In 2012, FAA tasked a team with developing an action plan to address these obstacles, but it remains unclear as to when they will issue a report on the team's plan.

Further, it is uncertain when airspace users can expect widespread benefits. In 2010, FAA launched its metroplex initiative—a 7-year effort to improve the flow of traffic and efficiency at congested airports in 13 major metropolitan areas.<sup>19</sup> While FAA is in the study or design and implementation phase at 9 of 13 metroplex locations, it has only recently implemented new PBN procedures for one location—Houston, TX. According to FAA, airline procedure design and other issues have caused delays at other metroplex sites ranging from 2 months to over 1 year.

According to FAA, the launch of new procedures at Houston in May 2014 was a success; however, the Agency will not know the extent of benefits realized until it completes its 6-month post-implementation assessment. As we reported in August 2012,<sup>20</sup> industry representatives expressed concerns that FAA's metroplex initiative will not maximize benefits because the Agency has not integrated efforts from other related initiatives, such as better managing airport taxiway, gate, and parking area operations. They also stated concerns that FAA has not provided enough advanced PBN procedures—specifically, those that regularly allow for more precise and curved approaches.

As we reported last week,<sup>21</sup> efforts to introduce more advanced routes have been impeded by the lengthy development and approval process for new PBN procedures. In September 2010, FAA reported numerous problems with the process, such as the lack of an expedited method for approving procedures that require only minor revisions, inaccurate interpretations of environmental policies and guidance, and data inconsistencies. To address these problems, FAA made 21 recommendations for streamlining the process for deploying new procedures in an internal review—the NAV Lean project.<sup>22</sup> In June 2011, FAA issued its plan for executing the 21 recommendations

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<sup>18</sup> NextGen Advisory Committee in Response to Tasking from the Federal Aviation Administration, "Recommendation for Increased Utilization of Performance Based Navigation (PBN) in the National Airspace System (NAS)," June 2013.

<sup>19</sup> The 13 metroplex locations are: Atlanta, Boston, Charlotte, Chicago, Houston, Memphis, Northern California, North Texas, Phoenix, Southern California, Washington, DC, Cleveland/Detroit, and South/Central Florida.

<sup>20</sup> *Challenges With Implementing Near-Term NextGen Capabilities at Congested Airports Could Delay Benefits* (OIG Report No. AV-2012-167), August 1, 2012.

<sup>21</sup> *FAA Faces Significant Obstacles in Advancing the Implementation and Use of Performance-Based Navigation Procedures* (OIG Report No. AV-2014-057), June 17, 2014.

<sup>22</sup> NAV Lean was a cross-agency project to streamline policies and processes used to implement instrument flight procedures in response to a 2009 joint FAA-industry task force report recommendation. FAA used the "Lean Management Process" to identify areas of waste.

and to date has implemented 9. However, FAA does not expect to complete the entire NAV Lean initiative until September 2015. Ultimately, industry will not get the full benefits of NAV Lean—to decrease the time it takes to implement new procedures by more than 40 percent—until all recommendations are implemented.

We made three recommendations to help mitigate barriers to PBN implementation and expedite the development of new procedures, including completing an action plan, establishing firm requirements and schedules, and measuring benefits regularly.

## **SIGNIFICANT RISKS REMAIN IN IMPLEMENTING CRITICAL NEXTGEN AUTOMATION SYSTEMS**

FAA's goals for NextGen in the near- and mid-term also depend on the success of its ongoing efforts to deploy new automation systems that controllers use to manage air traffic. However, despite recent progress, FAA continues to face technical, cost, and schedule risks with both its En Route Automation Modernization (ERAM) program—an over \$2.5 billion system for processing en route flight data—and the Terminal Automation Modernization/Replacement (TAMR) program—FAA's effort to modernize terminal air traffic control facilities.

### **FAA Made Progress With ERAM But Recent Outages Have Exposed Vulnerabilities**

FAA's long-term NextGen goals, such as increasing airspace capacity and reducing flight delays, depend on fully implementing the ERAM program. ERAM, which processes flight data to allow controllers to manage traffic at en route air traffic facilities, is a key foundation for realizing the benefits of NextGen's transformational programs, such as new satellite-based surveillance systems and data communications for controllers and pilots.

Following extensive software-related problems that resulted in significant delays and cost increases, FAA has made progress with ERAM over the last 2 years. The Agency is now using ERAM at 18 of FAA's 20 en route air traffic facilities either on a full- or part-time basis—a significant step forward given the extensive problems at the 2 initial sites. FAA plans for all 20 sites to achieve full operational capability and to decommission<sup>23</sup> the legacy system by 2015.

However, as FAA continues to deploy ERAM to the Nation's busiest facilities, such as those in New York City and Washington, DC, it expects to identify new problems that could further impact cost and schedule. FAA is currently spending about \$10.4 million a

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<sup>23</sup> Decommissioning involves the disconnection, removal, and disposal of the HOST legacy computer system once ERAM has been declared operationally ready at a site.

month on the ERAM contract.<sup>24</sup> Also, FAA has already approved an additional \$160 million for ERAM enhancements through 2016 to help address site-specific issues.

In addition, controllers and experts continue to raise concerns about ERAM's capabilities. While these issues are not expected to delay ERAM's expected 2015 completion date, they will need to be addressed for the system to support most NextGen initiatives. Two capabilities raise most stakeholder concerns:

- **Flight Plan Trajectory Modeler**—This capability models aircraft flight paths to predict aircraft conflicts and to ensure accurate handoffs between controllers as they communicate with pilots who transition to airspace controlled by another facility. However, the modeler software has often required adjustments to change the flight plan trajectory to ensure accurate handoffs. According to controllers, improvements are needed to support current operations and NextGen capabilities that use trajectory-based operations.<sup>25</sup>
- **Aircraft Tracking and Sensor Fusion**—This capability allows ERAM to integrate—or “fuse”—multiple radars and satellite-based information for controllers. However, thus far, controllers have not been able to take advantage of this improved capability because of problems accurately integrating radar and satellite data. A MITRE analysis found that the ERAM tracker will require adjustments to use ADS-B and radar together to manage air traffic.

Moreover, two recent major system outages at two sites exposed new vulnerabilities in the ERAM system. The more severe outage occurred on April 30, 2014, at the Los Angeles Center and resulted in a significant disruption in air traffic control operations that impacted thousands of travelers. According to FAA, the outage was triggered by a flight plan for an Air Force aircraft flying at an extremely high-altitude—60,000 feet—far above normal airline travel. This situation triggered an ERAM software glitch that caused the system to attempt to alter other aircraft flight plans, which overloaded the system for about 2 hours. Though less severe, ERAM also experienced an outage at the Miami center in February 2014 that caused delays or cancellations of hundreds of flights.

FAA is working to address the root causes of these outages, has made emergency modifications to the ERAM software, and plans to include a more permanent fix in the next software release due later this year. Nevertheless, these outages raise questions about the long-term stability and security of the system, as well as its ability to support NextGen capabilities. It remains uncertain when ERAM will be stable enough to remove the back-up legacy system as FAA intends.

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<sup>24</sup> This includes both capital and operations funding but does not include NextGen efforts, which are also funded against the same contract.

<sup>25</sup> Trajectory-based operations focus on more precisely managing aircraft from departure to arrival with the benefits of reduced fuel consumption, lower operating costs, and reduced emissions.

## **FAA Faces Significant Cost, Schedule, and Technical Risks in Modernizing or Replacing Automation Systems at Terminal Facilities**

FAA's TAMR program aims to modernize or replace all of the automation systems that controllers rely on to manage traffic at terminal facilities with a single automation platform—the Standard Terminal Automation Replacement System (STARS). If effectively implemented, TAMR is expected to reduce Agency costs and facilitate the implementation of NextGen capabilities. TAMR's current effort involves modernizing automation systems at 11 terminal facilities, 7 of which are the largest and busiest in the Nation. FAA estimates this effort will cost \$438 million and will be completed between 2015 and 2017.

However, as we reported in May 2013,<sup>26</sup> the Agency faces significant cost, schedule, and technical risks to modernize these facilities. Specifically, FAA has yet to identify and finalize all software and hardware requirements that are needed to successfully replace the existing automation system<sup>27</sup> with STARS. Finalizing these requirements involves extensive software development and testing—a lengthy and potentially costly process should issues arise during testing. FAA is currently developing software to address 94 requirements gaps but anticipates identifying more gaps once it begins transitioning to STARS at the busiest facilities. Moreover, because full STARS capability at the 11 terminal facilities is still years away, FAA continues to add new capabilities to existing systems at select facilities to support air traffic operations. The longer FAA maintains and updates existing systems at these sites, the greater the implementation and cost risk because FAA will have to add the same capabilities to STARS.

Furthermore, FAA's current cost and schedule estimates for its TAMR effort are not reliable. For example, FAA's approved program schedule does not include detailed milestones for software testing and implementation, and was not assessed for risk per Agency requirements. In addition, FAA's experience deploying STARS at the first site at Dallas Fort Worth Terminal Radar Approach Control (DFW TRACON) facility is proving more difficult than expected. According to FAA, DFW TRACON achieved initial operating capability (IOC),<sup>28</sup> however, software requirements remain unstable. FAA has identified 46 additional requirements that will be needed to ensure STARS provides at least the same capabilities as the existing system at the site. FAA also determined that meeting the unique needs of the other 10 sites requires more enhancements or modifications than originally planned. As a result, the true timelines and costs to modernize terminal automation systems remain unknown, and FAA will likely have to secure additional funds for the program.

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<sup>26</sup> *FAA's Acquisition Strategy for Terminal Modernization is at Risk for Cost Increases, Schedule Delays, and Performance Shortfalls* (OIG Report Number: AV-2013-097), May 29, 2013.

<sup>27</sup> Common Automated Radar Terminal System (CARTS-III) is the existing automation system currently at the 11 large terminal facilities.

<sup>28</sup> Initial Operating Capability (IOC) is the milestone in which controllers begin to use the system on a limited basis to manage traffic.

We made a number of recommendations to better and more cost-efficiently manage FAA's terminal modernization efforts. FAA generally agreed with our recommendations and has begun working to address them.

## **CONCLUSION**

NextGen is a complex undertaking that will continue to pose challenges to FAA for years to come—challenges that have been exacerbated by unrealistic plans, budgets, and expectations for key NextGen programs. Going forward, FAA will need to provide a clear understanding of Agency priorities to decisionmakers and stakeholders and how the priorities are linked to its budgets. Most importantly, FAA must develop a reasonable and transparent action plan with firm commitments on milestones and metrics for measuring benefits—essential for building stakeholder confidence. Sustained leadership with clear lines of accountability and authority will be key to accelerating NextGen progress. We remain committed to monitoring FAA's NextGen efforts and identifying opportunities to improve implementation.

Chairwoman Cantwell, this concludes my prepared statement. I am happy to answer any questions you or other members of the Subcommittee may have.