

# A REVIEW OF AND UPDATE ON THE MANAGEMENT OF FAA'S NEXTGEN PROGRAM

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(112-103)

## HEARING BEFORE THE SUBCOMMITTEE ON AVIATION OF THE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

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September 7, 2012

**MEMORANDUM**

**TO:** Members, Subcommittee on Aviation

**FROM:** The Honorable Thomas E. Petri, Chairman, Subcommittee on Aviation

**SUBJECT:** Hearing on "A Review of and Update on the Management of FAA's NextGen Program"

Wednesday, September 12, 2012, 10:00 a.m. in room 2167 Rayburn House Office Building

**Purpose**

The Subcommittee on Aviation will receive testimony from federal government and aviation industry witnesses regarding the management and status of the Federal Aviation Administration's (FAA) air traffic control modernization program known as the Next Generation Air Transportation System (NextGen).

**Background**

The national airspace system (NAS) consists of en route<sup>1</sup> airways, much like an interstate highway grid in the skies. Airways are routes in space between fixed points that include

<sup>1</sup> The FAA uses three types of facilities to control traffic: *Airport towers* control airport surfaces and the airspace immediately surrounding airports; *Terminal Radar Approach Control Facilities* (TRACONs) sequence and separate aircraft in terminal airspace (i.e., as they approach and leave airports, beginning roughly 5 nautical miles and ending roughly 50 nautical miles from the airport and generally up to 10,000 to 14,000 feet above the ground); and *Air Route Traffic Control Centers* control aircraft in high-altitude en route airspace (i.e., in transit and during approach to some airports, generally controlling the airspace around and above terminal areas).

navigational radio beacons and waypoints defined by latitude and longitude coordinates and unique names. Because aircraft operating at high altitudes must follow these airways, they often cannot fly the most direct routing from their departure points to their destinations.

Surveillance and separation of aircraft is largely provided by a broad network of radar sites and air traffic controllers who are directly responsible for ensuring adequate separation between aircraft receiving radar services. Maintaining this separation is achieved through extensive use of voice communications between controllers and pilots over open two-way radio frequencies, not so different from the technologies used during World War II.

Under the current system, controller workload, voice communication congestion, limitations of air traffic control (ATC) radar accuracy, and the coverage and accuracy of ground-based navigational signals impose limitations on the capacity and efficiency of air traffic, particularly in busy terminal areas near major airports and metropolitan areas.

The U.S. air transportation system transports roughly 730 million passengers each year, and combined with general aviation activity, results in roughly 70,000 flights over a 24-hour period. The FAA predicts that by 2025, increases in passengers (up 42 percent to 1 billion per year) and general aviation activity will result in air traffic increasing to more than 79,000 flights every 24 hours.<sup>2</sup> It is widely acknowledged that our current air transportation system will not be able to meet the future air traffic demands.

#### **Next Generation Air Transportation System (NextGen)**

The NextGen plan will transform the national air traffic system by transitioning from a ground-based radar system to a satellite-based surveillance system; developing data communications capabilities between aircraft and the ground to reduce controller and pilot workload; improving aviation weather forecasting and monitoring systems; and creating shared and distributed information technology architectures. NextGen will also benefit many communities, as well as passengers and operators, by reducing the environmental impacts of aviation, providing greater system efficiencies, and improving safety.

In 2003, Congress created the Joint Planning and Development Office (JPDO) within the FAA.<sup>3</sup> The JPDO is tasked to plan for, in coordination with federal and non-federal stakeholders, the transformation from the current ATC system to the NextGen system to meet anticipated air traffic demands of 2025. The *FAA Modernization and Reform Act* [P.L. 112-95 (*FAA Reform Act*)] elevated the position of JPDO Director to Associate Administrator, and established additional responsibilities for the new JPDO Associate Administrator.<sup>4</sup>

The *FAA Reform Act* also established a Chief NextGen Officer within the FAA. This position is responsible for, among other things, implementing NextGen activities and budgets across the FAA; coordinating the implementation of NextGen activities with the Office of Management and Budget; reviewing and providing advice on the Administration's

<sup>2</sup> FAA Email to Mike Matousek, Aviation Subcommittee Staff, 8/24/12

<sup>3</sup> P.L. 108-176, Section 709, Air Transportation System Joint Planning and Development Office

<sup>4</sup> P.L. 112-95, Section 208, Next Generation Air Transportation System Joint Planning and Development Office

modernization programs, budget and cost-accounting system with respect to NextGen; and developing an annual NextGen implementation plan. However, at this time the FAA has not put in place a permanent JPDO Associate Administrator or Chief NextGen Officer.

In order to evaluate the FAA's progress in implementing NextGen, the *FAA Reform Act* requires the agency to establish and track several national airspace system performance metrics.<sup>5</sup> These metrics include: 1) actual arrival and departure rates per hour measured against the currently published aircraft arrival rate and aircraft departure rate for the 35 operational evolution partnership airports, 2) average gate-to-gate times, 3) fuel burned between key city airports, 4) operations using the advanced navigation procedures, 5) the average distance flown between key city airports, 6) the time between pushing back from the gate and taking off, 7) continuous climb or descent, 8) average gate arrival delay for all arrivals, 9) flown versus filed flight times for key city pairs, 10) implementation of NextGen Implementation Plan, or any successor document, capabilities designed to reduce emissions and fuel consumption, 11) the Administration's unit cost of providing air traffic control services, and 12) runway safety, including runway incursions, operational errors, and loss of standard separation events.

The FAA is also required to work with aviation industry stakeholders to establish baselines for each individual metric and provide Congress, by August 12, 2012, with a report describing the metrics to be used, information on any additional metrics developed, and a process for holding the Administration accountable for meeting or exceeding the metrics. While the FAA is making progress in establishing metrics and baselines, the agency failed to meet the reporting deadline.

#### **Estimated NextGen Benefits**

The FAA has promised efficiency gains through the implementation of NextGen by optimizing performance and improving operational productivity in the NAS. However, before many airspace users are likely to invest in the expensive avionics from which the benefits of NextGen are derived, they must have confidence in both the business case (i.e., the cost accounting of benefits) and the FAA's ability to manage the NextGen program so the agency can deliver the benefits in a timely manner (i.e., within the needed return on investment window). To encourage equipage, the *FAA Reform Act* authorizes the FAA to establish an equipage incentive program for certain avionics equipment, which the agency is currently discussing and developing with stakeholders.<sup>6</sup>

The FAA estimates that by 2020 NextGen air traffic management improvements will reduce total delays, in flight and on the ground, by roughly 38 percent (dependent on some factors, such as the amount of air traffic) compared with what would happen if no NextGen program was pursued. This delay reduction could provide as much as \$24 billion in cumulative benefits to aircraft operators, the traveling public, and the FAA over this period (dependent on some factors, such as the cost of fuel). The NextGen program is also expected to save 1.4 billion gallons of aviation fuel and reduce carbon emissions by 14 million metric tons.<sup>7</sup>

<sup>5</sup> P.L. 112-95, Section 214, Performance Metrics

<sup>6</sup> P.L. 112-95, Section 221, Public-Private Partnerships

<sup>7</sup> FAA email to Mike Matousek, Aviation Subcommittee Staff, 8/17/12

NextGen will also improve aviation safety by enhancing the situational awareness of pilots and controllers, primarily through the use of Automatic Dependent Surveillance-Broadcast (ADS-B) technology. ADS-B technology will broadcast and receive more precise and frequent situational data that will be available to both pilots and controllers. In today's operating environment, pilots depend heavily on controllers to identify the location of other aircraft in the NAS.

Further, NextGen will benefit airports and communities. With new technologies, NextGen will increase access to commercial and general aviation airports, guide aircraft in and out of airports more efficiently, and enable pilots, controllers, and airport operators to share surface surveillance data. Many surrounding communities will also experience reduced carbon emissions and less noise interference due to more precise aircraft arrival and departure procedures. Ultimately, this will allow a community to make better use of their airport and enjoy many economic benefits that aviation can bring, including job creation.

#### **NextGen Task Force**

In January 2009, the FAA requested that RTCA<sup>8</sup>, a Federal Advisory Committee, establish a government-industry task force to forge community-wide consensus on the recommended NextGen operational improvements to be implemented during the transition to NextGen between 2009 and 2018.<sup>9</sup> The task force was also asked to focus on maximizing NextGen benefits and facilitating the development of the business case for industry investment. More than 300 people participated in the task force, representing nearly every sector of aviation, and in September 2009 the task force released its recommendations.<sup>10</sup>

A recent audit conducted by the U.S. Department of Transportation (DOT), Office of the Inspector General (IG),<sup>11</sup> assessed the extent to which the FAA is responding to the consensus recommendations made by the task force and addressing barriers that may hinder implementation. The DOT IG report found that while the FAA was quick to endorse the task force recommendations, it has made limited progress in implementing them. The DOT IG outlined several issues with FAA's implementation of the RTCA Task Force's near-term NextGen recommendations. These issues are discussed in more detail below:

##### **a. RTCA Recommendation Regarding Metroplex**

The task force recommended that FAA pursue an operational capability program to relieve congestion and tarmac delays at major metropolitan airports and increase efficiency at satellite airports. This program is commonly referred to as the "metroplex" initiative. To

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<sup>8</sup> Organized in 1935 as the Radio Technical Commission for Aeronautics, RTCA, Inc. is a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management system issues. It functions as a Federal Advisory Committee.

<sup>9</sup> [http://www.faa.gov/nextgen/media/nextgen\\_progress\\_report.pdf](http://www.faa.gov/nextgen/media/nextgen_progress_report.pdf)

<sup>10</sup> RTCA, "NextGen Mid-Term Implementation Task Force Report," September 2009.

<sup>11</sup> "Challenges with Implementing Near-Term NextGen Capabilities at Congested Airports Could Delay Benefits," a report by the DOT IG, August 2012.

implement metroplex at the 21 identified metroplex sites<sup>12</sup>, the task force recommended that the FAA leverage Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures and integrate procedure design to de-conflict airports and expand the use of terminal separation rules.<sup>13</sup> The FAA has extended the expected completion date for the metroplex sites by 15 months, from June 2016 to September 2017.

There is concern that the FAA's effort may not deliver all planned or desired benefits since the FAA has focused only on near-term airspace and procedure improvements rather than maximizing new technologies and advanced procedures as recommended by the task force. Airspace users want the FAA to focus its efforts on developing new flight paths that provide for more precise and efficient approaches, rather than designing procedures that overlay existing flight paths.

b. RTCA Recommendation Regarding Data Communications

Currently, communications between pilots and air traffic controllers is largely voice communications over two-way radio. Pilots are required to read back instructions from controllers to confirm that they have properly understood the instructions. Even with this requirement, errors are made that can jeopardize aviation safety, and frequency congestion can interfere with a pilot's ability to contact controllers, or for controllers to contact pilots. Voice communications are also more time consuming and limit an air traffic controller's productivity.

The task force recommended that the FAA address these challenges, and the FAA's answer is the Data Communications (DataComm) program. According to the FAA, DataComm will improve safety and efficiency by replacing voice communications with text message instructions, which for controllers would be generated by automated platforms. This will provide for far more complex maneuvers and allow complicated instructions to be transmitted and confirmed electronically. However, due to delays in modernizing related automation that controllers use to manage high-altitude air traffic, the FAA's timeline for initial service of DataComm has been delayed from 2014 to 2016, with full deployment not expected until 2019.

c. RTCA Recommendation Regarding Equipage Incentives

The task force recommended that the FAA incentivize industry investments in NextGen technologies by providing financial incentives and assistance, by providing a timely, unwavering certainty that operational benefits will justify the cost, or by developing a "Best-Equipped, Best-Served" policy (i.e., prioritizing air traffic control services for those users equipped with new systems). While the *FAA Reform Act* requires the FAA to develop a financial program to

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<sup>12</sup> Washington, DC; North Texas (Dallas); Charlotte; Atlanta; Northern California; Houston; Southern California; New York/Philadelphia; Chicago; Seattle; Las Vegas Valley; South Florida; Boston; Denver; Orlando; Detroit; Memphis; Phoenix; Minneapolis-St. Paul; Cleveland; and Tampa.

<sup>13</sup> RNAV enables aircraft to fly on any desired flight path within the coverage of ground- or spaced-based navigation aids, within the limits of the capability of the self-contained systems, or a combination of both capabilities. RNP is RNAV with the addition of an onboard performance monitoring and alerting capability. A defining characteristic of RNP operations is the ability of the aircraft navigation system to monitor the navigation performance it achieves and inform the crew if the requirement is not met during an operation.

incentivize aircraft equipage, airspace users still remain reluctant to equip with new avionics due to FAA's program implementation delays and a lack of defined or meaningful NextGen benefits.

For example, the FAA is designing many procedures to accommodate the performance capability of the least capable aircraft which offers little operational or financial benefits to airlines. According to the DOT IG, implementing a "best-equipped, best-served" policy will require the FAA to update air traffic control policies and procedures to incorporate the increased capabilities of NextGen technology and to improve interagency coordination. The FAA's training for air traffic controllers on existing and emerging procedures has also been limited and often only consists of briefings rather than comprehensive training on RNAV and RNP. In addition, FAA's Flight Standards Service is responsible for approving new procedures, yet it is unclear what Flight Standards' role is, or will be, in the design and implementation of new procedures.

#### **Status of Key NextGen Programs and Initiatives**

##### **a. Automatic Dependent Surveillance–Broadcast (ADS-B)**

Often characterized as the "backbone of NextGen," ADS-B is the satellite surveillance and tracking method that the FAA has chosen to replace radar.<sup>14</sup> The FAA claims eventually ADS-B, for the first time in aviation history, will allow both controllers and pilots to simultaneously see nearby aircraft. ADS-B is meant to provide enhanced and shared situational awareness for controllers and pilots with far more enhanced precision information, including air traffic location, aircraft type, heading, altitude, and speed. ADS-B is expected to enhance safety, capacity, and reduce fuel burn and emissions. While far more complex, ADS-B is a bit like having GPS in your car.

There are two key components to ADS-B implementation. One is the FAA's deployment of ground infrastructure for controllers. The agency awarded this contract to ITT Corporation in August 2007 and expects to complete this task by 2014. According to the FAA, 456 radio stations have been installed throughout the NAS, of which 400 are currently operational. These radios provide traffic and weather information to nearly 800 properly equipped aircraft on the East Coast, West Coast, and Alaska; support ATC separation in Louisville, Philadelphia, Houston, New Orleans, El Paso, the Gulf of Mexico, and Alaska; and support surface advisory services at Louisville, Philadelphia, Orlando, Seattle, Boston, San Diego, Ft. Lauderdale, and Newark. The FAA estimates that a total of 730 ADS-B radio stations will be needed to meet coverage requirements.

The second part of ADS-B implementation is avionics equipage on aircraft. While radar simply collects radar information from ground-based radar stations, ADS-B technology relies on avionics in the aircraft to broadcast information to ADS-B ground stations. This is a change from the passive surveillance where radars send out a signal that bounces off of the aircraft skin and is collected again by the radar station, to an active surveillance system where aircraft actually broadcast more precise and extensive information from the aircraft. Because avionics

<sup>14</sup> *ADS-B Out* will enable an aircraft to broadcast its position using GPS and *ADS-B In* will enable air traffic controllers and other properly equipped aircraft to receive it.

equipment is critical to ADS-B implementation and given the financial hardships facing aircraft owners, it is important for the FAA to develop operational or financial incentives, or a combination of both.

b. En Route Automation Modernization (ERAM)

The computer system used at the FAA's high altitude en route centers processes flight radar data, provides communications, and generates display data to air traffic controllers. The current system, called the "Host", is being replaced by ERAM, a key automation platform built with NextGen in mind that will enhance air traffic controller productivity.

ERAM is a platform program for NextGen. It will help to advance the transition to NextGen, and many programs, such as ADS-B and DataComm, depend on the successful deployment of ERAM.<sup>15</sup> As ERAM evolves, it will provide benefits to pilots, controllers, and the flying public. For pilots, ERAM increases flexible routing around congestion, weather, and other restrictions. For controllers, ERAM will allow the tracking of roughly 1,900 aircraft at a time instead of the current 1,100 flight capability. Finally, for the traveling public, ERAM will result in improved safety, efficiency, and consistency.

According to the FAA, the ERAM system is fully commissioned in Salt Lake City and Seattle, and the legacy Host system has been decommissioned. Seven additional sites have achieved Initial Operating Capability (IOC) on ERAM (i.e., ERAM is used to manage live traffic at these locations). Three of these sites are continuously operating on ERAM, while the remaining four sites conduct limited and extended operational runs on the system. Most recently, these nine sites have transitioned to a version of ERAM software that will process ADS-B information. The FAA expects to achieve IOC at the remaining eleven centers in Fiscal Year 2013.<sup>16</sup>

The original contract for ERAM was in 2002 and the system was scheduled to be fully implemented in 2010. The FAA now expects ERAM to be operating at all twenty en route centers in Fiscal Year 2013. According to the DOT IG, in part this delay is due to the FAA accepting a system that was not yet ready to be deployed (i.e., data tags were pairing with the wrong aircraft and flights were being dropped). There are also several unknowns, such as the overall cost and eventual capabilities of the system. This is alarming because from January 2010 to June 2012 the FAA spent more than \$641 million on ERAM, which averages to more than \$21 million per month. The DOT IG is expected to publish a report in the coming weeks highlighting concerns with ERAM and making recommendations to address them.

c. Greener Skies

The Greener Skies project is a collaborative project between the FAA, airlines, the Port of Seattle, and Boeing Corporation, intended to make the skies over Seattle quieter and greener.<sup>17</sup> The FAA is expanding the use of Optimized Profile Descents (where the airplane essentially

<sup>15</sup> [http://www.faa.gov/air\\_traffic/technology/eram](http://www.faa.gov/air_traffic/technology/eram)

<sup>16</sup> FAA email to Mike Matousek, Aviation Subcommittee Staff, 8/28/12

<sup>17</sup> <http://www.faa.gov/nextgen/snapshots/slides/?slide=6>

glides in idle to the runway threshold), RNAV arrivals, and RNP approaches. The FAA anticipates these procedures will be available to any properly equipped aircraft in Spring 2013.

Alaska Airlines is partnering with the FAA to develop and implement the Greener Skies project. On June 11, 2012, an Alaska Airlines flight was the first passenger flight to approach the airport using a satellite-based navigation arrival procedure, ultimately resulting in fuel savings and emissions reductions. Alaska Airlines estimates the Greener Skies procedures will cut fuel consumption by 2.1 million gallons annually and reduce carbon emissions by 22,000 metric tons, the equivalent of taking 4,100 cars off the road every year. It will also reduce overflight noise exposure for an estimated 750,000 people living within the flight corridor.

The Greener Skies flight trials will verify air traffic control processes, procedures, and traffic flow management. When Greener Skies is completed the FAA will have a template for how to implement these kinds of airspace improvements across the country. The *FAA Reform Act* requires the FAA to submit a report to Congress regarding the agency's strategy for the implementation and acceleration of the operational capabilities produced by the Greener Skies project as recommended by the RTCA task force.<sup>18</sup> The FAA was required to submit the report to Congress on August 12, 2012. However, it has yet to submit the report.

Other NextGen program mandates and requirements included in the *FAA Reform Act* are outlined in Appendix A.

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<sup>18</sup> P.L. 112-95, Section 225, Reports on Status of Greener Skies Project

**Appendix A**

Section Number	Section Title	Descriptions	Due date
208	Next Generation Air Transportation System Joint Planning and Development Office	Within 6 months of enactment, the head of each Federal agency referred to in paragraph shall execute a MOU with office carrying out activity	August 14, 2012
209	NextGeneration Air Transportation Senior Policy Committee	Within 1 year of enactment the Committee shall submit its annual report, and every year thereafter	February 14, 2013
211	Automatic Dependent surveillance-Broadcast Services	DOT IG shall conduct a review which will be submitted periodically	Periodically
211	Automatic Dependent surveillance-Broadcast Services	FAA will initiate rulemaking proceedings to issue guidelines and regulations within 1 year of enactment	February 14, 2013
211	Automatic Dependent surveillance-Broadcast Services	Within 18 months of enactment Administrator shall develop plan for use of ADS-B technology	August 14, 2013
212	Expert Review of Enterprise Architecture for NextGen	Within 1 year of enactment submit report of review to Congress	February 14, 2013
213	Acceleration of NextGen Technologies	Within 18 months 30% of required procedures at OEP airports must be completed	August 14, 2013
213	Acceleration of NextGen Technologies	Within 36 months of enactment 60% of all required procedures at OEP airports must be completed	February 14, 2015
213	Acceleration of NextGen Technologies	Prior to June 30, 2015, 100 percent of required procedures at OEP must be completed	June 30, 2015
213	Acceleration of NextGen Technologies	Within 6 months Administrator shall publish report for non OEP airports after consultation with industry and labor on RNP procedures	August 14, 2012

213	Acceleration of NextGen Technologies	Within 18 months of enactment 25% required procedures at non-OEP airports to be completed	August 14, 2013
213	Acceleration of NextGen Technologies	Within 36 months of enactment 50% non-OEP airport required procedures completed	February 14, 2015
213	Acceleration of NextGen Technologies	Prior to June 30, 2016 100% of required procedures at non-OEP procedures must be completed	June 30, 2016
213	Acceleration of NextGen Technologies	Deployment Plan for Nationwide Data communications systems within 1 year of enactment	February 14, 2013
214	Performance Metrics	Within 180 days of enactment Administrator of FAA shall establish and begin tracking NAS performance metrics	August 12, 2012
214	Performance Metrics	Within 180 days Administrator shall submit a report with descriptions of metrics	August 12, 2012
217	Inclusion of Stakeholders in Air Traffic Control Modernization Projects	Within 1 year of enactment, submit report on implementation to Congress	August 14, 2012
218	Airspace Redesign	Within 1 year following 1st day of completing of NY/NJ/Philly airspace redesign submit a report to Congress	TBD
219	Study on Feasibility of Development of a Public Internet Web-Based resource on locations of potential aviation obstructions	FAA will issue the report within 1 year of enactment	February 14, 2013
222	Operational Incentives	Administrator shall issue report either within 6 months of enactment or on the date aircraft a required to be equipped with ADS-B pursuant to rulemaking in section 211	August 14, 2012

224	Air Traffic Controller Staffing Initiatives and Analysis	<p>Within 1 year of enactment Administrator shall ensure sufficient number of contract instructors, space and simulators; distribute placement of certified professional ATC training and development controllers at facilities, initiate analysis of scheduling and practices, provide priority to certified professional air traffic controllers in training, assess training programs at failing ATC facilities and prioritize efforts to address recommendation facilities in DOT IG's AV-2099-047</p>	February 14, 2013	
225	report on status of greener skies project	<p>Within 180 days of enactment, FAA shall submit to Congress a report on the strategy of the Administrator for implementing NextGen operational capabilities</p>	August 12, 2012	
225	report on status of greener skies project	<p>Within 180 days of prior report being submitted, FAA shall submit a report on the progress by the Administrator in carrying out the strategy</p>	August 12, 2012	

**Witnesses:**

**Panel I:**

The Honorable John D. Porcari  
Deputy Secretary  
U.S. Department of Transportation

The Honorable Michael P. Huerta  
Acting Administrator  
Federal Aviation Administration

The Honorable Calvin L. Scovel, III  
Inspector General  
U.S. Department of Transportation

Dr. Gerald Dillingham  
Director, Physical Infrastructure Division  
Government Accountability Office

**Panel II:**

Ms. Sue Baer  
Director of Aviation  
The Port Authority of New York and New Jersey

Mr. David J. Barger  
President and CEO  
JetBlue Airways

Mr. Craig Fuller  
President and CEO  
Aircraft Owners and Pilots Association

Mr. Paul Rinaldi  
President  
National Air Traffic Controllers Association



## **A REVIEW OF AND UPDATE ON THE MANAGEMENT OF FAA'S NEXTGEN PROGRAM**

**WEDNESDAY, SEPTEMBER 12, 2012**

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON AVIATION,  
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,  
*Washington, DC.*

The subcommittee met, pursuant to notice, at 10:00 a.m. in Room 2167, Rayburn House Office Building, Hon. Thomas E. Petri (Chairman of the subcommittee) presiding.

Mr. PETRI. The hearing will commence. And my colleague, Mr. Costello, will be here shortly, but I will begin with my opening statement. And I suspect that by the time I am finished, he will be here and we will be able to benefit from that, as well.

Today the subcommittee will hear from Government and aviation industry stakeholders on the FAA's management of and progress toward transforming our Nation's air traffic control system. This program, known as NextGen, is among the largest and most ambitious public works projects in our Nation's history. The successful implementation of NextGen is critical to the future of our air transportation system and U.S. competitiveness in the global marketplace.

Today our air traffic control system is very inefficient. In order to accommodate the roughly 730 million passengers each year and 70,000 flights each day, we need to modernize our system. NextGen will transform air transportation by transitioning to a satellite-based surveillance system, improving communications between pilots and controllers, and developing more efficient navigation routes from start to finish.

The goal is to create a system that is safer, less impacted by weather conditions, better for the environment, and more consistent, with fewer delays. The FAA has made some progress, but it also faces significant challenges. FAA is currently spending roughly \$1 billion each year to develop and implement what we call NextGen. The aviation industry will have to invest billions of dollars to equip their aircraft with the avionics from which the benefits of NextGen will be derived. Unfortunately, the FAA's progress is slower than expected. And, as a result, the industry has been reluctant to invest.

Today's hearing will focus on the benefits that the FAA has delivered to airspace users. The witnesses will discuss FAA's progress with major transformational and NextGen programs. Likewise, the witnesses will discuss challenges the FAA is facing in the implementation of these programs, many of which are outlined in recent

Department of Transportation inspector general and General Accounting Office reports.

It is very clear that everyone, including industry, FAA, and Congress, wants NextGen to succeed. The FAA Modernization and Reform Act enacted earlier this year devoted an entire title to NextGen. Among the many reforms included in the law is the creation of new leadership positions within the FAA that are responsible and accountable for NextGen implementation, and requirements for the FAA to define performance metrics to measure progress and to establish operational or financial incentives for avionics equipage.

Like other major infrastructure programs, NextGen is expensive and hard. This is further complicated by the tight Federal budget. But, according to the Department of Transportation Inspector General, funding has not been a problem. And certainly congressional support for NextGen remains strong.

At the end of the day, the FAA must overcome the challenges and get the job done. The success or failure of NextGen depends on cooperation from everyone involved. And while we need to make more progress, nobody thought this would be easy. And I look forward to hearing from the witnesses, and I thank each of you for your participation here today.

And before we turn to the witnesses for their statements, I ask unanimous consent that all Members have 5 legislative days to revise and extend their remarks and include extraneous material for the record.

[No response.]

Mr. PETRI. Without objection, so ordered. And before recognizing Mr. Costello, I would just like to note that over the 6 years that we have led this subcommittee, he as chairman and me as ranking, or with the situation in reverse this last Congress, we have been committed to working together on a bipartisan basis to provide proper oversight and to ensure that NextGen continues to move forward. This was the case when he was chairman, and it continues today. This will be the last NextGen oversight hearing that we will preside over together on this subcommittee, and I thank him for his diligence and his hard work on this issue over many, many years.

And with that, I now recognize Mr. Costello for his opening remarks.

Mr. COSTELLO. Mr. Chairman, thank you. Mr. Chairman, I have a formal statement that I will enter into the record, and make some brief remarks.

But I do want to state for the record that the chairman is correct. This project, NextGen, is a major project, one of the most difficult undertakings that the FAA and the Department has attempted to undertake in many, many years, if ever. And we have worked very closely together. I think that other committees and subcommittees and the Congress in general could learn some—a few things by watching how this subcommittee has operated. It has been bipartisan, both when I chaired it—I also reached out to—not only to my ranking member, Mr. Petri, but also Members on the other side of the aisle. And Chairman Petri, since he has taken the committee over, he has done the same. He has consulted me, he has worked

with Members on our side of the aisle. So it truly has been bipartisan.

And I have said publicly before that I could not have had a better partner on this subcommittee, both as chairman and when he was my ranking member. And he has been more than fair with me and with our side of the aisle since he has been chairman. So I appreciate all of the courtesies and the friendship that we have established.

Mr. Chairman, thank you for calling the hearing today. As you know, as we have discussed in the past, and most people in this room who have followed and have been involved in NextGen, they know that I have said many times that the best way to keep NextGen on track is for us to hold everyone involved accountable for their actions, that we develop a plan to implement NextGen, and that for—this subcommittee needs to make certain that we monitor the progress.

When I chaired the subcommittee, we held multiple hearings, roundtables. We had a lot of discussions when we started calling hearings, actually, and roundtables. It was very clear to me that the stakeholders, the people that were going to run the system, the people who, in fact, were involved in the system, were not at the table. They were not consulted, which concerned me and concerned Mr. Petri, as well.

I thought it was crazy to try and design a multibillion-dollar system using taxpayers' money without involving those who, in fact, would operate the system. And, in fact, in one of our early roundtables, Mr. Petri will recall, I asked one of the people from the FAA to describe what NextGen was.

Mr. PETRI. I very much remember that.

Mr. COSTELLO. In layman's terms. And the individual could not describe what NextGen was in layman's terms. In fact, he couldn't describe it at all.

So, we knew we had a problem on our hands at that point. And we came together and we have held a number of hearings. It is my hope that in the next Congress, with, I hope, Mr. Petri as chairman of this subcommittee, that we will hold—you will hold additional hearings in the future, to make certain that the stakeholders are involved, everyone is working together.

And we have, in fact, achieved and seen a lot of progress since those early days. We have come a long way, but we have a long way to go. And I trust that the subcommittee will stay actively involved and will provide the oversight that is necessary.

So, with that, Mr. Chairman, I am yielding back the balance of my time, looking forward to hearing our witnesses.

Mr. PETRI. Thank you. Chairman of the full committee, John Mica.

Mr. MICA. Thank you, Mr. Chairman, for holding this hearing, and Mr. Costello, for your leadership. In fact, we are going to miss you. We are getting towards the end here of the Costello regime. But you guys have—both of you provided great leadership to this committee and to aviation. We wouldn't have had an FAA reauthorization without your help, even though it was very difficult to pass that bill and to get the President—although he did it in the

dark of night on February 14th, never sent me flowers or candy, but we did get the bill done.

And one of the most important components of the FAA reauthorization which was stalled again—unfortunately, Mr. Oberstar could not move it when he had the House, the Senate, and the White House, and before that 4 years on the other side, 17 extensions.

But one of the most important aspects of not passing that legislation was not having a blueprint, a formal blueprint, which the FAA authorization provides. And we found in our review that we needed desperately to have milestones, that we need to hold people's feet to the fire, put folks in charge. And we did just that with the bill, and the bill has provided a framework to move forward. It has been the law since February.

But now we find ourselves looking at the progress that has been made. Some you might—some of the blame for not moving forward you might assign to Congress for not having the bill and the policy in place. But nonetheless, it also requires FAA, in its management and leadership role, to act and to provide the administrative and executive leadership to get the—this important program an advancement, taking us from a ground post-World War II radar-based system into a satellite 21st-century system.

Simple thing is—well, let me say two things. One, a few weeks ago we had some near misses. I guess one was at Reagan. But we see them—unfortunately, they are all too common occurrences with aircraft flying close together and near misses, near misses on the ground. And we have only to realize that we will be doubling some of the air traffic over the next couple of decades, and that we will have more planes in the air, we will have more congestion, and our good fortunes to date of not having a major incident in which we lose a large number of lives is—I think that good luck is about running out.

So, shame on Congress for not having acted earlier, the administration on not acting earlier. But now we have the blueprint in place.

The report by the inspector general does highlight, quite frankly, a lack of leadership combined with a bureaucratic—just stalemate, as the FAA fails to move forward on some aspects of getting this new equipment and technology in place. And it is not acceptable, period.

Now, I know we have got a stalemate in the position of—a major position of leadership. But that is not an excuse. This isn't an excuse that Congress hasn't provided. When the policy or, two, the funding, both are in place—and now what we need is moving forward and, again, making certain that the hardware, the software, the systems, and the equipment, and all of the above, as they are in—as they are developed, that they are also deployed in an expeditious fashion.

Another point that I want to make here, too—and I will do everything I can to keep FAA out of the development of the technology itself—FAA should not be developing this technology, or step in the way of its development. This we have seen time and time again, that the private sector does a better job. So we have got to keep the private sector in the forefront with somebody making the deci-

sions and meeting the milestones and, again, the blueprint that has been set out by law.

So, we will hold this hearing, additional hearings, and hold FAA's feet to the fire. The safety of the flying public, the future of aviation, relies on this.

And finally, this is a contest in which, right now, we are maybe slightly a little bit ahead. And it is not because of what we have done—because we haven't done what we should, and FAA hasn't provided the leadership—but this is an international contest to dominate the field of development of next generation air traffic control technology.

This is a contest. The European Union and others who are trying to win this contest, only by their even grosser use of bureaucracy and constraints by bureaucracy, only because they are worse than we are, we are slightly ahead, in my estimation, in this process.

But this will determine who controls the market, both domestically, in changing out the—again, all of the equipment, the software systems—domestically in the United States, and long term, the whole world—and that is very important for jobs, for economic opportunity for the future, and for the future of aviation in the Nation and the world.

So, this is a critical mission. We are here to—we are going to hear today from the inspector general on some of the shortcomings. We need to mark each of these shortcomings and check them off and not tolerate them as we move forward in this process. So again, I am—I intend—and I will be here, unfortunately for some folks—but I will hold people's feet to the fire—ask Mr. Petri and others on the committee for also holding FAA's feet to the fire. We are going to get this done, one way or the other.

Thank you, and I yield back.

Mr. PETRI. Representative Bernice Johnson, Texas.

Ms. JOHNSON. Thank you very much, Mr. Chairman. And thank you for holding this hearing.

With this year's passage of the FAA reauthorization bill, NextGen modification, modernization, will transform the national airspace system. Through NextGen satellite-based traffic management, we will be able to address increased congestion in our Nation's skies, while improving safety and reducing environmental footprint of air transport.

Transitioning to the GPS-based air traffic control system will allow airlines to reduce flight delays, save fuel, and cut the amount of harmful emissions from aircraft engines. In addition, the successful implementation of NextGen will boost our economy and enable the creation of more jobs.

The Dallas Metroplex is a prime example of the significant growth in the aviation market, and the potential benefits of NextGen deployment. As with any metroplex, this growth comes with growing pains. Metroplex sites, by their nature, are located in busy, metropolitan areas. NextGen's use of satellite-based technology is developing more efficient and direct routes in and out of these major airports.

With this efficiency comes with shorter travel times for passengers, fuel savings for airlines, and decreases in emissions for the environment. Yet these advances come with a hefty price tag.

By the FAA's estimates, the development of NextGen will require between \$20 billion and \$27 billion in funding from 2012 to 2025. In addition to Federal funding, private industry is making significant investments in the development of aircraft upgrades and NextGen-capable avionics.

Both as a member of this committee and as ranking member of the House Science, Space, and Technology Committee, as well as a conferee on the FAA reauthorization, I recognize making our skies safer, less congested, and cleaner will require a substantial investment. We must invest in the future. But we must invest wisely. I am concerned with the Department of Transportation inspector general's April 2012 report that the end route automation modernization program implementation schedule has slipped by 4 years and over budget by \$330 million.

In addition, I understand that although progress is being made, the agency has had difficulties in developing performance metrics for NextGen goals.

I want to thank you, Chairman Petri and Ranking Member Costello, for calling this hearing. And I look forward to the testimony of the witnesses today. Because I do believe that we need to implement the NextGen technology.

Thank you, and I yield back.

Mr. PETRI. Thank you. And now we turn to our first panel. And I would like to welcome the Honorable John Porcari, who is the Deputy Secretary of the U.S. Department of Transportation; Michael P. Huerta, Acting Administrator of the FAA. Welcome both, to both of you. And our regulars on this panel, the inspector general of the U.S. Department of Transportation, the Honorable Calvin Scovel, as well as Dr. Gerald Dillingham, director, Physical Infrastructure Issues, Government Accountability Office.

Thank you all for being here. Thank you for—and your staff, for the effort that went into your prepared statements. And, as you know, you are invited to summarize them for—in about 5 minutes for the panel before we turn to questioning.

We will begin with Deputy Secretary Porcari.

**TESTIMONY OF HON. JOHN D. PORCARI, DEPUTY SECRETARY,  
U.S. DEPARTMENT OF TRANSPORTATION; HON. MICHAEL P.  
HUERTA, ACTING ADMINISTRATOR, FEDERAL AVIATION AD-  
MINISTRATION; HON. CALVIN L. SCOVEL III, INSPECTOR  
GENERAL, U.S. DEPARTMENT OF TRANSPORTATION; AND  
GERALD L. DILLINGHAM, PH.D., DIRECTOR, PHYSICAL IN-  
FRASTRUCTURE ISSUES, GOVERNMENT ACCOUNTABILITY  
OFFICE**

Mr. PORCARI. Thank you. Good morning, Chairman Mica, Chairman Petri, Ranking Member Costello, and members of the subcommittee. It is a pleasure to be here today to talk about the progress that the Department has made in transforming our Nation's air transportation system through NextGen.

As you know, we run the largest and safest air transportation system in the world, and we are recognized as a global leader in aviation. At the Department of Transportation, we continually strive to enhance safety.

NextGen is one of the largest infrastructure investments in the United States today. We are moving from a ground-based navigation and surveillance of the last century to a satellite-based system of the 21st century. NextGen is the way of the future, not just for the United States, but for the world. It will improve safety, reduce delays, relieve bottlenecks, and foster the flow of commerce.

Our estimates show that by 2020 NextGen improvements will reduce delays by 38 percent, as compared to what would happen if we didn't do anything. Our forecasts show that airline passenger traffic is expected to nearly double in the next 20 years.

NextGen prepares us to handle this increased demand on our system. The challenges associated with such a complex transformation require the right kind of leadership. Acting Administrator Michael Huerta has done an outstanding job in the last 2 years, intensifying the focus on NextGen within the FAA and with our stakeholders. We needed someone who could take the many technologies of NextGen from concept to reality, and we needed someone who could forge public-private partnerships. Michael has done both.

Under his direction and leadership, we have changed the way we manage large acquisition programs, and we have changed the NextGen management structure. We are already seeing positive results. I applaud Michael for his leadership, and I remain hopeful that the Senate will pass his nomination to lead the FAA. We need a steady hand, a proven professional at the helm to steer us through the many technological changes ahead. Confirming Michael Huerta as the Administrator of the FAA would allow us to name a Deputy Administrator who would serve as the chief NextGen officer, continuing the important day-to-day oversight of NextGen.

We are already seeing real improvements today from NextGen technology. Satellite-based surveillance in the Gulf of Mexico, for example, gives more precise images of the airspace where there is no radar coverage. We worked in collaboration with the oil and gas industry to place radio transceivers on the oil rigs in the gulf. And the largest helicopter company operating in the gulf has equipped its aircraft.

The technology gives pilots much better weather information at lower altitudes, where they operate, which enhances safety. It allows us to increase the number of aircraft flying in the gulf during low visibility conditions, because we know exactly where each aircraft is located. Equipped helicopters in the gulf save up to 10 minutes and 100 pounds per fuel per flight because of the greater efficiency, and they do that in greater safety. That is just one example.

The FAA has also partnered with JetBlue to equip some of its aircraft to take advantage of more direct NextGen routes from Boston and New York down to Florida and the Caribbean. These routes are like HOV lanes that bypass the congestion.

You may have noticed that these examples share something in common. They reflect our commitment to creating public-private partnerships. The Department cannot implement NextGen alone. We are collaborating with industry to discuss the best way to go about this major transformation of our air traffic control system, and what actions we need to take first to produce the best results.

We are working hand in hand with all of our aviation stakeholders. This communication is critical because it helps us align our work with what will produce the best results for the traveling public now.

As this committee well knows, civil aviation is vital to our economy. It contributes 10 million jobs and \$1.3 trillion annually to our Nation's economy. NextGen will help make sure these contributions continue for years to come.

I will stop here and allow Michael to give you more details. Thank you for your support of America's aviation system, and for keeping this economic engine running at full throttle.

Mr. PETRI. Administrator Huerta, go ahead.

Mr. HUERTA. Thank you very much. Good morning, Chairman Mica, Chairman Petri, Ranking Member Costello, and members of the subcommittee.

As you just heard from Deputy Secretary Porcari, NextGen is happening now. It is not something we are doing alone. It is a public-private partnership that will enhance the safety of our aviation system, and lay the groundwork for the United States to continue to operate the safest aviation system in the world.

I have made it a priority to step up our collaboration with our stakeholders externally to increase the focus on NextGen, and to bring benefits to the traveling public now. The FAA has a long history of engaging with industry to develop consensus around policy, programs, and regulatory decisions. We have worked closely with our industry partners such as RTCA, and have incorporated important advice from that organization in our NextGen planning.

We have also established a broad-based panel, the NextGen Advisory Committee, to provide guidance and recommendations on how to equip for NextGen, and how to measure our success. We value the advice of the Joint Planning and Development Office, which handles interagency coordination and long-term planning for NextGen. And we work with the experts at the Institute Management Council, which oversees the NextGen Institute. As always, we work with airlines that are enthusiastic about our pilot programs, and help us to gain valuable NextGen data.

Let me share a few examples of our partnerships for NextGen and the progress that we are making around the country. In Seattle, Washington, as part of the Greener Skies initiative, we are partnering with Alaska Airlines, the Port of Seattle, and the Boeing Company. We have created new NextGen approaches for airlines flying into Seattle-Tacoma International Airport. These flight tracks are shorter. They are more fuel-efficient, and more environmentally friendly. That is a lot of hard work by all of our partners.

And, thanks to that, we reached a milestone this summer. For the first time, Alaska Airlines is flying customers into Sea-Tac using these new NextGen approaches. In fact, these procedures will help all equipped airlines flying into Sea-Tac to significantly cut total fuel consumption annually, reduce carbon emissions, and deliver other important benefits.

And in addition to our partnerships, we have also taken steps to change the way we do business and improve the efficiency of our internal workflow. The results are apparent in our work, tackling

the problem of congested airspace over busy metropolitan areas around the country.

The old way of doing businesses was to improve air traffic procedures at one airport, separate from all the others. But we are now taking a different approach. We are looking at metro areas as a whole, and bringing all the stakeholders to the table: airports, airlines, our air traffic controllers, and Federal agencies. We are working together to improve air traffic flow around all the airports in a metroplex. We are creating new and more direct routes that will relieve congestion and improve safety and efficiency.

By changing the way we approach the problem, we are improving our airspace in 3 years. And under the old way of doing business, these changes would have taken 5 to 10 years. We are seeing great progress in Houston, Atlanta, Charlotte, California, north Texas, and right here in Metropolitan Washington, DC. And more regions will follow.

We have learned lessons from the past regarding our large acquisition programs, and we have developed best practices, moving forward. We have elevated and strengthened our NextGen organization, and we have created a new program management organization specifically focused on implementing major technology programs, such as ERAM, which is our En Route Automation Modernization program. This will strengthen and improve the coordination among NextGen initiatives, ushering them from the drawing board to live operation.

This new approach, as well as our improved working relationship with our unions, is already showing results. ERAM already is operating at nine en route centers around the country. We plan to use it at a total of 20 centers. And now, five centers are using ERAM as the primary technology to direct air traffic. This sets the stage for taking advantage of more NextGen capabilities throughout the air traffic control system.

This is truly an exciting time in aviation history. NextGen is fundamental to ensuring that we continue to operate the world's safest air transportation system for many years to come. It will allow us to deliver more on-time and more fuel-efficient flights. It is a better way of doing business for the FAA, the airlines, the airports, and the traveling public.

Thank you very much for the opportunity to appear before you today. This concludes my testimony, and I am happy to take any questions you might have.

Mr. PETRI. Thank you.

General Scovel?

Mr. SCOVEL. Chairman Mica, Chairman Petri, Ranking Member Costello, members of the subcommittee, thank you for inviting me to testify on FAA's progress in developing NextGen. Since FAA launched this complex program almost 9 years ago, we have reported on cost and schedule risks, as well as challenges that FAA must address to deliver NextGen benefits.

FAA has been responsive to our recommendations, and has taken important steps toward moving NextGen forward, such as establishing a new program management office. However, transitioning from planning to benefits delivered continues to challenge the agency. Today I will focus on three key challenges FAA faces.

The first challenge concerns FAA's Metroplex initiative, an effort to improve the flow of air traffic in major metropolitan areas and reduce delays. FAA has made important progress by aligning budgets and plans, completing airspace and procedure studies, and performing design work at several locations. Despite this progress, the expected completion date is September 2017, 15 months later than initial plans.

Industry representatives are concerned that Metroplex may not deliver all desired benefits, nor adequately integrate other critical capabilities. Of particular concern are delays in implementing DataComm, a capability industry considers key to more precisely manage aircraft for improved fuel consumption and operating costs. Additionally, FAA's Metroplex effort faces barriers such as working across diverse agency offices, improving implementation of new flight procedures, and training of controllers on advance capabilities.

The second challenge relates to the deployment of ERAM, FAA's flight data processing program for high-altitude operations. FAA has installed ERAM at nine sites, a significant step forward, since testing at the two initial sites revealed many software problems associated with safely managing aircraft. FAA's progress is largely due to senior leadership's sustained commitment to resolve problems and improve risk management. Still, controllers, technicians, and users familiar with ERAM have reported an excess of 900 new high-priority software issues, delaying ERAM's nationwide deployment, and resulting in hundreds of millions of dollars in increased costs.

Problems with ERAM exposed fundamental weaknesses in program management and contract oversight. For example, ERAM's cost incentive fee did not motivate the contractor to stay below cost targets, because FAA simply increased the targets as requirements grew. Consequently, FAA paid the contractor \$150 million in incentives, even though ERAM costs exceeded the budget by at least \$330 million.

In response to our findings, FAA modified the ERAM contract to better align incentives to performance targets. FAA is also taking steps to address other programmatic and contract management issues we have identified, including modifying its contract to better track costs. However, unresolved technical and programmatic problems with ERAM continue to affect the cost and schedule of NextGen.

The third challenge relates to the development of NextGen's six transformational programs, which FAA expects will cost \$2.4 billion over the next 5 years. Three programs in particular, ADS-B, SWIM, and DataComm, will provide critical technologies for NextGen, and allow for efficient data sharing among airspace users and better management of air traffic. To date, FAA has yet to develop total cost, schedule, and performance baselines for the six programs.

For example, to realize ADS-B's full range of benefits, FAA must finalize requirements for displaying traffic information in the cockpit. It must also modify the systems that controllers rely on to manage traffic, reduce radio frequency congestion, implement procedures for separating aircraft, and assess security vulnerabilities.

FAA also lacks an integrated master schedule to mitigate operational, technical, and programmatic risks. Dividing larger programs into smaller, more manageable segments, as FAA has done for ADS-B, SWIM, and DataComm can reduce some risks. However, as requirements continue to evolve, programs are left with no clear end state, and decisionmakers lack sufficient information to assess progress. Also, delays with one program can significantly slow another, since the programs have complex interdependencies with each other and with other FAA systems. FAA is now developing an integrated schedule. But to fully populate it, the agency must identify required data such as key system dependencies.

FAA's recent actions to reorganize its NextGen efforts demonstrate its commitment to improve the management of NextGen and its major acquisitions. These efforts are in the early stages, and will focus on improving airspace efficiency at congested airports, resolving problems with ERAM, and addressing uncertainties in NextGen's transformational programs. These challenges are significant, and we will continue to monitor the results of FAA's organizational changes.

Mr. Chairman, this concludes my statement. I will be happy to answer any questions you or other members of the committee may have.

Mr. PETRI. Thank you.

Dr. Dillingham.

Dr. DILLINGHAM. Thank you, Mr. Chairman, Ranking Member Costello, Chairman Mica, Mr. Duncan, and other members of the subcommittee. GAO has been monitoring the transition to NextGen for this subcommittee since planning for the initiative began in 2003. We have made numerous recommendations to FAA to address delays in NextGen's development and acquisitions, improve business processes, and focus on accountability and performance.

Over the last 2 years, FAA has taken several steps, instituted many changes, and implemented several of our recommendations to address these issues. While initial planning focused on having NextGen in place by 2025, more recently FAA has emphasized improvements that can be implemented through the mid-term, which the agency now defines as through 2020.

Our work indicates that FAA views this emphasis as a means to respond to industry skepticism about its ability to implement NextGen, to build support for long-term NextGen investments, and to more quickly address existing inefficiencies and delays in the national airspace system. Overall, FAA is making progress in implementing NextGen. However, our work also shows that stakeholders are concerned about the pace of implementation and, in some cases, about the extent to which the full benefits of NextGen will be realized.

My written statement highlights five challenges, in addition to what the DOT IG just explained, with regard to implementing the NextGen, and the actions FAA has taken to address these challenges.

The five challenge areas that we include: one, delivering and demonstrating NextGen's near-term benefits for stakeholders; two, encouraging operators to equip with NextGen technologies; three, keeping key systems acquisitions on budget and on schedule; four,

clearly defining the NextGen leadership roles and responsibilities for both internal and external stakeholders; and finally, balancing the priorities of the current air traffic control system through the transition to NextGen.

In light of the Federal budget environment, this balancing is particularly important to ensuring NextGen's implementation stays on course, while also sustaining the current air traffic system, a system that will be core of the national airspace system for several years to come.

Mr. Chairman, Ranking Member Costello, and members of the subcommittee, while NextGen is certainly critical to modernizing the current system, increased efficiencies from NextGen improvements alone may not be sufficient to meet projected increases in demand for aviation system capacity. FAA's modeling indicates that even if all NextGen technologies are implemented, some of the 35 busiest airports in the Nation may not be able to handle the forecasted increase in air traffic. If these projections are accurate, additional capacity, including the construction of additional runways, taxiways, and terminal gates will also be needed. Making infrastructure improvements can be a very costly and lengthy process, requiring substantial planning and analysis before they can be implemented.

Thank you, Mr. Chairman. This concludes my prepared statement.

Mr. PETRI. Thank you. Thank you all for your statements. And I would like to begin questioning by asking Mr. Porcari or Mr. Huerta if you have any comments or reactions to the—General Scovel or Mr. Dillingham's statements that were made.

Mr. PORCARI. Thank you, Mr. Chairman. In both cases, the reports have been very helpful in helping us structure steps forward. We appreciate the fact that they recognize the steps that have been taken on NextGen implementation. This is a system of systems, so it is very complex in its implementation. But in every case, we have tried to increase the collaboration with industry, with our partners across the industry spectrum to actually get this technology out there, and get these procedures out there and usable as quickly as possible.

We do recognize this is a U.S. technological leadership issue that is very important.

Mr. HUERTA. Just to add to that, Mr. Chairman, as the Deputy Secretary said, we have had a lot of discussions with the IG and with GAO on the oversight and management of the program. But I think one thing that I want to stress is the management changes that we have made, and the focus on near-term benefit has been just that. It has been what can we do to ensure that, as we make investments, and as our industry partners make investments, and as we collaborate with the workforce that makes all this happen, how do we ensure that, as we make these investments, we are matching benefits so that the users of the system are seeing benefits as these investments move forward.

That is extremely important, and that is what our initiatives such as Metroplex are all about. How do we make sure that users are actually getting benefits now, in things like fuel burn, reduced emissions, reduced cost? And this benefits not only the air carriers,

but also the general aviation community, the business aviation community. Everyone benefits from greater efficiency of the use of the national airspace system.

We want to assure that our system continues to be the safest in the world, and also the most efficient in the world.

Mr. PETRI. Well, I know it is a complicated process, and you have to sort of break it down into pieces, and it involves redoing training manuals and procedures and airlines retraining personnel, and all the rest of it, and coordinating into actually get things done. And trying to coordinate that with investments and new equipment schedules is a perilous process sometimes.

But Mr. Porcari, you have mentioned several times, and we have known the United States has, we think, generally led the world in aviation since the Wright Brothers. And it has been a great asset for the United States, and I think a benefit for the world. Can you discuss some of the implications of what we call NextGen for that leadership, and why it makes a difference beyond, you know, cheering for the good old USA?

Mr. PORCARI. Certainly, Mr. Chairman. I appreciate the question. As you point out, the U.S. has led the world in aviation since the Wright Brothers. NextGen, in particular, because it really is the future of aviation in many ways, is a great opportunity.

While we are collaborating, for example, with the European Union on technological standards for SESAR, their equivalent of this, that has been primarily a planning exercise to date. What we have really focused on, and what Acting Administrator Huerta and the NextGen implementation team have really worked on, is operational benefits now. And we have done that in a way that has been a collaboration with industry.

As Michael pointed out, we have worked hard to bring our workforce into this, something that was not done in the beginning of this program. I think we all understand we would have benefitted from greater collaboration. But we see this today and into the future as an opportunity for the United States, worldwide.

I mentioned before the \$1.3 trillion per year economic impact of the overall industry, both from an export perspective and certainly for future domestic growth. It is something that we see as a core part of our mission. Transportation is also economic development. This is one of the ways that we make the foundational investments for a better future in America. NextGen, as one of the largest infrastructure investments that we are making as a Nation, is one of our primary tools for doing that.

Mr. PETRI. Mr. Costello?

Mr. COSTELLO. Mr. Chairman, thank you. Dr. Dillingham, when you concluded your testimony you made the statement that NextGen may not be able to handle traffic at the busiest airports in the United States. I wonder if you might elaborate on that and, one, why you believe that, and, number two, what needs to be done to address that issue.

Dr. DILLINGHAM. Yes, sir. I was referring to the fact that, based on FAA's forecast of traffic and the current airport capacity, we are still going to have congestion at those airports. The technology of NextGen will help us move planes from place to place and, in some ways, also help manage traffic on the ground.

But if the forecasts come true, we are clearly going to need additional runways and taxiways in order to accommodate that demand. Otherwise, we are going to see the levels of congestion that generated the need for a NextGen.

Mr. COSTELLO. So it is a funding issue. In order to make those improvements, you are dealing with the passenger facility charge and the airport improvement program. Is that correct?

Dr. DILLINGHAM. Clearly, it is a funding issue. But it is also a planning issue. I think one of the big obstacles to infrastructure construction oftentimes, is not bringing in all of the stakeholders early on; particularly the communities, with regard to environmental issues, noise, and emissions. So it is money, as well as stakeholder involvement and some of the other issues.

Mr. COSTELLO. I know that you are aware that in the bill that the House passed in 2007 and again in 2009, we attempted to—in fact we did, in that bill—increase the passenger facility charge. In other words, take the cap off at \$4.50 and take it up to \$7, and increase the AIP fund, where, in fact, the law that—the bill that was passed and the President signed into law, of course, keeps the cap on the PFC fund at \$4.50 and actually reduces funding for the AIP program. So that is a challenge that we are going to have to deal with in the future.

Let me move on to the next question. You have talked about progress has been made on planning and implementation of NextGen. Give some concrete examples as to the progress that has been made in the planning and implementation.

Dr. DILLINGHAM. Yes, sir. I will start with what has been mentioned a couple of times this morning. That is back when FAA contracted with RTCA to bring all the stakeholders together in one room. That was one of the seminal events where everybody came together and agreed on how to move forward, which was a unique situation. From that, FAA has, as mentioned earlier, identified and prioritized metroplexes to start on integrated implementation of NextGen.

We have seen demonstrations at various airports around the country with savings in fuel and lessening of emissions. Those kinds of things, from our perspective, build credibility for FAA, in terms of the airlines' willingness to put forth the money to equip, or at least stay in the game until these benefits can be seen and, therefore, they are more likely to equip moving forward.

We have recently seen a reorganization in FAA for more accountability and oversight which also came out of the bill. The reorganization is new at this point, so we don't know how it will play out. We have seen reorganizations before that didn't yield all the things we thought it would. But I think those are some examples of what we mean when we say progress is being made, although not as fast as any of us might have wanted or expected. But as has been said this morning, it is very complex, and one of the biggest things the U.S. is doing at this point in time.

Mr. COSTELLO. In addition to monitoring the implementation of NextGen here in the United States, this subcommittee has asked you to monitor what they are doing in Europe, as well, as far as progress that is being made to improve their air traffic control sys-

tem. I wonder if you might give us an update as to where Europe is, versus the United States.

Dr. DILLINGHAM. Yes, sir. I think Chairman Mica probably captured it when he said we are ahead, but just by a little bit. There is a lot of cooperation, and some competition, between the U.S. and Europe. I think what is important is that this effort could go off track at any point in time. If we fall behind in implementing NextGen, and they keep moving ahead, we could, in fact, find ourselves in a different position.

On the other side, they have to deal with multiple nation states to get permission to do the kinds of things that we do here, since we have one system. At this time, in small measure, the U.S. is in the lead.

Mr. COSTELLO. Final question—Chairman, you have been generous with my time—Secretary Porcari, it wasn't too long ago that we had David Grizzle, who heads up, of course, the ATC—or ATO organization at the FAA. And I asked about 2 months ago, when he testified before the subcommittee, I asked him how sequestration would affect the FAA. And he said that he would get back with us, that there were no specific hard numbers.

So you have had plenty of time, and hopefully your agency is planning both for—if sequestration happens or if it doesn't happen. And I think it is in the interest of everyone here—people, regardless if they support sequestration or they are opposed to it, they should know what is going to happen. So, what will happen if sequestration, in fact, goes forward? What happens to the FAA, as far as funding is concerned? And specifically, what happens to progress that has been made with NextGen?

Mr. PORCARI. Under sequestration we would face some very drastic service cuts, which is why we would all urge Congress to act quickly to avert those sweeping cuts.

Mr. COSTELLO. Mr. Secretary, we heard that from David Grizzle. What I am asking you specifically is to give me some figures. You obviously know. You have had to plan for sequestration. So, if sequestration goes forward, is it \$1 billion out of the FAA budget? And, if so, one, what is the figure, and how will it affect, dollar-wise, NextGen?

Mr. PORCARI. If I can start with the impact part of it, first, our primary objective would be to make sure it does not impact safety. Safety activities excepted, we know it will have impacts on air traffic control services, NextGen implementation, which will be slowed down, and aircraft certification for manufacturers, among other activities.

The cuts are estimated by the Congressional Budget Office at 7.8 percent for the nondefense agencies. What I would emphasize there is that if this happens in January, we are already a quarter of the way through the fiscal year. So the impact would be greater, because it is not spread over an entire fiscal year, three-quarters of one, instead.

We are working closely with the Office of Management and Budget through their guidance on specific impacts. I know that OMB has indicated that later this week, most likely, there will be a report to Congress with more specifics.

Mr. COSTELLO. You are aware that the Aerospace Industries Association took a look at one of two possible scenarios under sequestration, and they said that full NextGen implementation could be delayed until 2035 or beyond, resulting in 1.3 million job losses and annual reductions in economic activity growing from \$40 billion in 2020 to \$80 billion in 2035. You have any reason to doubt those figures released by AIA.

Mr. PORCARI. We have seen the Aerospace Industry Association figures. They are based on very specific assumptions, as are some of the other studies that are out there on potential sequestration impacts. Depending on what assumptions you make, those will obviously drive the conclusions on the impact of service.

We appreciate the work they have done, but we don't have any specific comment on that or other studies, because they are all based on individual assumptions which may or may not play out under a sequestration scenario.

Mr. COSTELLO. Thank you, Mr. Chairman.

Mr. PETRI. Thank you. Chairman Mica.

Mr. MICA. OK. Inspector General and Mr. Dillingham, you both did some reviews here. What period of time did you cover in your review, Inspector General?

Mr. SCOVEL. Chairman Mica, we have covered the last several years, both with regard to ERAM—

Mr. MICA. OK. Would—but did you include the post-period after February 14th, when we signed the new legislation, or is most of this before that?

Mr. SCOVEL. Much of it is before that, sir. We do have updates with regard to specific programs and FAA initiatives post-February.

Mr. MICA. Mr. Dillingham?

Dr. DILLINGHAM. Yes, Mr. Chairman. Most of our work preceded the February 14th date, but we also updated the work where we could in the time allowed.

Mr. MICA. The reason I ask is we put some pretty specific parameters in law, again trying to deal with some of the problems that had been disclosed before in management oversight, milestones, leadership.

Secretary Porcari—well, we have got an Acting Administrator. If I was going to say somebody in charge is supposed to be—I guess the Deputy, is that Mr.—is that right, Mr. Huerta, of a Deputy Administrator?

Mr. PORCARI. Yes. The Deputy Administrator position—

Mr. MICA. Right.

Mr. PORCARI [continuing]. Is the chief NextGen—

Mr. MICA. Right.

Mr. PORCARI [continuing]. Officer. So—

Mr. MICA. But Huerta is acting, and then the deputy is acting, right?

Mr. PORCARI. Michael is a two-hatter at this point. He is Acting Administrator. Until confirmed, if he is confirmed as Administrator, we cannot fill the Deputy position. So he has two day jobs right now.

Mr. MICA. But basically, then, if I have to look at somebody and say who is in charge under the new law, then we have to say the Acting Administrator.

And are you lacking anything in direction from the law, or you see some difficulty in implementation? Or—I mean we passed that 6 months ago. Is there something missing? Do you have the tools to do the job? And is the guideline specific enough that we provided?

Mr. HUERTA. Mr. Chairman, we very much appreciate the support and guidance that has been provided by the committee. And as—

Mr. MICA. No, but the law.

Mr. HUERTA. I will come back to exactly what we are doing.

The law provides for us to establish roles and functions within the NextGen organization, which we have done, and the Joint Planning and Development Office, which we have done.

Mr. MICA. Right.

Mr. HUERTA. Both of those organizations report to the chief NextGen officer. Our concept—

Mr. MICA. But that is you.

Mr. HUERTA. Which is me.

Mr. MICA. OK. Have you delegated that?

Mr. HUERTA. I have delegated the role of chief NextGen officer, on an interim basis, to Vicki Cox, who is the head of our NextGen organization. But I stay very personally involved in it.

Mr. MICA. And that is adequate? You are able to now identify who is in charge and move forward, and you don't see—what I am—I want to know if what we did is adequate. Do you have the legislative tools and direction? Yes? No?

Mr. HUERTA. Yes, that is correct, I would love to have a deputy.

Mr. MICA. OK. Well, that I can't change. But again, we have got to make certain.

Now, the other thing, too, is we took the head of the JPDO and we raised it to an—raised it to, what, Associate Administrator position. Has that been done?

Mr. HUERTA. It hasn't been done—

Mr. MICA. Why not, Porcari?

Mr. PORCARI. First, going back to Michael's comment, there is a chain of command issue here. Having an Administrator—

Mr. MICA. I know, but one of the things we directed in law was to elevate that position. We have—OK, we give you February, March, April, May, June, July, August. We are into September. When will we see that position elevated and filled?

Mr. PORCARI. The filling of the position is not in any way holding up NextGen implementation, Mr. Chairman.

Mr. MICA. No, but what I want—you know, I just come from a business background. I don't have a lot of experience, no Harvard Ph.D. in business or anything, but you got to have somebody in charge. That is what we identified as part of the problem, OK? So I want identifiable people in place, the positions, and what the law provided for, and then people doing their jobs getting this in order.

Now, they said it wasn't—we said it wasn't money, but some said it may be money. OK. Now who is in charge for a 3½ to—well, almost a half-a-billion dollar overrun in the ERAM, and a 3—the

ERAM, isn't that the—one of the key components to the whole program, guys? Yes? Yes?

Mr. PORCARI. It is.

Mr. MICA. OK.

Mr. PORCARI. It is a foundational technology—

Mr. MICA. It is 3½ to 4 years late. Now that is post. And it is—I have \$330 million to half-a-billion dollars in overruns. Did you pinpoint responsibility for that, gentlemen? Mr. IG? It is not a small amount, and it is not a small component to getting this whole thing in place.

Mr. SCOVEL. It is not a small amount. And you are absolutely right, Chairman Mica. The problems with ERAM began with the design of the contract, and persisted all the way through development and implementation.

Mr. MICA. Which was developed by FAA—

Mr. SCOVEL. By FAA. Yes, sir.

Mr. MICA [continuing]. And implemented by the contractor in changes, et cetera.

Mr. SCOVEL. Right.

Mr. MICA. Now, somehow, whoever is in charge and the people that are in charge, we have got to make some progress, and keep the cost under control. If you work for me and you had a \$330 million or a half-a-billion dollar cost overrun and a 4—I give you a 3- to 4-year delay, your butt would be fired. OK? So that is not acceptable.

And what we have got to do, we learn from the past. We have got to have—I have got to have the pattern that we set in place by law executed, and then we have got to have somebody in charge and managing the contract and getting it implemented. Is that the identifiable problem, Mr. Scovel, Mr. Dillingham?

Mr. SCOVEL. That is it.

Dr. DILLINGHAM. Yes, sir.

Mr. MICA. OK. OK. Mr. Dillingham, don't want to put any words in your mouth.

Two quick things before I go—I won't be gone permanently, unfortunately.

[Laughter.]

Mr. MICA. Talked to manufacturers. Now, we need to move some people around somewhere in FAA on certification for manufacturing of equipment. Some regions, it appears, or offices, they can get it done faster. Others are sitting on it. We are losing a competitive advantage in manufacturing and opportunities for putting people to work and capturing markets.

The longer that delays—now, don't tell me it is a personnel problem, because the personnel are out there, and some can do it. If we have to move people around, somebody has got to have a plan. Come back to the committee with a plan so that manufacturing certification can be accomplished, and that we—and I know there are positions that can be moved around or personnel that can be made available to accomplish those goals. Or, at least some standardization in the process, so one place has some ding dong requirements and keeping things at bay. Can you do that for us, Mr. Huerta?

And then, one of the other things, I want you to come back. We had talked before about working conditions for air traffic controllers, which is a concern. Some of them are working in dumps. And some of them are working in conditions that are not conducive to doing a good job or being on the job alert, awake, and all of that. And we had started talking about this with your predecessor, and now I want to see a plan to start implementing it.

So, they are our key, because this air traffic control system of Next Generation won't be around for a little while, so we have to rely on the men and women that are actually doing the job, and making certain they are capable of doing the job, working in an atmosphere that is conducive to accomplishing that simple goal. So, can you get back to us on that?

Mr. HUERTA. Certainly.

Mr. MICA. All right. Thank you. I yield back.

Mr. PETRI. Mr. DeFazio.

Mr. DEFazio. Thanks, Mr. Chairman. Mr. Chairman, just a general note before I begin specific questions, but I would note that there were two iterations of an FAA reauthorization: one that was written on our side of the aisle, which would have increased AIP and would have allowed an increase in PFCs, which would have dealt with some of the issues that Dr. Dillingham is talking about here and some of the issues just raised by the chairman in terms of staffing and these programs. And, of course, AIP was cut and PFC was capped in the legislation that ultimately passed. So we have created some problems there. I don't think the resources are adequate, but let me go to some other issues.

Dr. Dillingham, is there going to be a guarantee of interoperability between whatever it is the EEU is doing and whatever it is we are doing? I have sat in hearings for 26 years on NextGen. I still don't know what it is, what it is going to cost, when or how we are going to deploy it, but is whatever it is we are going to do going to be compatible with whatever it is they are going to do?

Dr. DILLINGHAM. Mr. DeFazio, that's the plan. That's the activity and action that's taken place to make sure that it is, in fact, going to be interoperable. Because, as you know, aviation is a global undertaking at this point in time. And FAA is working very cooperatively and collaboratively with SESAR to make sure that it happens.

Mr. DEFazio. OK. So say they aren't a bit dismayed at some of the problems we're having, like with the ERAM or that? I mean how does that—you know?

Dr. DILLINGHAM. I am sure they are dismayed, but they have problems of their own as well, Mr. DeFazio. They aren't at the same place we are with regard to actually implementing some of the technology. They're still planning and designing those kinds of things. But, again, they have a very complex system and there's a lot of cooperation going on. So I think from our work, they understand the situation that occurs. Also, you think you can do something quicker than you can do it, particularly when it involves new technology, new procedures, and all of the other things that are associated with such a major project.

Mr. DEFazio. Right. But I have got to reflect that I think it's outrageous that the contractor is still getting cost incentives when

they are at 100 percent over budget and 4 years behind schedule. How do we explain that? Who would like to explain that? Why are they still getting cost incentives? They should be getting a whack on the top of the head.

Mr. RINALDI. Mr. DeFazio, we have restructured the contract.

Mr. DEFAZIO. Restructured in causing them some pain?

Mr. RINALDI. I think that we have got their attention and they are very focused in working with us. And, as I mentioned, we do have ERAM at a point now where I am feeling that we are well on our way toward final deployment there.

Mr. DEFAZIO. What's the 900 urgent software glitches identified by air traffic controllers and others that are kind of problematic? Where we have got the plane with the wrong route and wrong number? And we don't really know who it is where?

Mr. RINALDI. It is certainly not of that magnitude. ERAM is actually our primary technology that is in use at two of our air traffic control centers; well, actually at five in continuous operations where we have decommissioned the system at two of those with a plan to get it out to all 20.

Mr. DEFAZIO. And these urgent software fixes do not apply to those fully operational airports?

Mr. RINALDI. In any operational system deployment you have software issues and the important thing to focus on is their relative priority and how quickly you can get those resolved. We do that collaboratively with the workforce.

Mr. DEFAZIO. OK. Well, we will hear from a practitioner from the workforce later; and, if you will, they think it is more serious. I just said this is, you know, 26 years. It has been a long haul. I have been on this committee 26 years and I have seen many reports from Mr. Scovel and Dr. Dillingham about NextGen, but even before that, you know. We began these discussions my first term in Congress. And I guess this leads me, Mr. Porcari, to a question I opposed previously, and this is not directed personally of you. But, why is it that the only agency of the Government of the United States of America than is worse than acquisitions than the Pentagon, who's famous for massive waste and cost overruns, is the FAA? I mean what is wrong with your procurement process, and how are we going to fix it?

Mr. PORCARI. As you have heard, Mr. DeFazio, in retrospect, the ERAM contract would have been and should have been structured differently. I will tell you that we got the contractor's attention at the CEO level to get the changes that we needed done quickly. The profile of the kind of work that the FAA does is very high-risk, sometimes at the technological leading edge, sometimes the bleeding edge. It is that kind of project, more likely—especially when it's as complex as NextGen is—to have setbacks and delays.

When you take the six, separate, foundational technologies that constitute NextGen in the interplay and interaction between them, it gets an order of magnitude more complex. That is not an excuse, but what it puts a premium on is better project management skills and understanding the risks from the beginning, and we're very much focused on that.

Mr. DEFAZIO. OK. Thank you.

Mr. Chairman, just one other quick question. I read something yesterday about potentially using the iridium system for the data management and maybe being able to move along more quickly by contracting with them. Is that something under active discussion?

Mr. HUERTA. Mr. DeFazio, it is under active discussion. At this point, what we're trying to get is a better understanding of the relative cost of investing in the iridium. Iridium is a space-based ADS-B technology which would supplement investments that are already being made in ground-based ADS-B. We want to ensure, before we make any decision with respect to funding or contracting, that there is a valid benefit case to be made, that this technology provides us something that we wouldn't otherwise get and that it merits the investment that would be required. But we are looking at it.

Mr. DEFazio. OK. Thank you. Thank you, Mr. Chairman.

Mr. PETRI. Thank you. And, Mr. Ribble?

Mr. RIBBLE. Well, thank you, Mr. Chairman. And, Mr. Chairman, I have some information regarding ADS-B that I would like to submit for the hearing record, and ask unanimous consent to do so.

Mr. PETRI. Without objection.

Mr. RIBBLE. Yeah. Thank you. Well, I appreciated my friend Mr. DeFazio's questioning. I've only been here 2 years, and I've got to tell you I'm struck by the whole NextGen—I want to call it debacle, but maybe it's not a debacle, but it feels like it when I listen to your comments. And I guess I'll start with Dr. Dillingham. In your opinion, has the FAA ever suffered from lack of funding for NextGen? Because I'm beginning to sense it's not NextGen. It's NextNextGen, or NextNextNextGen by the time we get this done.

Dr. DILLINGHAM. We have not seen any evidence where a lack of funding has been a major contributing factor to the issues that we've seen with regard to NextGen. Similarly, we have not seen a situation where the availability of technology, specifically, has been a major contributing factor.

Mr. RIBBLE. OK. Do you believe that there are stakeholders that aren't committed to NextGen?

Dr. DILLINGHAM. Our work shows that stakeholders are guardedly optimistic of NextGen's progress. Stakeholders that we talked to would like to see some evidence of benefits. They'd like to see a small victory with regard to NextGen implementation to build their confidence in FAA's ability to come through with the larger investment. The airlines can take that business case showing the return on investment to their management. At this point, stakeholders are guardedly optimistic, as best I can tell. Stakeholders have been in the same room, and have said if FAA does these things, if FAA provides these near-term benefits, then stakeholders will be on board.

Mr. RIBBLE. Gen. Scovel, do you agree with that assessment on stakeholders? The fact is I hear a lot of cynicism from stakeholders. They don't think it is going to get done.

Mr. SCOVEL. There is a lot of concern, Mr. Ribble. FAA's effort to advance the Metroplex project is key to this because as a result of the RTCA task force recommendations, FAA moved out to try to drop portfolios of initiatives on specific locations. A key problem with many of the users is FAA's misplaced focus, as they would

characterize it, on a certain type of instrument flight procedure improvement that provides very limited benefit. Some are equipped to take advantage of more advanced procedures.

Others are not, and that's the specific rub. As you'll probably hear from the next panel, some users are very much cheerleaders for FAA to move ahead as quickly as possible with advanced procedures to embed those and train the air traffic controllers. Others, who haven't yet made the investment, may candidly tell you that they're kind of happy with the status quo. So it's somewhat of a mixed bag. Conceptually, they are all in favor of NextGen, big picture; but, where are we today? What's the return on investment? How much money have we already put into systems aboard aircraft? That's a different kind of picture.

Mr. RIBBLE. Yeah. Secretary Porcari—and I am just curious. I think it was back in 1961 when President Kennedy challenged NASA, prior to manned space flight, to have someone on the Moon within the next decade. And they were able to accomplish what seems to me, looking at it through a historical prism, an extraordinary feat within 9 years. Was this harder than that?

Mr. PORCARI. This is not harder than that. That was certainly an extraordinary feat, and as you're a student of that, I'm sure you know that there were numerous setbacks along the way. There was concurrent development of numerous technologies that ultimately had to work together in synchronicity. It didn't happen without setbacks.

We can certainly, as Americans, accomplish anything we put our minds to. We view NextGen as one of the most important infrastructure investments that we need to make as a Nation, and, as you have heard before, as an element of U.S. technological leadership nationwide. So we take it very seriously. We appreciate the support that Congress has shown for NextGen. We are starting to see, and it's easier on the inside, sometimes, to see the progress that is being made in operationally deploying usable parts of this that are making a meaningful difference, in terms of completing flights in bad weather, greater capacity, greater safety, and those benefits will start to compound as well.

Mr. RIBBLE. OK. Thank you, the panel, for being here today. This has been helpful for me. And, Mr. Chairman, I yield back.

Mr. PETRI. Thank you. Rep. Cohen.

Mr. COHEN. Thank you, Mr. Chair. First, I would like to thank the panel. Several of you have been to Memphis and I appreciate your courtesies and service to our country.

One issue—and I think Federal Express has been a leader in working on NextGen, and, of course, Federal Express is a leader in all things. In aviation, in package delivery, in sports, and every other way. Having made a comment, a word from our sponsor, but let me ask.

I think probably Mr. Huerta might be the correct person to ask. I asked you, I think, in Memphis about the proposed rule that you all have about structures around airports. And, of course, Memphis is one of the cities that helps to become and is becoming, or some would say is becoming an metropolis, and is a major economic engine for us. And so limitations on the size of structures around the airport can be limiting in terms of economic development. What is

the status of that particular rule about safety, aircraft and height of buildings around there, and is there going to be comment periods and rigorous cost to evaluation examination?

Mr. HUERTA. Sure. Mr. Cohen, I will need to get back to you with a specific timetable and steps going forward; but, in general, the issue is that we need to find the appropriate balance for the areas around airports. We need to plan, not only for what are the routine flight paths that everyone takes in and out of an airport, but also how can we ensure that, should a mishap occur and an aircraft has a missed approach; or, something that would be more dangerous, that they have time to recover. We need to ensure that there are not hazards in the way that would preclude their ability to recover.

Finding that balance is extremely important. That is something that we have to do in a very thoughtful way for the reasons that you talked about. The interests of the airport's ability to operate, which represents one economic engine and one economic benefit, versus surrounding property owners who are located near the airport for the obvious reason that they want to take advantage of that proximity. But, it's something that we're looking at very carefully, and we'll get back to you with more detail on what the next steps are forward.

Mr. COHEN. I appreciate it, and I understand safety is the utmost concern, but it needs to be balanced in terms of you can still have safety and have the economic development. We have great hopes for economic expansion around the airport area. Because of Federal Express, so many people have wisely brought their distribution centers to Memphis.

More companies should be thinking about bringing their distribution centers to Memphis, because it's so easy from there, because of rails, runway, roads, and river, to move their product all over the world. In fact, probably, the Department of Defense should probably plan on moving its operations entirely to Memphis to move everything out of Memphis which we could do at a financially successful manner in an efficient manner. But, we don't want to have our buildings limited so we can't house them when they come there, and I know they're all coming.

Mr. HUERTA. And we're saying the same thing. It's finding the right balance and ensuring we are operating a safe airport, while at the same time providing opportunities for industry.

Mr. COHEN. And there will be opportunities for comment and an analysis based on cost as well?

Mr. HUERTA. We are looking at it carefully. We will get back to you with what the process is going forward.

Mr. COHEN. Thank you very much, and thank you for all of your work. And I yield back the balance of my time.

Mr. PETRI. Thank you. Rep. Cravaack.

Mr. CRAVAACK. Thank you, Mr. Chair. How about if we pool some positive gee's. Dr. Dillingham, can you tell me some of the positive things about NextGen and the FAA? What is it doing right now?

Dr. DILLINGHAM. Yes, sir. I think we can point to the fact that with congressional urging and reports from both us and the IG, we are now beginning to see some goals and metrics for NextGen, so the Congress and GAO can better monitor progress. Some of the

other panel members mentioned that some of the demonstration projects that are taking place at the various airports around the country are showing stakeholders that they can, in fact, benefit from NextGen in terms of fuel savings, and reduction in emissions for the community surrounding the airports.

I think, again, progress is clearly based on the fact that we still have interested stakeholders who are willing to participate, though they are becoming less willing to participate as time goes on. We again would say progress is being made, albeit not as fast as not any of us might want it to occur.

Mr. CRAVAACK. Thank you, sir. I am a big believer in NextGen, if we can ever get it. Look forward to hearing from JetBlue to see how it's affected theirs. Has it alleviated any congestion in the airports? Can you comment on that at all?

Dr. DILLINGHAM. In those airports where the demonstrations have taken place, FAA and the stakeholders are reporting that they've seen efficiencies with arriving and departing. Some of the issues that still remain are related to integrating surface management with NextGen improvements. So, getting aircraft to the airport is improving, but moving the aircraft on the service around is still a work in progress.

Mr. CRAVAACK. Man, do I hear you on that one? I would hate a taxiing aircraft at Chicago. OK. Gotcha. All right.

Mr. Scovel, what do you mean when you say that the FAA may not be delivering the desired benefits? What, exactly, do you mean by that?

Mr. SCOVEL. Let me look. You and Dr. Dillingham were just talking about the Metroplex initiative and the need to integrate procedures with surface management operations, and so forth. The key aspect that I would seek to reinforce is that FAA should respond to industry's demands. The users' requests for a focus on the most advanced levels of procedures that are possible, RNP.

Our data indicates that 67 percent of main line carriers' aircraft are equipped for RNP. Forty-nine percent of the aircraft are equipped and have crews that are approved to fly them. In order to derive the most benefits from advanced procedures, which would be precise routes and curved approaches, RNP needs to be in place. Our data indicates 136 solutions were produced by FAA, but only 3 incorporated advanced procedures with those precise routes and curved approaches.

So there is a disconnect between what FAA is capable or willing, at this point, to produce, and what the most advanced segment of the airline carrier industry would like to see happen. So there's that difference between what is expected or requested and what can be delivered.

Mr. CRAVAACK. Do you think this is going to be a good return on our investment?

Mr. SCOVEL. Absolutely. Come the Promised Land, you know, when we all get to Jerusalem and NextGen is in place, it will be an excellent return on investment.

Mr. CRAVAACK. Amen. OK. Sounds good.

[Laughter.]

Mr. CRAVAACK. On a little but more of a touchy subject in this regard, recently, on May 23, 2012, at a staff meeting a gentleman

by the name of Mr. Hickey, the Deputy Associate Administrator for Aviation Safety made what I thought were some inappropriate comments. If Republicans win office—"If Republicans win office, jobs may be affected. If Democrats win office, their jobs would not be affected." I think these comments are extremely inappropriate, and I would like to know where these comments are coming from. Is this an independent speaking? Is it coming from the administration? Is it coming from the White House? Where is this man speaking from?

Mr. HUERTA. It is certainly not coming from the administration or the White House. I take, and the FAA takes, any potential violation of the Hatch Act extremely seriously. We do understand that the Office of Special Counsel has opened up an investigation into this particular instance, and we are cooperating fully with that.

Mr. CRAVAACK. Good enough for me. Thank you, sir, and I yield back.

Mr. PETRI. Thank you. Mr. Duncan?

Mr. DUNCAN. Well, thank you, Mr. Chairman. And this will be a little bit repetitive, because I share some of the same frustration that Chairman Mica and Mr. DeFazio earlier expressed, but I read in General Scovel's report. I see these headlines, "Unresolved problems with Iran continue to impact the cost and pace of NextGen." And then I see it says below that, "ERAM software related problems have caused cost overruns and schedule delays."

In a staff memo, they have that \$640 million has been spent on Iran that was meant for other programs. And I suppose that I have been to every hearing that we have ever had on NextGen from the very start and have been to a couple of FAA facilities to try to learn what this is all about and see how it would operate. And I sure don't understand all this, but I said at maybe the first or the very early hearings on this—that I guess I either made a statement or asked the question—was some future Aviation Subcommittee going to come in here and hear about delays and cost overruns, because that's what everybody sort of expected what happened. And, sure enough, it has happened; not just on Iran, but on other things as well.

What I am wondering about, since it is similar to a question I asked or a statement I made years ago, are we going to have a meeting of the Aviation Subcommittee 6 or 8 years from now and hear about additional delays and cost overruns? And I understand I've been told over the years that when it comes to all this technology that everything is obsolete the day they take it out of the box, and I know that there are always additional bells and whistles that people want. But, I will ask all of you. Do you feel that we are doing everything that could be done, or are there any additional things that could be done to see that we don't have additional cost overruns before this is fully implemented in 2020 or whenever? Mr. Porcari?

Mr. PORCARI. Thank you, Mr. Duncan. I think it is a fair question and it is one that we take very seriously in the sense that we have looked at some of the lessons learned. If you take ERAM as one example, that contract would have been structured differently. In hindsight, we would have brought in our workforce from day one

to help us develop it, and that was in my opinion a large part of the problem.

We, if anything, would have had greater interaction from the beginning with industry and users, and we have a very collaborative effort that Mr. Huerta has described to you. It has greatly benefited the implementation of NextGen, including picking some of the early procedural implementation parts of it where we determine what and where is operationally implemented for benefits.

It is, I think, not possible to say that there will never be any problems going forward with this, but I will tell you I have a much greater level of confidence. As the Department's largest infrastructure program, it is something that I have been very personally involved in. I have a much greater level of confidence in where we are headed and the trajectory we are on now than a couple of years ago. In part, I would credit Acting Administrator Huerta's personal involvement as Deputy and continuing as Acting Administrator.

Mr. DUNCAN. Anybody else what to—yes.

Mr. HUERTA. Mr. Duncan, when I joined the agency a little over 2 years ago, my background was program management, large, complex technology deployment. What I saw when I arrived was that we had a deployment that was encountering problems. The problems we had were that we were starting deployment in live facilities. We were running into operational difficulties, workforce interface issues, things that posed significant challenges that we needed to work through.

What we did at that time was to put a couple of things in place. One was a diagnosis of what the problem was. We brought in third parties to look at it. We determined that what hadn't occurred early enough in the program was the human interaction. Involving the people that are actually going to operate this program must be involved in its development. In addition, our testing had been insufficient to really understand how this was going to work in a real-world environment.

As a result of evaluating this program, we started putting management changes in place. We established a centralized program management organization that will bring best practices at program management to ensure that we can hit deadlines, that we can hit milestones, and that we can hit budgets. That's why we elevated and expanded the responsibilities of our NextGen organization so that we can ensure that we have appropriate system integration, that we're taking account of how one project affects other projects, other schedules, and so forth.

What we wanted to do was make sure that we were using best practices that are used in any business for managing a large complex undertaking of this sort. It was in June of 2011 that we rebaselined the ERAM program. At that time, we said that that project was going to be 3 years and 8 months behind schedule because of the problems that I told you about, and that it was going to cost \$330 million more.

Today, that is still exactly where we are. We have hit the milestones that we put in place at that point, and I think that we have turned the corner on that program. I certainly wish that we had never gotten ourselves into this situation, but I think we are well on the way to solving it.

Mr. DUNCAN. Well, before I run out of time, let me just say this. I mean what is frustrating is years ago when all this was started, when it was brought up, I think everybody probably expected that there would be cost overruns and delays. I doubt there is anybody in this room that is shocked or surprised that there have been cost overruns and delays, or that there will be in the future. But, let me ask you this. How much have we spent on NextGen?

ERAM is not the whole NextGen program. How much has been spent on the whole NextGen program so far, and how much is going to be spent before it is fully implemented? And I'm wondering if anybody can answer that question. I guess it is almost an impossible question; and, I know that this is a difficult thing. I know everything looks easy from a distance, but I also know that we have an obligation to try to stay on top of this.

Mr. HUERTA. We have been spending at a rate of about \$1 billion a year.

Mr. DUNCAN. I am sorry. I didn't hear what you said.

Mr. HUERTA. We have been investing in NextGen at a rate of about \$1 billion a year, with the support of Congress. The Federal investment in ERAM is a \$20 to \$27 billion expenditure due to the cost overruns as we have talked about. Now, that does not include—

Mr. DUNCAN. \$27 billion?

Mr. HUERTA. Yeah.

Mr. DUNCAN. And that does not—OK. Go ahead.

Mr. HUERTA. That does not include what industry invests in equipping their aircraft and everything that would be associated with that. From our standpoint, we are managing this program as a series of building blocks. We have six foundation technologies that are baselined and all are operating within their baselines.

We have adopted an approach which is premised upon best program management approaches. That is a risk mitigation strategy where we make incremental investments, match them up with benefits, so that we can ensure that it makes sense to continue making those investments. In a program of this nature, investments are being made over an extended period of time, in a very dynamic industry that is going through its own changes, that deals with uncertainties, such as cost of fuel, and what is the market doing. We believe that this is the most prudent approach to ensure the best stewardship of the Federal taxpayer investment.

Mr. DUNCAN. Well, I apologize. I ran over my time. This is all very interesting to me. But I remember many years ago they told me they had biographical sketches of all the Members of Congress down at the Department of Transportation, and at the bottom under each Member they had questions typically asked. And under most Members, they didn't have questions; but, under mine it says, "How much will it cost?" And I didn't realize that I was so transparent, I guess, but I have been concerned about that on this program, and I still have those concerns. And it is a fascinating thing, but also a lot of concern too. Thank you.

Mr. PETRI. Well, under the next fellow, we'll hear from, Mr. Coble, they probably have, have you taken a sharp pencil to this program. Harry Coble.

Mr. COBLE. Thank you, Mr. Chairman. I have been involved with a simultaneous hearing between here and Judiciary, so I have had to play catchup. I apologize for my belated arrival. Good to have you all with us.

Mr. Scovel, I assume that the proposed trip to Jerusalem will not depart today?

Mr. SCOVEL. It certainly won't, I regret to say.

Mr. COBLE. We all want to go, but not today.

Mr. SCOVEL. OK.

Mr. COBLE. Mr. Porcari, do you believe there are any stakeholders not fully committed to the proper implementation of NextGen?

Mr. PORCARI. At this point I believe all the stakeholders are committed to it, and we have worked hard on stakeholder interaction and understanding their needs to make sure they see the benefits of it. So I believe the stakeholders are committed.

Mr. COBLE. So, no naysayers known to you?

Mr. PORCARI. Well, I do think there is appropriate skepticism from everyone involved—

Mr. COBLE. I gotcha.

Mr. PORCARI [continuing]. That we get the proper benefits for the investment.

Mr. COBLE. Their own balance supportive.

Mr. PORCARI. Supportive.

Mr. COBLE. Mr. Huerta, how will NextGen improve the productivity of air controllers, A; and, B, do you believe that NextGen has delivered an increased productivity?

Mr. HUERTA. To answer the second question first, I do. But I think more needs to be—

Mr. COBLE. Could you pull that mike a little closer to you, Mr. Huerta?

Mr. HUERTA. How's this?

Mr. COBLE. Better.

Mr. HUERTA. I do believe that it has increased productivity, but much more needs to be done and we will continue to deliver more productivity benefits. The major benefits that we are seeing, and which we are really focused on, is improved air traffic control procedures. You get the maximum productivity by focusing on what you can do around airports.

There are two dimensions to that: First, can you reduce track miles flow on arrival and departure? What that gets you is reduced fuel burn, reduced emissions and reduced cost. Another example is something called an optimized profile descent, which we are very focused on. Traditional descents into airports are a lot like walking down the stairs. That is the aviation equivalent of stop-and-go driving in traffic—very fuel inefficient. With an optimized profile descent, engines idle, so you are reducing your fuel burn.

All of that represents huge enhancements in productivity. So improving the way aircraft approach and depart airports gets you a lot more efficiency and gets you a lot more ability to manage more aircraft in congested airspace.

The second benefit that it gets you is the ability to “deconflict” airports. In large, metropolitan areas, say Dallas-Fort Worth, because of the nature of older technology and just the geography of

where airports are located, we need to manage airports in conjunction with one another. Traffic at DFW affects traffic at Dallas Love, and controllers need to manage both in tandem.

With advanced navigation procedures, we can separate those airports, because of the curved approaches that Mr. Scovel talked about. And since the tracks do not conflict, that greatly increases the capacity of both of those airports. That's what we're trying to get at through the deployment of advanced navigation procedures, and the benefits are quite real.

Mr. COBLE. Thank you, sir. Anybody else want to weigh-in on that?

Good to have you with us. Yield back, Mr. Chairman.

Mr. PETRI. Thank you. And before Mr. Costello has something to say, as long as you are here, Mr. Porcari, it's a little unrelated to the subject of this hearing, but I wonder if you could comment on the status of sort of the international negotiations, if that's the correct way of framing it, in dealing with the European—what I think and Congress has been on record as criticizing—illegal emissions trading scheme in that they are trying to impose it extra territorially. Would you comment on where that whole issue stands?

Mr. PORCARI. I'd be happy to comment on it. First, we have serious legal and policy concerns with the proposed emissions trading scheme. It is extra territorial. It is fundamentally unfair in its approach, and we believe it's not the right way to do it. If you look at precedents, using ICAO, the International Civil Aviation Organization, for consensus building on international aviation issues is a much more effective way to do this.

We have been clear, both on the record, off the record, and at every level with our EU counterparts that this is unacceptable, that we do not support it. And, I think if you are looking closely at the reaction around the world, you'll see that we have a lot of other nations that in concert with the United States also believe that the unilateral imposition of that emissions trading scheme is inappropriate.

Finally, there appears to be some recognition on the European side of late that there are real consequences for doing this. So we will continue to press for the appropriate avenues for resolution of an issue like this. We are continuing to make it clear that we have serious concern and do not believe it should be implemented. And I think the consequences of the European Union moving ahead unilaterally are much better understood by the EU these days.

Mr. PETRI. Thank you. Mr. Costello?

Mr. COSTELLO. Mr. Chairman, thank you. Just a few comments, and I think it is worth noting oftentimes we point out when there are mistakes made or cost overruns. But I just have to say that since I have been involved in NextGen, I mentioned in my opening remarks, there was a time when the FAA couldn't tell us in laymen's terms what NextGen was.

It wasn't until Secretary LaHood was appointed Secretary of Transportation, and Randy Babbitt, the former Administrator, came into office; and, of course, with the Acting Administrator in board 2 years ago, that there was in fact stakeholder involvement. Many of you heard me say from this seat, and actually that seat at that time, we heard Dr. Dillingham. We heard General Scovel

agree that we needed to get stakeholders involved. But, that logjam did not free up until Secretary LaHood and Administrator Babbitt came into office, and then we started involving stakeholders.

We started talking about near-term benefits, and we actually came up with a blueprint, which Chairman Mica mentioned. Many of the things that are in the bill that was signed into law in fact came from—the task force came from Secretary LaHood, Randy Babbitt and the Acting Administrator here today. So I think it is worth noting that much progress has been made since that day.

I remember when Secretary LaHood was nominated. He came to see me, and he said: “What are the challenges with aviation?” And I said, “You have to do two things and you have to do them quickly; and, one of the things is you have got to free up this mentality at the FAA that we don’t want the stakeholders involved. We don’t want to hear from them.” And so to his credit and to the credit of the former Administrator, Mr. Babbitt, and the Acting Administrator who is here today, we have made progress. We have made a long way to go, but we’ve come a long way from just a few years ago. So, with that, Mr. Chairman, thank you.

Mr. PETRI. Thank you. And I must say, too, I think currently the FAA’s internal management competence in this sort of process are due in part to several who are here as before is leagues ahead of where it was just a couple years ago, because this is a different type of process and it takes a different type of experience. And we thank you very much for your testimony, and the first panel is adjourned.

We will turn to the second panel, and as they are coming forward, let me introduce them. It consists of Mr. David Barger, who is the president and CEO of JetBlue Airlines. And we are particularly appreciative. We know he has a number of important commitments and we have to select between them, and we appreciate his attendance at this hearing today. In a sense, it may be his swan song in that he is finishing up a distinguished period of public service as the head of the NextGen Advisory Board, and it has been a major contribution moving this from dead center, or even slipping back in some areas, to making real progress.

And I think it is to his credit that usually one good measure of how someone is doing is whether they are preparing someone to take their place and someone who is strong. And I think in Bill Ayers, where you have another person of competence and experience in this area, and I am impressed by the fact I hear from some of his associates that he is blocking off some extra time in his schedule so that he can engage in helping on this process and turning some of his day-to-day responsibilities over to others at the Alaska Airways. So that is a tribute to you, in part, and we thank you for that.

Others on the panel are Paul Rinaldi, who is the president of National Air Traffic Controllers Association. He has been before us before. Thank you for being here again. And that’s true also of Ed Bolen, president and CEO of the National Business Aviation Association; and, Ms. Sue Baer, Director of Aviation, Port Authority of New York and New Jersey.

Welcome. Thank you all for being here. We look forward to you summarizing your prepared statements in about 5 minutes, beginning with Mr. Barger.

**TESTIMONY OF DAVID J. BARGER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, JETBLUE AIRWAYS CORPORATION; PAUL RINALDI, PRESIDENT, NATIONAL AIR TRAFFIC CONTROLLERS ASSOCIATION; ED BOLEN, PRESIDENT AND CHIEF EXECUTIVE OFFICER, NATIONAL BUSINESS AVIATION ASSOCIATION; AND SUSAN M. BAER, DIRECTOR OF AVIATION, PORT AUTHORITY OF NEW YORK AND NEW JERSEY**

Mr. BARGER. Thank you very much, Mr. Chairman. I appreciate the very kind words as well. Thank you, Ranking Member Costello, as well, for your ongoing support over the years. And to distinguished members of the subcommittee, on behalf of the more than 14,000 crewmembers of JetBlue Airways, thank you for the opportunity to be here this morning.

I am delighted to be here at this testimony. This morning, I would like to begin by thanking you, Mr. Chairman, for your genuine passion on this topic, educating all Americans about the importance of NextGen. I know as we have spent time over the years we think about, of course, your home State and the robust aviation community in the State of Wisconsin, and what happens over the course of the most spectacular week of the year at the Oshkosh Air Show with the EAA.

And, with that said, I also juxtaposed my thoughts and comments regarding just the home base of operation that I come from at New York's John F. Kennedy Airport and the congestion, and the airspace challenges that we have across places like the New York metropolitan area, Philadelphia, and certainly airports here in the Metropolitan Washington area. And all that said, Mr. Chairman, and certainly to Ranking Member Costello, as well, in all of my meetings over the years, you have certainly been passionate about pursuing just real meaningful solutions to these problems as if they had been right in your own backyard, your own congressional districts across the country. And we certainly appreciate that as an industry.

You have held hearings and conducted informational sessions and have always had an open door, as you sought not to assign blame, but really in terms of driving a shorter path to progress in the future. And I have served for the past 2 years as chairman of the FAA's NextGen Advisory Committee. I thank you and the Members, again, for today's hearing, and I am wearing two hats today, and, that is in the role of the chairman of the NAC as well as CEO of JetBlue Airways.

Now, on the NextGen Advisory Committee, where as you mentioned I will soon conclude my 2-year role as chairman, we're a diverse group of 28 aviation leaders, really, from across the world, that's both volunteer driven and volunteer led. We provide consensus-based recommendations on complex policy issues to the FAA in response to specific questions or taskings that they represent to us.

Now, the NAC through the RTCA has reported back to the FAA's taskings with recommendations or initial reports on 17 items crit-

ical to the implementation of NextGen ranging from selecting and prioritizing Metroplex sites, NextGen rollout within these sites to performance metrics, equipage incentives to the issue of DataComm, and the 17 items have been submitted in my written testimony. Now, as I have undertaken the equivalent of a graduate level studies course on all things NextGen over the past 2 years, in my spare time, I am delighted to report that I could not be more pleased with the progress of this group that I have chaired, including those, and the support of my fellow panelists here with me this morning—and also with our partners of the FAA, as you both mentioned in your closing comments that we've worked with so closely over the past 2 years of my chairmanship.

My fellow NAC members are participating in our meetings. We are voting with our feet and we are there at each and every meeting. In fact, over the past 2 years, we have held our sessions here in Washington, DC. We have been down at Embry Riddle Aeronautical University in Daytona Beach. We have been up in New York at Kennedy Airport, and with Mayor Bloomberg at Gracie Mansion, and even at the Boeing complex in Seattle recently. And, in just a couple of weeks, we'll be hosted by the Department of Defense at Wright Patterson Air Force Base. The thought here—this in Dayton, Mr. Chairman—is to get out and see what is happening across aerospace, whether it is education or whether it is the different facets of aviation as we talk about these issues tied to NextGen.

The NAC is engaged. The NAC is committed. And I would be certainly remiss if I didn't thank our subchairs over the course of the past 2 years: Tom Hendricks from A4A, who has since moved on, and also Steve Brown at NBAA for their tremendous work, and literally hundreds of volunteers working on work groups and task groups. That was really led by RTCA with Margaret Jenny, and I would also like to also thank Andy Cebula with his help over the years.

Just as the NAC members are engaged in our work, we have been very pleased with the knowledge and level of engagement by Acting Administrator Michael Huerta, first as a designated Federal official to the NAC while serving as the FAA Deputy Administrator. Michael has become even more, not less active in our work since being elevated to the role of Acting Administrator. With Michael at the helm and with his interest in working closely with the aviation community, I am confident in our collective ability to overcome some of the barriers to implementing NextGen.

Now, you commented about succession planning. And I am very pleased that with my chairmanship sunseting—and I will remain on the committee—Bill Ayres, who is chairman of the Alaska Air Group, Bill has been formally leading the Alaska Air Group as chairman and CEO, who as an experienced aviator, will be taking over the chairmanship of the NAC on a go forward basis as we pass the baton at Wright Patterson Air Force Base here in October.

I believe the Greener Skies initiative was illuminated upon by both the Deputy Secretary and the Acting Administrator of just tremendous success stories. And, while I won't go into details about that, this collaboration, this work with the Port of Seattle with Alaska Airlines with the FAA, over several years, moving flight

tracks over water, reducing miles flown, optimizing descent profiles and altering air traffic control procedures, all enhancing navigational performance, while Alaska Airlines, the largest carrier in Seattle along with others, they're reducing fuel burn and emissions today, reducing noise exposure in the community. And Alaska expects to save over 2 million gallons of fuel annually as a result of this collaborative effort. This is NextGen that is happening today in the Seattle Metroplex.

Mr. Chairman, the success taking place in Seattle is as much about the technological improvements as it is about surmounting the nontechnical barriers to implementing NextGen. I am expecting that the final tasking from the FAA to the NAC during my chairmanship will be to explore these nontechnical barriers, and I look forward to recommending paths to effectively cut through these barriers in the future.

A couple of closing thoughts: As I just put on my JetBlue hat for today, first of all, JetBlue operates primarily in the congested Northeast airspace, with our two biggest focus cities being that of New York's Kennedy Airport, one of Sue's airports, where we are the largest airline, and also at Boston Logan Airport, where we are the largest carrier. And JetBlue believes in the promise of NextGen. We certainly do. The industry does. Well, candidly, in our airspace, we are requiring solutions today, and this is on behalf of the 30 million people that we are caring, accommodating, over the course of 2012 and growing.

So when we think about some of the partnerships, and, again, illuminated, I won't go into details by the Deputy Secretary and Administrator, the ADS-B out partnering that we are doing in terms of equipping 35 Airbus A320's to pioneer new routes, more fuel efficient routes, more emission friendly routes, shorter elapsed time routes from the Northeast to Florida and the northern Caribbean I think is a very important example of collaboration. And, also, I would just say that pioneering with the FAA the use of what we would call the RNP 13 left and 13 right approach into John F. Kennedy Airport is also allowing us greater predictability into our home base of operations in New York. These unique, performance-based navigation procedures utilize a constant vertical descent in conjunction with a precise curved flight path resulting in a stabilized approach path, shorter flight times, as well as reduced fuel burn emissions and noise similar to the Greener Skies initiative in Seattle.

I think in my closing thoughts very good progress is taking place, I believe, on behalf of our airline, as I put my JetBlue hat on. I think that I would be remiss if I didn't comment that we were a little bit disappointed that a new procedure that was put into place at LaGuardia Airport has been suspended, because we do think the deconflicting some of the airports in the New York Metroplex—and this just happened recently—I think we'll work through this with a solution, will benefit all of us in the New York Metroplex. But all that said, very pleased about the partnership that's taking place.

In closing, NextGen is a vital and necessary evolution for the aviation industry. It is just as important for our Nation's economy. NextGen will reduce aviation fuel burn, save energy and improve

the environment. Implementing NextGen will also improve the efficiency and safety of aviation while adding jobs and strengthening our economy. The case for NextGen has been and continues to be compelling. I would again like to thank you, Mr. Chairman, Ranking Member Costello, distinguished members of certainly the committee, for hosting the panel today. I look forward to any questions you might have. Thank you again, sir.

Mr. PETRI. Thank you.

Mr. Rinaldi?

Mr. RINALDI. Thank you, Mr. Chairman, Ranking Member Costello, members of the subcommittee. Thank you for hosting this hearing today on important issue of NextGen.

NextGen is a catchall phrase over the last 10 years that means everything to everybody in the aviation community. NATCA is proud to be involved as an essential stakeholder in NextGen development and fully participates in the NextGen Advisory Committee, which Mr. Barger just spoke of. The NextGen Advisory Committee has done an outstanding job of simplifying the elevator speech, so to say, of what NextGen really is, of using satellite-based technology and streamlining approaches to reduce carbon emissions, using best technology to reduce voice communications or voice saturation on frequencies.

That's what NextGen is as we are moving forward in the short term and the near term. We have heard a lot about the equipment and we have heard a lot about ERAM. Believe it or not, ERAM is not considered a NextGen program. ERAM was supposed to be implemented by now. Collaboration is key for NextGen to work. Collaboration is key for anything to work, I think, in life. But ERAM in 2009 when Randy Babbitt took over, and when Secretary LaHood was confirmed, and when Michael Huerta got involved, we were not involved in ERAM at all. And at that time it was already over budget, and it was not deployed in any facilities across the country. And it was in January 2010 when we actually started to get involved in identifying those numbers of areas that we were getting on the positions as we were testing ERAM in the back room that it was unacceptable and unsafe to run in air traffic control facilities to track airplanes.

Through hard work, through collaboration, through the passion of our controllers being involved in ERAM, we are proud to say it is up and running continuously in five facilities across the country; and, hopefully, we meet the goal in making of 2014 being deployed across all of our facilities en route facilities. The important thing to note is ERAM started to be developed in 2003, and in 2009 it was supposedly ready to be deployed, spent 100 percent of its contract, and it wasn't even close to being finished.

In 2 short years we have brought it from not being able to work in any facilities to working in five facilities right now. And we are working hard, and real important, to get ERAM involved in the NextGen discussion. Here is why. ADS-B, which we talked about, the satellite-based navigations, DataComm, which we talked about, the texting communications between pilots and controllers, SWIM, which is the information component that will go to the cockpit on real time necessity to get there, all of that doesn't work unless ERAM is deployed.

So we have to focus on ERAM in making sure that that actually is deployed properly, continues to be focused on there. We put our reps, our reps are very proud of what they have done in ERAM, and when we put them in place we said make it safer, make it better, and make it work. And the collaborations started with developing, testing, training and implementing. And we take it short steps at a time, and here's why. Let's not ever lose the fact that we are running the safest, most efficient system in the world. And we are trying to change technology, and it's not a flip of a light switch.

While we are changing the technology, it is like changing a tire on a car that's running down the highway at 65 miles an hour. We are still moving 100 percent of the airplanes and changing the technology at the same time. So as we incrementally take these steps in success, we have to understand how we are getting here. We understand how ERAM became a complete failure and is over budget, because stakeholders were not involved.

Now that stakeholders are involved, we are seeing the success of it. And, as we move forward, and I have heard a lot of discussions about future panels on NextGen, we cannot forget how we got to the success of ERAM to every program in NextGen, that you need real stakeholder involvement, so that when we deploy, we train, we test and we develop. They're involved on the front end, so we save money and keep it going.

One of the things I wanted to talk to you about is recently one of ERAM programs called TAMRA, which is a terminal replacement, and our rep stumbled across a monitor problem where it flickers. And when you turn the lights down it just flickers, and it's a huge distraction. And for anyone who's seen a radar scope, you can't look at that for a long time as it's flickering like that.

We found work-arounds, where we were going to save the agency almost \$9 million. Now, I know that doesn't seem like a lot when we talk about \$27 billion, but if we are involved early, as we were in TAMRA, that is how we can save money and deliver our entire products. Once again, I thank you for the opportunity to testify in front of you. I do want to thank you for holding this hearing. I urge you in the next Congress to hold more hearings so that we continue to keep the focus on NextGen and its important programs. Thank you.

Mr. PETRI. Thank you.

Mr. Bolen?

Mr. BOLEN. Well, thank you, Chairman Petri and Mr. Costello. As you know, I am here today both as a representative of the National Business Aviation Association and in my capacity as vice chairman of RTCA. And you are very familiar with both of those organizations. I would like to use my time here today to pick up on the theme that I think Congressman Costello articulated so well, which is where we were and where we are hoping to go.

You know. Mr. Rinaldi said that when we started on this NextGen kind of meant everything to everyone, which is another way of saying it meant nothing to anyone. Right? If everything's a priority, nothing is. But, I think where we are today is NextGen is beginning to mean the same thing to everyone, and that's a pretty important accomplishment. We've talked today about the fact

that NextGen is transitioning from ground-based navigation to satellite-based navigation, transitioning from analog communications to digital communications. And we are doing that for very specific reasons.

We are doing that because we believe NextGen can give us substantial capacity increases that will reduce delays. We are doing it because we believe that NextGen will enhance safety by improving our situational awareness, and we are doing it because we believe NextGen, by providing more direct routing, can reduce our environmental footprint. So we are embarking on this transformation for some very specific benefit. And we are laying out a path.

I think the JPPO has done a great job of laying out a vision for where we want to go. And over the course of the past several years, RTCA has been taking taskings from the FAA and beginning to figure out how we actually move forward very clearly. And that movement forward is not without its challenges. We are learning that NextGen is not just about technologies. Clearly, ERAM is part of it. ADS-B is part of it. SWIM is part of it, but it's also about policies and it's about procedures.

It all has to fit together if we are going to move forward. We are seeing ourselves beginning to move from a vision to an operational system, beginning to take philosophical approaches to issues, such as deciding that it's not a big bang, one size fits all, let's do it everywhere all the time, but in more measured, Metroplex approach that looks at some of the unique attributes of the community.

I think a lot of the progress that we have made so far is directly attributable to this subcommittee, the leadership that you have provided and the accountability you have demanded. And I also want to say that I think a lot of the progress is a result of the tremendous leadership that Dave Barger and the NAC has been able to provide. The NAC has brought together the diverse industry stakeholders that you have demanded.

We have the military involved. We have general aviation involved. We have airports involved. We have the airlines. We even have community representatives, and we are all trying to move forward, because we understand that we are all going to benefit. The question was asked earlier, do all the stakeholders support it.

I can speak for NBAA, and I think I can speak for the broader general aviation community saying we do support it, because the reality is the system that we have in the United States, just like everywhere else, was built largely to accommodate the needs of the commercial airlines, and that is entirely appropriate. General aviation, including business aviation, participates in that, but what we have seen is time and time again as airspace becomes congested or airports become congested, general aviation gets pushed out a little bit. I remember when Midway Airport was a great general aviation airport, or Fort Lauderdale Executive, or San Jose or Manchester. You see how that begins to evolve.

We want to make sure that we can expand that capacity, enhance the safety, realize the environmental benefits, and I think we are moving forward today. We've got a lot of challenges ahead. We can see the potholes. We can see the wet pavement, but we have an opportunity to move forward, and I want to thank you for

the leadership and the accountability that has been demanded by this subcommittee, because the benefits have been very tangible.

Mr. PETRI. Thank you.

Ms. Baer.

Ms. BAER. Thank you, Chairman Petri, Ranking Member Costello and members of the committee. Thank you for inviting me to speak today.

I am the Director of Aviation for the Port Authority of New York and New Jersey. We are the ones responsible for the busiest airport system in the country, comprised of JFK, Newark International, LaGuardia, Stewart and Teterboro Airports, dedicated solely to general aviation. Together, these airports serve more than 107 million annual passengers. That means about 20 percent of all U.S. flights operate into or out of one of our airports.

First, let me begin by applauding the members of this committee for delivering a 4-year FAA Reauthorization Bill. I particularly appreciate how you included a strict timeline and metrics in the bill that will help us analyze the delivery and benefits of NextGen. I also have to thank Acting Administrator Huerta, who is also our designated Federal officer on the NextGen Advisory Committee, together with Dave Barger, who has been positively brilliant.

He has led the NAC, providing careful guidance on how to move the NextGen agenda forward, and I am very proud to be known as a member of that committee. I was also honored to be part of Transportation Secretary Ray LaHood's Future of Aviation Advisory Committee, where NextGen was a fundamental element of nearly every conversation we had, no matter what the subcommittee, and a prevailing theme throughout all the committee recommendations.

I should be clear. I really never intended to learn this much about NextGen, but in many ways I just had to. With experts like Vicki Cox or Paul Rinaldi here today, I can't claim really to be an expert, but I know more than I'd ever hoped to about the subject. And it's no secret that our airports are consistently ranked at or near the bottom and on time performance. And those delays in our airports trickle throughout the country.

MITRE tells us that one in three U.S. flights are affected by delays in the New York, New Jersey and Philadelphia airspace, and 40 to 50 percent of the national airspace ground stops and ground delays occur in New York. That means right now about half of all flights in the country being held at a gate or delayed on the tarmac can trace their delays to one of the airports in the New York/New Jersey region.

Delays and ensuing capacity constraints have stifled growth and effectively put a no vacancy sign on JFK, Newark and LaGuardia. Our economists have calculated that for every million potential additional passengers whom we cannot serve, there are 5,000 jobs that don't get created in our region. So, delays are not just an annoyance. They cost money, real money, and have real economic consequences. Extra fuel, a new flight crew, hotel vouchers, missed meetings, business deals not done, extra meals in an airport, and so on.

In 2010 a University of California, Berkeley study found that flight delays cost the United States \$32.9 billion a year; and, most

unsettling of all is the fact that air passengers bear the largest burden. Delays are a threat to this Nation's global competitiveness. So, how can we, as a Nation, continue to rely on an air traffic control system that is fundamentally what was used in the 1940s? We can't. And we must act quickly to fix this problem, because the cost of inaction is simply too great.

NextGen is the fundamental backbone of the solution. It is not the only solution but it is the backbone. Not to be selfish, but if I am told that my airports are responsible for 50 percent of the problem, I really think that NextGen has to be implemented in Newark, New Jersey region as soon as possible, where it can deliver the greatest benefits to the country. But, I'm realistic. I understand the wholesale revamping of the way our national airspace functions can happen overnight.

However, by attacking the problem where it is most acute, NextGen can deliver improvements to constituents throughout the country from Green Bay to Tampa Bay, from Portland, Oregon to Portland, Maine, and all the points in between. Because according to the 2010 GAO report, our three airports, along with Philadelphia, Atlanta, O'Hare and San Francisco account for 80 percent of all the departure delays across the entire country. So you fix it in New York and a few others, and you can fix the problem everywhere.

The problem in New York is so acute that we can't wait until 2018 or 2020, or whatever the date is when the first NextGen benefits should be realized. Recognizing that our problem was truly an issue of national urgency in 2009, the Port Authority established the National Alliance to Advance NextGen, a coalition of business, civic and industry groups and organizations devoted to getting out the message about NextGen.

We continued to grow, and last month we reached 1,000 members. In fact, the thousandth member was the Chicago Land Chamber of Commerce from Ranking Member Costello's home State. In all, we have members from all 50 States and Washington, DC, firms like Sherwin Industries from Wisconsin, organizations like the Los Angeles Chamber of Commerce in California, Air Dat, LLC, from North Carolina, St. Louis Business Travelers Association, and hundreds more. Together, these organizations represent tens of millions of U.S. air travelers who are demanding improvements to our national air traffic control system through the implementation of NextGen technology, policies and procedures.

We have already begun piecing together elements of NextGen on the ground, including a revolutionary ground management system at JFK that has helped to meter departures and minimize delays. We have done that in conjunction with our friends at the FAA and the airlines. Using JFK in a very collaborative effort it's been very successful. We are working with the FAA to expand the program to LaGuardia and Newark airports. At JFK alone, this system has saved nearly 5 million gallons of fuel and almost 15,000 hours of taxi time annually.

Over the last decade, our agency has invested more than \$1 billion to make airport operations on the ground more efficient. Our initiatives have delivered. We have invested in building high-speed taxi way exits, multiple entrance taxi ways, minimizing runway oc-

cupancy time, enabling a more efficient queuing procedure. The bottom line is that tens of thousands of hours of delay have been averted to say nothing of the reduction in emissions and environmental benefits that come from curbing delays and congestion.

And, as we move forward with NextGen, we have made a number of efforts to be better neighbors, having recently launched a single phone number that pulled together all our airports' noise complaint hotlines together with a Web site that enables the public to express concerns regarding aircraft noise. This new system provides feedback in real time, has a standardized repository, and offers the ability to analyze noise complaints better than we have in the past.

As we have before, we will share complaint statistics with the FAA to ensure that they are aware of the volume and origin of complaints so they may consider any operational adjustments such as runway selection, if feasible. All of this is well and good, except that admittedly these efforts are not making improvement, or are making improvements at the margins. It doesn't mean we are going to stop, nor will I stop advocating for the swift implementation of NextGen.

Members of Congress, we cannot afford for it not to happen; not in this economy; not in any economy, frankly. In a time of tightened budgets and other fiscal restrictions, it will prove challenging to fully fund NextGen. But, do we instead continue to risk the mounting challenges we will face as a Nation stuck with a World War II era radar-based Air Traffic Control system?

With so much at stake, I urge members of this committee and Congress to move quickly to implement NextGen Technology. We certainly stand ready, willing and able to assist at the Port Authority of New York and New Jersey.

Thank you.

Mr. PETRI. Thank you and thank you all for your testimony.

Mr. Barger, you have had the opportunity to spend a couple of years immersing yourself in some of the issues involved in pieces of this problem, and I think you have looked at it from the point of view of your own organization and the opportunities and challenges. I don't know, but I would be remiss if I didn't ask if you have any ideas or suggestions, or feelings about how the process is going and how it can be speeded up. How skeptical people in the industry—some of them feel burned one or two times. This has been on again, off again.

The technology keeps changing, and they're wondering when they ought to leap and they actually like to see a return on the investment when they do. How can this process be—Mr. Bolen said it's a policy and procedure as well as a technology. How can we help encourage sort of positive leadership to help move this thing forward faster, so that boards see opportunities and have something specific investment opportunities that would in fact not just involve new equipment, but some new flight plans and all the rest so there would be a payoff for their organizations? Could you sort of discuss how you see us moving this thing forward?

Mr. BARGER. Sure. Thank you so much, Chairman, and if I may I think I tend to be a cadence person. And when I think about these past 2 years and Bill Ayres now moving into the chair role

at the NAC, and, by the way, this is working on behalf of the very good work of organizations like task force 5, previously, collaborating with the FAA. But, ensuring that again the opportunity for industry stakeholders to have a seat at the table, to respond to these taskings to the FAA, which are complex, when you start thinking about Metroplex.

Seattle is different than New York. North Texas is different than Atlanta, but the ability to talk about these complex issues and respond to the tasking. So I think first and foremost I'd keep the committee, such as the NAC in place, with a cadence put in place for Federal advisory meeting cadence with the FAA.

Number two, continue the taskings. And so the taskings that I've come across so far from the FAA, such as equipage incentives, Metroplex further definition and roll out are prioritization, performance metrics. And, by the way, what are the metrics? Is it access to the system? Is it lapsed time en route? Is it fuel burn? Defining what these metrics are, the use of DataComm, right, as Mr. Rinaldi talked about with the use of technology to communicate, driving efficiency, I am very excited about potentially taskings that talk about these nontechnical barriers. So I think cadence, continue the taskings.

We have 28 members, including the leader of SESAR. When we talk about the impact over in Europe, including the director general of Euro control, including stakeholders here in the United States, this harmonization that's so important. And I would just close, Chairman, by saying that really the benefits of these policies, procedures, the equipage, everybody being on the same page, when you look at the return on capital of the business case—and I'll take an airline perspective—40 percent of our cost of JetBlue, up to 40 percent, is fuel in terms of producing a unit of measurement and available seat mile.

Well, I mean we all are looking at fuel, whether it is Mr. Bolen's group with NBAA, whether it is corporate aviation, but again, it's access. The benefits are obvious. The return on investments are obvious. The business case to the boardroom is obvious. And my sense is that's what we have to continue to do and last but not least, as Mr. Rinaldi said, we are all using the same language, the definition of what it is—what's the elevator speech—because we were not, even as airlines, let alone the rest of the industry, defining NextGen the same way.

Sir, thank you.

Mr. PETRI. Well, we tend to, and it is understandable, but in Government we try to have rules and be fair and equal for everyone. Then there is the tendency for top down and follow our rules or you are going to get in trouble, or whatever. And in this case it strikes me that you need to get the incentives right and get some kind of where people make a decision to participate or to move forward faster and have a system that has enough flexibility to accommodate that.

So, for example, if we get the basic technology out there, then if an airport, say Dallas-Fort Worth, were to go to get its procedures in place to be a NextGen airport, presumably it would be more competitive from the point of view of travel to that airport. The ticket prices, likely, would be less, because the flights would be

more efficient. The fuel cost would be less, and so on. And that committee would have a little bit of an advantage in competing, say, with Atlanta or someone else.

And why not figure out ways of getting some dynamics so that people around the country, who are operating airports or are trying to promote the regions, aren't starting to bang on us and on the FAA and others saying move this thing forward, because there's some opportunities for us here. Let us get ourselves approved for this new procedure, because it will make us more competitive. Would you comment on that?

Mr. BARGER. Yes, Chairman, and I think two further thoughts. One is the theme of best-capable-best-served. And other members, including Mr. Rinaldi may have comments regarding first-come-first-served versus best-capable-best-served, not unlike an HOV lane, if you think about access to moving on a congested highway. And so I think that when you look at this concept, which is one of these nontechnical barriers to implementing NextGen, best-equipped-best-served, best-capable-best-served, there's different terminology for it.

My sense is, again, the incentives are going to be obvious; and, these two partnerships that JetBlue is collaborating with, the FAA, the approach into Kennedy Airport—and I'll take the ADS-B out—pioneering offshore from the Northeast down to the Caribbean, for us to save 6 minutes en route each way on an airplane that burns 750 gallons per hour times \$3 and whatever it is per gallon, let alone getting the airplane back earlier, so that maybe at the end of the day we can operate another flight on a multimillion-dollar asset. The incentive is obvious.

One other thought: I think of the success again of the Greener Skies initiative in Seattle. This was many years worth of work. Alaska Airlines, the FAA for many different components of the FAA in the Port of Seattle working to really harmonize not just Sea-Tac, but all the type of operations that were happening in that airport, because you also want to be careful about disadvantaging, right, because there is mixed equipage.

So I do think a couple thoughts there, sir, and things like the issue of best-capable-best-served. It seems so obvious. It really does.

Mr. PETRI. Mr. DeFazio?

Mr. DEFAZIO. Thank you, Mr. Chairman.

I was pleased to hear from this panel that we seem to have made so much progress from some of the earlier efforts. I just would like to know that it's both deep, i.e., that it relates to the planning for NextGen and some of the things that were specified in the reports by the IG and the others about not having yet set parameters for a number of the major programs. And, secondly, revisiting a little bit what changed so much, and I guess I'd go to Mr. Rinaldi first with the ERAM program. I mean what was the change here? What you described was much more typical of my experience over many years with acquisitions with the FAA.

Mr. RINALDI. Sure. Thank you. What changed with ERAM was our involvement, our involvement from a human in the loop testing at the tech center in Atlantic City before it reached the floor out in Seattle and Salt Lake. What they wanted to do was deploy it in

live traffic, and it just wasn't working. As you said, it was tracking the wrong airplanes or it would freeze up with a big red X. And once the controllers don't have confidence in setting out the position that it's actually giving you accurate information, then that's what you rely upon. That's how we get through the day. So what happened was there was delays.

Now, we pull it back. We actually test, identify what really is problems, and the actual testing is controllers hitting the keys that they would normally hit in a routine sequence on a regular basis. And what that was doing was actually shutting the program down in many cases. And the reason that was happening is because you didn't have real live testing going on, or real testing going on with air traffic controllers. They had, you know, engineers doing it.

Not anything against engineers, but if you're going to build a system for air traffic controllers, you need air traffic controllers involved. Once we got to that point, and then they had to rewrite a whole bunch of code. Lockheed Martin can tell you exactly how much code that they had to write, but it was a lot to change the direction of ERAM to actually get it to function with human air traffic controllers.

Once we got to that point, we're incrementally testing it now in nine more facilities and each time we test it we develop it, we find another problem. But we're not implementing until that problem is fixed or we have an acceptable work around of that problem; such as, don't touch the ABC key and then hit enter. And you get a big work around, so you don't do that.

The reason I talked about ERAM in my opening was regardless of who's in charge of this committee or the White House, or who the FAA Administrator is, the NAC has seen it. The industry has seen it, and Congress has seen how we have success by having us involved in the very beginning. Is it perfect? No. We are not there yet with the agency that we're involved at pre-decisional, very beginning of what NextGen technologies.

We want NextGen. We want the latest technology. We want them to save fuel and be very successful, because we want the best aviation system in the world. What it comes down to is us really saying is this piece of equipment making it safer, more efficient, or making everybody's job better.

Mr. DEFAZIO. Good. Mr. Barger, just from your experience chairing the committee, do you think we've seen a systemic change in the FAA and its relationship with stakeholders, and not just air traffic controllers, but all the stakeholders? Because in the past as Mr. Rinaldi said there was a procurement. They went out, they got engineers involved. Then the FAA started sending change orders, and yet there was no relationship going on over here that the people were actually going to have to implement, either buy the equipment or actually operate the system itself.

Mr. BARGER. Congressman, I have seen a change, but again, my visibility is from 2 years back chairing the NAC to today, and then obviously looking forward on the committee. But, what I've learned with RTCA, task force 5, all the work that was done before, JPDO, again, longer term, shorter term, and then day of, I think the comments by the chair, as well as ranking member, regarding the Acting Administrator, Michael Huerta, has been 100 percent focused,

in place, present, whether it says Deputy Administrator or as the Acting Administrator, as the DFO in my 2-year term.

Randy Babbitt before that as well has commented, and then people like Vicki Cox in this room, David Grizzle, and a significant number of FAA leaders. But, what I think is really interesting, Congressman, is that again 28 members on the committee, and they're there, whether it's down at Embry Riddle or out at Seattle, going into Memorial Day weekend, or here in Washington or a hangar in New York. People are truly—they're present. And, again, whether you're an equipment provider, whether you're building airplanes, you're operating airplanes, whatever that make might be, whether it's corporate and whether it's general aviation military airline, European, USA, I mean, I think that that collaboration speaks volumes to stakeholders being engaged. So I can say that it's a very healthy meeting, because you know when you have something that's not healthy. You absolutely know that.

Mr. DEFAZIO. Mr. Bolen?

Mr. BOLEN. Well, I agree with exactly what's been said. I think what has changed is now everybody is in the room. We're collaborating, and we sense that at the top of the FAA there's a commitment. And I think that has led us all to believe this is possible. We can do it. I don't want to underestimate, however, the challenges that remain ahead. You know.

Dave Barger mentioned best-capable-best-served. We want to make sure that as we go forward no one misinterprets our commitment to best-capable-best-served as not-capable-not-served. One of the reasons we were so enthusiastic about what we saw with the Greener Skies initiative up in Seattle is we saw that those who invested in the NextGen equipment were able to receive shorter approaches and saved fuel. Those who were not equipped were treated the same way they have always been treated. They weren't suddenly shut out.

We are going to be operating in a mixed use environment for a very, very long time. The military, general aviation and some international, there are groups they can't equip. We have got to find a way to do that, and I think we are beginning to see the pathways. And I think there's this clear vision now on how we get there. We need to make sure the policies and the procedures support that.

I do want to make sure we understand. Getting NextGen right is not just getting the technologies out there, but getting the benefit to be received. It's not enough to have ERAM, ADS-B and SWIM. We've got to have more capacity, better safety, reduced environmental footprint; and, that is going to be a challenge. We are talking about equipage. Are you going to invest in the technology and put it on your airplane? Only if I truly believe the benefits are there. So I would urge this committee to stay very focused as we move forward on whether or not we are realizing benefits, not just deploying technologies.

Mr. DEFAZIO. Excellent. All right. Thank you. Thank you, Mr. Chairman.

Mr. PETRI. Thank you. Mr. Costello?

Mr. COSTELLO. Mr. Chairman, I don't have any questions, but I think it is probably a good time to wrap this hearing up based upon what Mr. Bolen just said. I think he is exactly right, and I

think it is the responsibility of this subcommittee. And I know that you will take the challenge on to make certain that the benefits, in fact, are there and that we are monitoring NextGen as we go forward.

I just want to thank the witnesses, not only for their testimony here today, but for your service on the committee, and in particular, you, Mr. Barger. You have taken the time for the past 2 years to not only get engaged and get involved, but for your leadership. You truly have made a real difference in bringing us to where we are today. So we don't want that to go unnoticed. Thank you for your service, and we look forward to continuing to work with you.

Mr. BARGER. Thank you.

Mr. COSTELLO. I will be working with all of you in a different capacity, but this subcommittee will continue to work with you in the future. Thank you.

Mr. PETRI. One of the secrets of America is that many, many people contribute in different ways, sometimes sung and sometimes unsung, to the success of our national enterprise, and this is one example. There are actually many others up and down the line and it helps make us a great country.

So we thank you all for your testimony, and this hearing is adjourned.

[Whereupon, at 12:35 p.m., the subcommittee was adjourned.]



OPENING STATEMENT OF  
THE HONORABLE RUSS CARNAHAN (MO-03)  
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE  
U.S. HOUSE OF REPRESENTATIVES

Hearing on  
*A Review of and Update on the Management of FAA's NextGen Program*  
Tuesday, September 11, 2012  
10:00 am  
2167 Rayburn House Office Building

Chairman Mica, Ranking Member Rahall, and Members of the Committee: Thank you for holding this hearing on FAA's NextGen Program. Today's hearing provides an opportunity to continue our dialogue on how best to implement and manage the future of aviation. As we all know, our current domestic aviation system is outdated and inefficient, causing frequent flight delays, wasting time and fuel, and creating a significant drain on our strained economy.

Flight delays remain a significant issue in my home state. In 2011, the St. Louis Lambert Airport saw 11,238 delays, or just fewer than 20% of total flights originating from the city. Even more, the average delays are just short of an hour in length. We in Congress must do our best in working with private airlines to make NextGen the future of American aviation.

Around 70% of flight delays are caused by unforeseen weather conditions. NextGen will incorporate global observations into a single system available to all planes and updated in real time.

The current National Air Traffic System utilizes a multitude of different voice switching systems. NextGen will create a unified national system instead, aiming to improve air traffic safety, efficiency, and order. Together with the use of GPS technology, NextGen will create a more efficient airspace around airports and allow planes to fly closer to one another than before, both necessary for a growing aviation industry. At the same time, safety enhancements will reduce the risk to the public and help avoid future disasters.

Furthermore, the domestic airline industry is responsible for hundreds of thousands of tons in greenhouse gas emissions each year. By coordinating planes with ground crews, flights will spend less time in the air waiting for available runways. If Next Gen is properly implemented, delays are estimated to be reduced by 38 percent by 2020, providing approximately \$24 billion in cumulative benefits while saving 1.4 billion gallons of fuel and the related emissions. The aviation industry employs approximately 10 million people and facilitates more

than \$1 trillion in economic activity annually. Investing in such a central pillar of the American economy will only bolster the American job market in the future.

However we must ensure that the FAA is properly guiding the development of these technologies. We must ensure that there is sufficient attention and leadership given to the programs that make up NextGen, and that timetables and estimates are met. This is essential not only to remain good stewards of the public's funds, but also to make sure the industry has the needed confidence to make their own investments.

I look forward to hearing from our witnesses today on ways to best implement the NextGen system and make our domestic aviation system efficient, reliable, and safe.

Thank you Mr. Chairman.



STATEMENT OF  
THE HONORABLE JERRY F. COSTELLO  
SUBCOMMITTEE ON AVIATION HEARING ON  
“A REVIEW OF AND UPDATE ON THE MANAGEMENT OF FAA’S NEXTGEN PROGRAM”  
SEPTEMBER 12, 2012

- Mr. Chairman, thank you for calling today’s hearing on “A Review of and Update on the Management of FAA’s NextGen Program”.
  
- It is important that this Subcommittee stay actively engaged on NextGen. Last Congress, I held multiple oversight hearings on key issues that we will hear about again this morning
  
- A few years ago, and as a result of hearings and roundtables that I chaired, it became clear to me that the industry stakeholders needed to be more involved in the planning and implementation of NextGen. Frankly, the FAA was having a hard time explaining NextGen and what the agency was trying to accomplish.

- It also became clear that the FAA needed to change course.

The agency had to first achieve near-term NextGen benefits and strengthen its credibility with the user community, while continuing to plan for and implement long-term goals. In 2009, this Administration did change course, positively engaging with a task force of industry stakeholders to develop a blueprint of near-term improvements to the national airspace system.

- As a result, there have been positive developments with NextGen in recent years, and the FAA can point to real, tangible NextGen benefits. For example, the FAA has implemented new flight procedures in Houston, Atlanta, Charlotte, Northern California, Dallas and Washington, D.C. These improvements will save at least 22 million gallons of fuel; and reduce carbon emissions by 220,000 metric tons.

- While this hearing will focus on the positive aspects of NextGen, it is important to be up front about the challenges that lie ahead. The Department of Transportation Inspector General has expressed concerns that cost overruns on the En Route Automation Modernization (ERAM) program will delay NextGen implementation. I look forward to hearing from our witnesses about what steps the FAA is taking -- or should be taking -- to contain these cost overruns and ensure taxpayer dollars are being spent wisely.
  
- Mr. Chairman, I also want to highlight an important point that is not a technical or financial issue causing difficulties for the FAA to move forward with NextGen implementation; rather, it involves politics. The FAA has operated without a confirmed Administrator since December 2011. In March, President

Obama nominated Michael Huerta, who has done a good job as Deputy Administrator and now Acting Administrator. In July, the Senate Commerce Committee voted to approve his confirmation, yet one Senator is holding this vote up. The absence of an FAA Administrator has created gaps in key NextGen leadership positions, which could lead to delays in NextGen implementation. **The Senate must confirm Acting Administrator Huerta right away so we can keep the NextGen program on track.**

- With that, Mr. Chairman, I thank you for calling this hearing, and I look forward to hearing from our witnesses.

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*Eddie Bernice Johnson*  
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Statement for the Record  
 Congresswoman Eddie Bernice Johnson  
 House Subcommittee on Aviation  
 Wednesday, September 12, 2012:

#### A Review of and Update on the Management of FAA's NextGen Program

With this year's passage of the FAA Reauthorization bill, NextGen modernization will transform the National Airspace System. Through NextGen's satellite-based traffic management, we will be able to address increased congestion in our Nation's skies, while improving safety and reducing the environmental footprint of air transport. Transitioning to a GPS-based air traffic control system will allow airlines to reduce flight delays, save fuel, and cut the amount of harmful emissions from aircraft engines. In addition, the successful implementation of NextGen will boost our economy and enable the creation of more jobs.

The Dallas Metroplex is a prime example of the significant growth in the aviation market, and the potential benefits of NextGen deployment. As with any metroplex, this growth comes with growing pains. Metroplex sites, by their nature, are located in busy metropolitan areas. NextGen's use of satellite-based technology is developing more efficient and direct routes in and out of these major airports. With this efficiency comes shorter travel times for passengers, fuel savings for airlines, and decreases emissions for the environment.

Yet these advances come with a hefty price tag. By the FAA's estimates, the development of NextGen will require between \$20 and \$27 billion in funding from 2012 to 2025. In addition to federal funding, private industry is making significant investments in the development of aircraft upgrades and NextGen-capable avionics.

Both as a member of this Committee and as Ranking Member on the House Science, Space, and Technology Committee, as well as a conferee to the FAA reauthorization, I recognize making our skies safer, less congested, and cleaner will require substantial investment. We must invest in the future, but we must invest wisely. I am concerned with the Department of Transportation Inspector General's April 2012 report that the En Route Automation Modernization program implementation schedule has slipped by four years and over budget by \$330 million. In addition, I understand that, although progress is being made, the agency has had difficulties in developing performance metrics for NextGen goals.

I thank Chairman Petri and Ranking Member Costello for calling this hearing, and look forward to the testimony of today's witnesses on the next steps in implementing NextGen technology.

Statement of  
The Honorable John D. Porcari  
Deputy Secretary  
AND  
Michael Huerta  
Acting Administrator, Federal Aviation Administration  
U.S. Department of Transportation  
BEFORE THE  
Subcommittee on Aviation  
Committee on Transportation and Infrastructure  
U.S. House of Representatives  
September 12, 2012

*A Review of and Update on the Management of FAA's NextGen Program*

Chairman Petri, Ranking Member Costello, Members of the Subcommittee:  
Thank you for the opportunity to appear before you to discuss the state of the Federal Aviation Administration's (FAA) Next Generation Air Transportation System, known as NextGen.

NextGen is one of the nation's largest infrastructure projects underway today, but it is more than just a single project, plan or new system. It is the integration of many systems, projects, concepts, technologies, plans, and organizations working with our National Airspace System (NAS) stakeholders to deliver new service capabilities that meet increasing air transport demands. The future of the NAS depends on the success of NextGen, and NextGen's success depends on FAA's effective management and oversight of program implementation, as well as collaboration with our industry partners and our employee labor representatives. We would like to highlight the significant progress we have made to date, and outline how our program management and industry collaboration have contributed to our successes and helped us meet challenges.

Airline passenger travel is expected to nearly double in the next 20 years. That translates into many more aircraft carrying a lot more passengers who will need to arrive at their destinations safely and on time. NextGen can meet that challenge. Our latest estimates show that by 2020, NextGen improvements will reduce delays, in the air and on the ground, by 38 percent as compared to what would occur without those improvements. Such delay reductions are estimated to result in \$24 billion in cumulative benefits to aircraft operators, the traveling public and the FAA. Full implementation, which is defined in the NextGen Implementation Plan as occurring in 2020, will result in 1.4 billion gallons of fuel saved and a 14 million metric ton reduction in carbon dioxide emissions.

While we are on track to meet these long-term goals, it is important to stress that NextGen is happening now. Across the country, we are creating satellite-based procedures that will transform the NAS. Satellite navigation is essential to deliver benefits to users right away. The new flight tracks will relieve bottlenecks, improve safety and efficiency, and foster the flow of commerce.

NextGen programs are delivering benefits to users of the system and the traveling public today. Through our work with an advisory group composed of industry stakeholders, we received expert input on the problem of congested airspace in busy metropolitan areas. We have turned those recommendations into specific action by launching our Metroplex initiative. This is a collaborative effort with industry to bring benefits to the public as soon as we possibly can. We are creating new, more direct routes across the country that will relieve bottlenecks and congestion, in addition to improving safety and efficiency. We are making progress in many different areas, including Houston, Atlanta, Charlotte, the San Francisco bay area in northern California, the Los Angeles area in southern California, the Dallas-Fort Worth area in northern Texas and right here in the metropolitan Washington, D.C. We are also working on additional metropolitan areas. Satellite-based navigation is expected to cut a total of seven million nautical miles from flight plans around these cities each year. These shorter routes, together with gradual descents under reduced engine power, are projected to save at least 22 million gallons of fuel annually. For these cities, that's a total reduction in carbon emissions of 220,000 metric tons annually, or the equivalent of taking more than 43,000 cars off the nation's streets.

Each Metroplex is unique and requires an integrated solution that yields benefits to the specific users of the airspace. The development of flight tracks and procedures must take into consideration numerous factors, including the area's terrain, the number and location of airports, the volume of operations, and the mix of equipped and non-equipped aircraft operating in the area. The precision of satellite-based navigation being deployed under the Metroplex initiative helps us to use our airspace more efficiently by deconflicting traffic headed to adjacent airports and allowing general aviation better access to smaller airports near big cities. It also provides GPS precision approaches to smaller airfields that do not have expensive instrument landing systems on the ground.

NextGen is also providing the general aviation community access to airports that have previously been inaccessible in low visibility conditions. Sixty percent of general aviation aircraft that fly under instrument meteorological conditions are equipped to take advantage of satellite-based navigation into airports that have no ground navigation capability. This has the added benefit of reducing congestion around larger airports that have previously been the only available choice in bad weather.

Another initiative that is yielding positive results is the Greener Skies Over Seattle initiative, a collaborative project between the FAA, Alaska Airlines, the Port of Seattle, and the Boeing Corporation. This initiative will create new NextGen approaches for multiple aircraft and airlines flying into Seattle-Tacoma International Airport (Sea-Tac), leaving Seattle's skies quieter and greener. These flight tracks are shorter, more fuel efficient and more environmentally friendly. Thanks to a lot of hard work by all of our partners, we reached a milestone this summer. For the first time, Alaska Airlines is flying customers into Sea-Tac using these new NextGen approaches. The importance of Greener Skies is not just that we are creating more efficient flight paths into Sea-Tac, but that we are developing a template for how to implement these kinds of airspace improvements in cities across the country.

Finally, I would like to share another example of how the FAA is partnering with industry to advance NextGen technology. The FAA entered into an agreement with JetBlue last year to

provide data and conduct real-time operational evaluations. JetBlue will equip up to 35 of its A320 aircraft with Automatic Dependent Surveillance-Broadcast (ADS-B) avionics. ADS-B will provide air traffic controllers with precise positioning of the aircraft by using GPS satellite signals, enabling the aircraft to fly more direct routes off the East Coast where ground-based radar coverage is unavailable. Field trials are scheduled to begin in early 2013. The FAA will collect valuable NextGen data by observing and conducting real-time operational evaluations of ADS-B on revenue flights. This agreement is beneficial to both the airline and the FAA and has the potential for industry-wide benefits.

While we've made significant progress in accelerating the benefits of new technology, we recognize that, as with any large-scale infrastructure program, we need to position ourselves to address the challenges that will inevitably arise. The FAA's Foundation for Success initiative, which we implemented last year, is helping the agency use our resources as efficiently and effectively as possible, while improving agency accountability. The changes that we made include attaining greater productivity by improving internally-shared services, redesigning FAA's governance and implementing a revised NextGen management structure. We recognized that the agency needed to be more proactive and flexible in order to keep pace with anticipated growth and advancements in aviation world-wide. We also recognized that our commitment to maintaining the safest, most efficient aviation system in the world could not be compromised in any way. Safety will always remain our number one priority.

We have learned lessons from previous large acquisition programs, and are developing new best practices moving forward. As an agency, we are also going through a positive transformation. You may recall that in 2010, we embarked upon Destination 2025, a long-term strategic vision for transforming not only the national aviation system, but also the agency responsible for making it happen.

In support of that vision, we launched our Foundation for Success initiative, which is putting an improved organizational structure in place to ensure the agency has the flexibility necessary to keep pace with the expected growth and advancement of aviation worldwide. As part of that initiative, we reorganized the structure of the NextGen office, moving it from the Air Traffic Organization (ATO) and elevating its top official to the position of Assistant Administrator for NextGen. This newly realigned position, reporting directly to the FAA Deputy Administrator, oversees an organization dedicated entirely to delivering NextGen benefits. Under a revised management structure, the new NextGen organization provides technical assistance and systems integration expertise, as well as promoting collaboration and accountability across the FAA.

We also created a program management office to improve our administration and coordination of key air traffic development programs. Through the Foundation for Success, we also established a new organization solely focused on implementing major technology programs. The Program Management Organization (PMO) is part of the FAA's Air Traffic Organization and is responsible for strategically managing our major acquisition programs. The PMO helps us to work across organizational boundaries to help continue to advance NextGen initiatives, ushering them from the drawing board to live operation. Equally important, we moved responsibility for these programs out of the components of the ATO which also have responsibility and primary

expertise in running the day-to-day operation of the aviation system. As a result, both the daily operation and the transformational programs can get the focused attention they need.

This new approach is already working with the En Route Automation Modernization (ERAM), a foundational NextGen program. ERAM has successfully been refocused and is on-time and on-budget. Changes to the program oversight, contract management and implementation approach over the last year have delivered significant progress in deployment of the technology. ERAM is now operating in some capacity at nine of the 20 en route centers, and five of those centers are currently using ERAM as the primary technology to direct high-altitude air traffic. Since December 2011, the system has accumulated more than 20,000 hours of operations across a range of varying airspace needs and traffic volumes. All of the en route centers will be operating ERAM by 2014. This turn-around is, in no small part, attributable to an improved relationship between a newly appointed management team and our labor organizations, the National Air Traffic Controller Association (NATCA) and the Professional Aviation Safety Specialists (PASS). We created collaborative work groups and established new program governance and oversight that included a steering committee and regular program management reviews. We standardized procedures to transition to continuous operations on ERAM, and made a series of process improvements across all aspects of the ERAM technology lifecycle. The success of ERAM is an essential component of moving forward with NextGen, and we will apply the lessons we've learned from the turn-around of ERAM to other initiatives.

Just as collaboration with the workforce has paid dividends on the ERAM program, industry partners continue to play a key role in transforming the way we travel and communicate in the NAS. The FAA has a longstanding history of engaging with industry. The agency has used the RTCA to develop industry consensus around policy, program and regulatory decisions for many years.

To facilitate NextGen specific recommendations, the NextGen Advisory Committee (NAC) was formed within the RTCA. The NAC's goal is to develop a common understanding of NextGen priorities in the context of NextGen capabilities and implementation constraints, with an emphasis on near and mid-term initiatives. Under the leadership of JetBlue Airways President and CEO Dave Barger, the NAC has helped foster a common understanding of success with joint performance objectives and development milestones, and focuses on implementation issues, including joint investment priorities, and the location and timing of capability implementation. The NAC is comprised of top-level executives representing operators, manufacturers, air traffic management, aviation safety, airports, environmental, civil and military, and domestic and international interests. Within the scope of the NAC's purpose, the FAA will issue tasks that reflect an FAA request for aviation community advice and recommendations on a particular operational or investment topic. Representatives of FAA, MITRE, and the RTCA are non-voting members of the NAC.

The NAC is working to define accepted metrics in six areas to enable measurement of the impact of NextGen on system performance. They include improved situational awareness, increased operational efficiency, increased capacity, increased fuel efficiency, reduced NAS costs, and improved access to the NAS. Agreed-upon NextGen metrics are critical to ensuring continued investment by users of the system, government and the international community.

Of course, the full range of NextGen goes well beyond what we have discussed. The Joint Planning and Development Office (JPDO) is the organization responsible for interagency coordination on NextGen and other select aviation issues. The JPDO is also the primary body to consider long-term concepts for NextGen and to ensure alignment of agency priorities.

The NextGen Institute, established by the FAA in 2005, is the mechanism through which the JPDO enables collaboration between government and the private sector to coordinate long-term NextGen goals and priorities. Key objectives are to foster a shared vision, facilitate concepts and approaches and to encourage innovations. The Institute Management Council (IMC), comprised of 16 senior industry representatives, oversees the NextGen Institute.

The JPDO charters a variety of collaborative networks that include study teams, discussion groups, information-sharing sessions and community review and validation opportunities. Each has defined expectations and performance periods. These collaborations have produced a long-term avionics roadmap, examined research and simulation needs for safety of more automated systems and share environmental approaches.

NextGen is a comprehensive undertaking, and can't succeed without industry collaboration, effective management, and engaging our workforce. Continued investment in NextGen is critical to transforming the NAS and delivering benefits to the flying public. It is not something FAA can do alone; rather, it will require partnership and commitment by the aviation industry if these endeavors are to be successful. We know that this Committee is committed to supporting NextGen and understands its significance. We, both government and industry, appreciate and rely on that support. There is certainly much more to NextGen than can be discussed in a single statement or appearance before this Committee. We will continue to work with you as we move forward delivering near-term benefits of NextGen and long-term success in modernizing our nation's aviation system.

This concludes our prepared statement. We will be happy to address any questions that the Subcommittee might have.

#

**QUESTION#1:** Can you explain why airlines would choose to invest billions of dollars in equipage for longer-term NextGen programs like ADS-B In when the FAA hasn't been successful in implementing near-term programs like performance-based procedures, and what steps the agency has or intends to take to address the IG's concerns?

**ANSWER:** The ADS-B-In Aviation Rulemaking Committee (ARC), with co-chairs from Airlines for America (A4A) and the National Business Aviation Association (NBAA), provides a forum for the U.S. aviation community to define a strategy for incorporating ADS-B-In technologies into the National Airspace System (NAS).

The ADS-B-In ARC provided a report to the FAA in September 2010 with over 100 recommendations, to include the acceleration of existing and future demonstration projects. The ARC found that these activities enable government and industry to better understand the benefit mechanisms and costs of implementation, as well as develop equipment standards and other elements necessary for NAS-wide implementation. This, in turn, provides the catalyst to redirect or focus available resources as the most promising technologies and capabilities emerge.

The FAA is currently working with United Airlines to perform validation test for the ADS-B-In application called "In-Trail Procedure" (ITP). The FAA provided funding to develop certified ADS-B-In avionics which are now installed on 12 United 747 revenue aircraft. The FAA also developed the controller procedures for ITP and provided technical support to United Airlines regarding the flight crew procedures and training. ITPs can currently be performed in the Oakland Oceanic Flight Information Region (FIR) by trained United flight crews operating with the equipped aircraft. FAA and United are collecting technical data on ITP system performance as well as operational benefits data to evaluate whether the estimated benefits are realized in actual operations. Results from this program are expected next summer. In addition to United, the FAA has been working with UPS, USAirways, and JetBlue to advance ADS-B In capabilities.

We will closely capture and monitor progress from the equipage effort to ensure near/mid-term benefits are realized. Additionally, we are pursuing focused implementation on new procedures.

#### **Performance Based Procedures**

The FAA has taken the comments and recommendations from the IG report and implemented new processes and procedures for the prioritization and development of performance-based navigation (PBN) procedures. These processes are emphasizing more "system benefits" rather than the number of procedures developed. Such an approach results in more "value added" and increased "returns on investment" for the entire aviation user community.

#### **Optimization of Airspace and Procedures in the Metroplex (OAPM) and RTCA**

The FAA has developed a robust, collaborative process that brings FAA management, labor organizations and aviation system users (commercial airline, general/business aviation and military) together to prioritize, develop and implement procedures that have buy-in from all

parties prior to their deployment. Such an approach results in less need for modifications and greater utilization rates once the procedures are implemented. An example of the value of this approach is the recent Optimized Profile Descents (OPS's) into Washington Reagan National and Dulles International Airports. Since the start of these approaches, over 80% of the candidate arrivals into these airports are using these OPD's, resulting in significant fuel savings, reduced noise and improved air quality.

The FAA is also paying significant attention to the utilization of existing PBN procedures. Again, in collaboration with stakeholders, the FAA is developing a PBN Dashboard that will provide analytical data on specific utilization rates and obstacles to PBN usage. From this, the FAA and its partners can address specific issues that are causing less than optimum usage of existing procedure.

With the assistance of labor and the aviation stakeholders, the FAA is documenting and validating benefits to PBN utilization that assists the user community to make their business cases for equiptage and support of these advance navigation procedures.

**QUESTION#2:** With each of its recent OAPM/Metroplex projects, the FAA is forecasting significant benefits in terms of added capacity, better on-time performance, and fuel/emissions savings for aircraft operators. What is the FAA doing to validate its projections? The FAA has a history of "over-selling and under-delivering" when it comes to NextGen. What is being done to make sure the facts live up to the hype?

**ANSWER:** Optimization of Airspace and Procedures in the Metroplex (OAPM) Study Teams develop preliminary benefits estimates to allow FAA decision-makers to evaluate the potential costs and benefits of proceeding with more detailed design and implementation efforts. Should estimated benefits justify moving a Metroplex project forward to the next phase, more detailed and refined benefits are developed in the Design and Implementation (D&I) phase of the project. Actual benefits depend on the final airspace and procedures solutions implemented and their utilization.

OAPM solutions are developed and implemented through a five-phase process. The final phase, Post-Implementation Review, involves analysis and validation of the implemented solutions to determine if they have delivered the desired benefits and/or caused other impacts. Actual flight track data, both before and after the project's implementation, are used to assess whether the airspace and procedures solutions delivered the expected benefits. The Post-Implementation Review specifically allows for additional adjustments or refinements as needed to better achieve desired benefits or address unforeseen impacts. If no significant adjustments are proposed, a Post Implementation Review is expected to require between three and six months to complete.

**QUESTION#3:** Mr. Huerta, the recently enacted FAA Modernization and Reform Act contained several provisions that would expedite the agency's development and implementation of performance-based procedures, which would help airlines conduct more fuel-efficient

approaches and departures. Can you provide an update on what the FAA has done to implement these requirements since the bill was enacted in February?

**ANSWER:** The FAA Modernization and Reform Act Section 213c seeks to accelerate environmental reviews of performance-based navigation (PBN) procedures with two legislative Categorical Exclusions (Catex). The first Catex applies to PBN in certain airports unless there are extraordinary circumstances with respect to the procedure. We expect to issue guidance on this Catex soon. The second Catex requires the Administrator to issue a Catex for PBN procedures that would result in measurable reductions in fuel, CO<sub>2</sub>, and noise on a per flight basis compared to existing procedures. This Catex presents a number of issues, primarily how to determine noise on a per flight basis. We have asked the NextGen Advisory Council (NAC) for assistance.

We are also implementing a comprehensive plan covering policy and guidance, best practices, enhanced coordination and consultation, and resources and training to expedite environmental reviews of NextGen and other agency efforts.

**QUESTION#4:** What benefits will operators receive from ADS-B In and ADS-B Out, and when would operators realize these benefits?

**ANSWER:** The operator benefits for ADS-B Out and ADS-B In are primarily associated with enhancements to safety and efficiency. The safety enhancements involve air to air capabilities; traffic and weather services; and expanded surveillance and instrument Flight Rule (IFR) services both en route and on the airport surface. Specific benefits include:

Reductions in accidents such as midair collisions, weather related accidents, runway collisions, and Controlled Flight into Terrain in the Continental United States, Hawaii, the Gulf of Mexico, the Caribbean, and Alaska.

Improved Search and Rescue and improved Medical Evacuation for areas where there is limited surveillance in the current environment.

The efficiency benefits translate to savings in both aircraft direct operating costs and passenger value of time. The efficiency benefits include: Reductions in weather deviations; reduced cancellations resulting from increased access to some Alaskan villages during reduced weather conditions; additional controller automation and improved performance of decision support tools; and additional ADS-B In applications.

Operator benefits in the non-radar regions of Alaska, Colorado, and the Gulf of Mexico have begun to accrue with the investments to date, while the remaining benefits increase over time from 2014 to 2020.

**QUESTION #5:** Mr. Huerta, the FAA Modernization and Reform Act, as well as the RTCA Task Force on NextGen, called for the FAA to streamline its environmental and operational

approval and certification processes associated with NextGen implementation. First, do you have the appropriate administrative and regulatory authority to implement these needed reforms, and second, how do you plan to address these long-standing bottlenecks?

**ANSWER:**

The FAA has authority to implement environmental improvements, consistent with the National Environmental Policy Act (NEPA) and other environmental laws that are relevant to aviation. The RTCA Task Force 5 Report and other stakeholders have offered specific recommendations to streamline NextGen NEPA review, and the FAA has undertaken a series of evaluations of our environmental review process and practices. In December 2011, the FAA issued a NextGen National Environmental Policy Act ("NEPA") Plan. This NEPA Plan lays out planned improvements between 2011-2015 in the way that the FAA will implement NEPA to ensure timely, effective, and efficient environmental reviews of NextGen. In this Plan, environmental improvements are described under four key focus areas: Policy and Guidance, Best Practices, Consultation and Coordination, and Resources and Training.

**QUESTION #6:** Mr. Huerta, Aviation stakeholders have expressed concern about the impact of sequestration on many key FAA programs, including NextGen and the Contract Tower Program. I assume you are looking at ways to eliminate waste and inefficiencies throughout the agency before you pursue any programmatic cuts. Can you identify where possible savings could be achieved?

**ANSWER:**

The Administration understands that we would face some very drastic choices under sequestration. Congress must act quickly to avert cuts across the federal government.

A budget reduction of this magnitude would result in significantly less efficient and less convenient air travel service for the American traveling public.

For the FAA, potential cuts would impact air traffic control services, NextGen implementation, and aircraft certification for manufacturers.

Civil aviation is a major economic driver contributing 10 million jobs and \$1.3 trillion annually. Congress needs to take action to avoid potential impacts to our economy.

The FAA has aggressively looked at ways to manage its cost and improve efficiency. For instance, the Cost Control Program has tracked an average of \$94 million in cost avoidance and cost savings per year and an overall total of \$658 million in cost avoidance since the program's founding in 2005.

In FY 2012, FAA is on track to save an additional \$94 million in the Cost Control Program. FAA's cost savings and efficiencies this year are focused primarily on four program areas: ATO Service Areas, Workers' Compensation, Information Technology, and the Strategic Sourcing for the Acquisition of Various Equipment and Supplies (SAVES) program. The SAVES program

has mirrored private sector best practices in the procurement of administrative supplies, equipment, IT hardware, commercial off-the-shelf (COTS) software, and courier services.

The FAA has also implemented the goals outlined in the Executive Order on Efficient Spending, reducing overall spending in the areas of travel, information technology, printing, and contracts. Consequently, the FY 2013 budget reflects a \$114 million reduction from FY 2010 levels. FY 2013 alone includes a substantial target, more than \$66 million, of that \$114 million reduction.

**House Subcommittee on Aviation****Space Based ADS-B Questions****September 6, 2012****1. Who at FAA is aware of Iridium's plan to host the ADS-B payload on commercial satellites and what does the Agency think about the project?**

Response: At the most senior level, the Acting Administrator, the Associate Administrator for NextGen, the Chief Financial Officer, and the Chief Operating Officer of the Air Traffic Organization all are aware of Iridium's plans to host the ADS-B payload on commercial satellites.

The FAA understands how critical its participation is for the successful implementation of the Space Based ADS-B concept. The FAA believes that Space Based ADS-B may provide benefits in the oceanic airspace by increasing access to preferred altitudes and decreasing delays by increasing capacity. As we move forward, the agency will continue to evaluate the concept, refine our strategy, and evaluate potential funding opportunities in order to make an operationally and economically sound decision.

**2. Does FAA have any plans to participate in the effort or include such technology in FAA's NextGen program? If yes, please explain. If no, please explain why not.**

Response: Given the agency's current budget constraints, we have not yet reached a final decision on whether or not to financially commit to this initiative. However, the FAA intends to be actively engaged in setting the specifications and configuration of Space Based ADS-B surveillance. At this time, the terms of our engagement are yet to be determined.

**3. Should FAA decide not to participate in the project, are there any consequences in terms of costs, both to the Federal Government and industry?**

Response: A cross-agency team is currently evaluating alternatives and impacts, including potential funding strategies.

**4. Should FAA decide not to participate in the project, what might be the impact to maintaining U.S. leadership in global air traffic control modernization efforts?**

Response: The cross-agency team is currently reviewing and evaluating risk to service and tradeoffs for an optimized approach.

**5. Should FAA decide not to participate in the project, are there any consequences in terms of FAA providing air traffic control services and greater efficiencies in the oceanic environment?**

Response: The cross-agency team is currently reviewing and evaluating risk to service and tradeoffs for an optimized approach.

**6. Should FAA decide not to participate, how does it intend to proceed with providing tangible nearer term NextGen benefits in order to establish the business case for operators to equip their aircraft with ADS-B avionics?**

Response: The ADS-B Out Final Rule was published in May 2010, with compliance effective after January 1, 2020. To expedite early equipage, the agency has signed agreements with several airlines, including JetBlue, United, UPS, and US Airways. In addition, the FAA has agreed to fund upgrades to the avionics for approximately 54 helicopters in the Gulf of Mexico that had voluntarily equipped with an earlier version of ADS-B avionics before the ADS-B rule requirements were published. The FAA will also award a contract this fall to upgrade approximately 400 air taxi aircraft that were equipped under the legacy Capstone program in Alaska. These agreements are set up to demonstrate the benefits of advanced ADS-B applications and procedures during revenue service and allow the FAA to share costs and risks with the participants. The operational evaluations will give the agency detailed cost and benefit data, and encourage airlines to equip early to capitalize on ADS-B benefits.

Manufacturers are just now starting to submit avionics through the FAA's certification process. The agency anticipates equipage to increase in 2013 and beyond, as more certified, rule-complaint avionics become available.

In addition, the agency is investing in ADS-B In standards development based on a request from industry through the ADS-B In Aviation Rulemaking Committee. Recently, the agency made the decision to invest in the implementation of the In Trail Procedures application.

**7. Is there any other information related to this issue that the FAA would like to share with the Subcommittee?**

Response: The agency is proceeding through the Acquisition Management System (AMS) process to establish a funding source for this initiative. To date, a market survey has been conducted and Concept of Operations has been developed. Requirements documentation and an alternatives analysis will be conducted in preparation for an FY2013 Initial Investment Decision and an FY2014 Final Investment Decision.

**Before the Committee on Transportation and Infrastructure  
Subcommittee on Aviation  
United States House of Representatives**

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## **Update on FAA's Progress and Challenges in Advancing the Next Generation Air Transportation System**

**Statement of  
The Honorable Calvin L. Scovel III  
Inspector General  
U.S. Department of Transportation**



Mr. Chairman and Members of the Subcommittee:

Thank you for inviting me here today to testify on the Federal Aviation Administration's (FAA) progress in developing the Next Generation Air Transportation System (NextGen)—a system that is expected to provide safer and more efficient air traffic management. As you know, NextGen is FAA's most complex effort to date and will require multibillion-dollar investments from both the Federal Government and airspace users.

Since the effort began in fiscal year 2004, we have reported on cost and schedule risks as well as challenges that FAA must address to successfully transition from legacy air traffic systems to NextGen. In September 2009, a Federal Government-industry task force—established at FAA's request—recommended several strategies for accelerating NextGen's benefits in the near term. However, last October, we testified that delivering near-term benefits and resolving problems with ongoing projects continue to challenge FAA.<sup>1</sup> While FAA has taken important steps over the past year to improve the management of NextGen, such as establishing a new program management office, the Agency has made limited progress in shifting from planning to actual implementation and delivering benefits to airspace users.

Today, I will focus on three key challenges that continue to impact FAA's ability to realize NextGen's benefits: (1) implementing NextGen capabilities at congested airports, (2) resolving technical and program management problems with the En Route Automation Modernization (ERAM) program, and (3) managing program costs and schedules in developing and implementing NextGen's transformational programs.

## **IN SUMMARY**

FAA has made progress in improving air traffic management at congested airports in major cities—one of the task force's most critical recommendations. For example, FAA has completed studies to identify recommended changes for seven metroplex locations and is performing airspace and procedures design work at six of them. However, industry representatives are concerned that the effort may not deliver all desired benefits and that FAA has not yet integrated metroplex with other related initiatives, such as better managing surface operations. Additionally, FAA has not fully resolved key organizational, policy, and training barriers to implementing NextGen capabilities in the near term. Central to realizing benefits from the task force recommendations and other NextGen initiatives is the successful deployment of ERAM—a multibillion dollar program for processing flight data. However, extensive software-related problems have significantly delayed ERAM's nationwide deployment, resulting in hundreds of millions of dollars in increased costs. FAA is taking steps to address our concerns about a number of ERAM programmatic and contract management issues, such as modifying its contract

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<sup>1</sup> OIG Testimony Number CC-2011-036, "Progress and Challenges in Developing to the Next Generation Air Transportation System," October 5, 2011. OIG reports and testimonies are available on our Web site at <http://www.oig.dot.gov/>.

to better track costs, but considerable risks remain to complete the effort within the Agency's revised cost and schedule parameters. FAA faces similar cost and schedule risks with its NextGen transformational programs, as the Agency has not approved total cost, schedule, or performance baselines for any of the programs or developed an integrated master schedule for managing and executing NextGen.

## BACKGROUND

NextGen involves a significant overhaul of the National Airspace System (NAS) to shift from ground- to satellite-based air traffic management. This effort includes several components, such as:

- Redesigning airspace and deploying new performance-based flight procedures,
- Developing systems to help controllers better manage air traffic, and
- Providing critical technologies and infrastructure for NextGen.

As shown in the following table, FAA has several NextGen initiatives and programs under way that are expected to deliver benefits to the NAS.

**Table. Examples of Key NextGen-Related Initiatives and Programs**

Initiative/Program	Expected Benefits
Metroplex Airspace	Improve the efficiency of airspace that affects multiple airports near large metropolitan areas.
Airport Surface Operations	Improve the management of airport taxiways, gates, and parking areas.
Data Communications (DataComm)	Provide 2-way data communication between controllers and flight crews for improved cruise and transition operations to enable more efficient use of available or forecast capacity in the NAS.
ERAM	Replace and significantly enhance existing software at the 20 FAA Centers that manage high-altitude air traffic. ERAM is FAA's key platform for NextGen to process flight data across the NAS.
Automatic Dependent Surveillance-Broadcast (ADS-B)	Enhance information about aircraft location for pilots and air traffic controllers using satellite-based surveillance technology.
System Wide Information Management (SWIM)	Provide a more agile exchange of information through a secure, NAS-wide information web that will connect FAA systems with other agencies and airspace users.

Source: OIG analysis

In 2009, FAA asked an RTCA<sup>2</sup> task force to reach consensus on the NextGen operational improvements planned for 2012 to 2018, help develop plans to maximize NextGen benefits, and justify investment in mid-term capabilities. The task force made

<sup>2</sup> Organized in 1935 as the Radio Technical Commission for Aeronautics, RTCA, Inc., is a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management (CNS/ATM) system issues. It functions as a Federal advisory committee.

32 recommendations 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. The task force also emphasized the need to assign responsibility, accountability, authority, and funding within the Agency to accomplish all required non-infrastructure tasks, such as developing needed policies and procedures.

Recently, we reported that FAA is facing challenges with implementing near-term NextGen capabilities, which could delay benefits,<sup>3</sup> and that FAA has not yet established total program costs, schedules, or performance baselines for any of the six NextGen transformational programs, which limits visibility into the total costs and timelines required to achieve benefits.<sup>4</sup>

### **CHALLENGES REMAIN FOR FAA IMPLEMENTATION OF NEXTGEN CAPABILITIES IN THE NEAR TERM AT CONGESTED AIRPORTS**

FAA has made important progress in responding to the task force recommendations to improve air traffic management at congested airports by aligning budgets and plans, completing airspace and procedure studies at specific airports, and performing design work. However, FAA's efforts have been delayed in several critical areas, including airspace affecting multiple airports near large metropolitan areas, airport surface operations, and data communications. In addition, FAA has not fully addressed key barriers to implementing task force recommendations, which could further delay the delivery of much needed benefits at congested airports.

#### **FAA Has Responded to Task Force Recommendations by Aligning Budgets and Plans and Performing Study and Design Work at Specific Airports**

Within 4 months of the RTCA report, FAA issued a plan to implement all recommendations and incorporated its response in its NextGen Implementation Plan,<sup>5</sup> as recommended by the task force. In addition, FAA allocated over \$600 million in funding for fiscal years 2011 and 2012 to fund task force-related activities. Further, FAA established the NextGen Advisory Committee (NAC)<sup>6</sup> to address the task force's recommendation for providing a mechanism for continued industry collaboration.

FAA has made progress in improving airspace around congested airports in major cities—one of the task force's most critical recommendations. The task force and FAA

<sup>3</sup> OIG Report Number AV-2012-167, "Challenges With Implementing Near-Term NextGen Capabilities at Congested Airports Could Delay Benefits," August 1, 2012.

<sup>4</sup> OIG Report Number AV-2012-094, "Status of Transformational Programs and Risks to Achieving NextGen Goals," April 23, 2012.

<sup>5</sup> FAA's NextGen Implementation Plan is an annual plan that sets out FAA's vision for NextGen, now and into the midterm. The plan further identifies the goals FAA has set for technology and program deployment and the commitments FAA has made in support of that vision.

<sup>6</sup> The NAC is a Federal advisory committee that will develop recommendations for NextGen priorities 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.

identified the metroplex initiative as a key area that could provide the most near-term benefits by improving traffic flow and reducing delays at congested airports in 13 major metropolitan areas.<sup>7</sup> Work at each of these 13 sites will consist of study<sup>8</sup> and design phases<sup>9</sup> that will take about 3 years at each location. FAA has completed initial studies at 7 of the 13 locations and is performing design work at 6 of these locations.<sup>10</sup> Since we testified last October, FAA developed an operational plan with milestones for this effort and began one additional study—the South Florida metroplex.

### Work Remains in Areas Critical for Improving NAS Performance

Despite FAA's progress, significant work remains on the metroplex initiative as well as other critical areas, such as airport surface operations and data communications.

- **Metroplex Airspace (*Improve airspace affecting multiple airports near large metropolitan areas*).** The expected completion date for all metroplex sites is 15 months later than previously planned. FAA's early plans were to complete work at all metroplex sites by June 2016; however, the Agency postponed completion to September 2017 because it determined the initial schedule was too aggressive. FAA also reduced the number of metroplex sites from 21 to 13.<sup>11</sup> For example, a critical site with systemwide impacts, such as New York, is not included in FAA's current metroplex effort due to a major ongoing airspace and procedures project. This project has been ongoing for several years due to public concerns about the environmental impact on the area.

Additionally, industry representatives are concerned that the metroplex effort may not deliver all planned or desired benefits because FAA has focused solely on limited airspace and procedure improvements, rather than implementing advanced procedures, as recommended by the task force. For example, of the 136 solutions proposed for the first 7 metroplex sites, only 3 involve more advanced procedures that allow aircraft to fly more precise routes and curved approaches to airports. Further, FAA has not yet integrated efforts from other related initiatives, such as better managing surface operations, into its metroplex initiative. In October 2010, over 1 year after the task force report, FAA tasked the NAC to develop recommendations on how FAA can better integrate its efforts. FAA expects recommendations from the

<sup>7</sup> Washington, DC; North Texas (Dallas); Charlotte; Atlanta; Northern California; Houston; Southern California; Chicago; South Florida; Boston; Cleveland/Detroit; Memphis; Phoenix.

<sup>8</sup> Study teams are the first step in the metroplex process to provide a front-end strategic look at each major metroplex. These teams analyze the operational challenges, assess current/planned airspace and procedures efforts, explore new solution opportunities, and issue a study report with recommended procedure and airspace solutions.

<sup>9</sup> Design and implementation teams are responsible for executing the design, evaluation, and implementation portions at each metroplex site.

<sup>10</sup> The seven locations are Washington, DC; North Texas (Dallas); Charlotte; Northern California; Houston, Atlanta, and Southern California. Design work has begun at Washington, DC; North Texas; Charlotte; Houston; Atlanta; and Northern California.

<sup>11</sup> FAA reduced the number of metroplex projects from 21 to 13 by combining some and dropping others because of other ongoing airspace and performance-based navigation initiatives. The sites dropped were: New York/Philadelphia, Minneapolis-St. Paul, Seattle, and Las Vegas Valley.

NAC in September 2012 on the committee's recently completed work to map NextGen capabilities to specific metroplex sites.

- **Airport Surface Operations (*Improve management of airport taxiways, gates, and parking areas*).** FAA did not designate an office director with responsibility for implementing surface initiatives until March 2011—18 months after the task force recommended it as a high priority. Currently, FAA's ongoing surface management projects span multiple air traffic organizations without a coordinated plan. Representatives in FAA's surface operations office are working to coordinate their efforts within the air traffic organizations responsible for these projects, but it is not yet clear how or if they will integrate their efforts with the metroplex initiative.
- **Data Communications (DataComm) (*Enable more efficient use of available or forecast capacity*).** Due to delays in modernizing automation that controllers use to manage high-altitude air traffic, FAA's timeline for developing this capability slipped by 2 years, from 2016 to 2018. Industry representatives stated that they need assurance that FAA's revised implementation date for high altitude traffic management is attainable. They view DataComm as the key building block for improved communications needed to shift to NextGen's concept of more precisely managing aircraft from departure to arrival, with the benefits of reduced fuel consumption, lower operating costs, and reduced emissions.

For recommendations related to runway access and high-altitude cruise, FAA is not planning to follow the timelines and locations recommended by the task force, because the Agency determined it needed to perform its own cost-benefit analysis before accepting the recommendations.

- **Runway Access (*Improve the use of converging or closely spaced runways during low visibility conditions*).** Making better use of existing runways, as RTCA recommended, requires updated safety studies for new, complex runway configurations—such as closely spaced parallel runways<sup>12</sup> and converging or intersecting runways—at several busy airports. While the Agency adopted the task force's recommended dates and locations for closely spaced parallel runway projects, it has not defined locations and dates for implementing other key recommendations, such as a precision surveillance system for runways and a new automated tool to maximize benefits of routes. FAA stated this is due to the need to perform cost-benefit analysis and further safety studies.
- **High-Altitude Cruise (*Improve high-altitude flight by better using available airspace to increase capacity and reduce delays*).** The task force recommended that FAA take action in 2011 to expand the use of an existing high-altitude automated controller tool for managing aircraft. Instead, FAA focused its actions on

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<sup>12</sup> Closely spaced parallel runways are those in which the centerlines are separated by less than 4,300 feet.

implementing a longer-term solution called Time-Based Flow Management.<sup>13</sup> FAA's target implementation date for this system is November 2014, about 3 years beyond the timeframes recommended by the task force.

Given these delays, task force representatives remain concerned with the Agency's overall timelines for NextGen. For example, the task force stated that if some DataComm capabilities are delayed to 2018, as FAA has currently proposed, airspace users will need to revisit their business cases and commitment to advance NextGen. Task force industry representatives have also emphasized the need for FAA to shift from planning to implementation, as meeting implementation milestones will be critical to securing operator investment.

### **FAA Has Not Fully Resolved Key Organizational, Policy, and Training Barriers To Implementing Task Force Recommendations**

FAA has not yet resolved many of the barriers that will impede the implementation of the task force recommendations. These barriers include working across diverse Agency lines of business, streamlining the process for implementing new flight procedures, updating policies, and training controllers on new advanced procedures. While FAA has plans to address these barriers, progress has been slow, and none of these initiatives have been fully implemented.

- **Working across diverse lines of business.** To complete the task force's recommendations, FAA will have to coordinate with various organizations within the Agency—including its Aircraft Certification Service, Flight Standards Service, and Air Traffic Organization (ATO). Such coordination has been a challenge for FAA in the past. For example, as we testified in July 2009, organizational barriers and fragmented efforts hindered FAA's process for approving new flight procedures.<sup>14</sup> To address these concerns and other NextGen-related problems that we have reported, in September 2011, FAA began making significant organizational changes in how it manages NextGen. However, given the scope of FAA's effort, the Agency needs a reasonable amount of time before it can fully implement these organizational changes and ensure it achieves the desired outcome of working effectively across different lines of business.
- **Implementing new flight procedures.** FAA's process for developing and implementing new flight procedures is time-consuming and fragmented. In September 2010,<sup>15</sup> FAA reported that it planned to implement 21 recommendations made by 6 internal work groups for streamlining its process to develop and deploy these procedures. However, FAA has yet to implement the majority of the

<sup>13</sup> Time Based Flow Management enhances system efficiency and improves the traffic flow by leveraging the capabilities of controller decision support tools designed to optimize the flow of aircraft into capacity constrained areas.

<sup>14</sup> OIG Testimony Number CC-2009-086, "Challenges in Implementing Performance-Based Navigation in the U.S. Air Transportation System," July 29, 2009.

<sup>15</sup> FAA's Navigation Procedures (NAV Lean) Instrument Flight Procedures Final Report, September 2010.

recommendations and estimates it may take as long as 4 years to implement all of them. FAA has recently begun to determine flight procedure utilization rates and examine causes for a lack or drop in usage for advanced performance-based flight procedures—an issue we raised in December 2010.<sup>16</sup> We recently initiated an audit to update our prior work on FAA’s implementation of new flight procedures and the Agency’s efforts to streamline the process.<sup>17</sup> We will continue to monitor the Agency’s progress in this critical area.

- **Updating key policies.** The task force encouraged FAA to continue to develop a “best-equipped, best-served policy”—that is, prioritize air traffic control services for those users equipped with new systems—and revamp information sharing systems to better manage airport surfaces. FAA recognizes the importance of these issues and continues to work with industry to reach consensus on strategies concerning equipage for NextGen and to identify processes and standards for data sharing. However, FAA does not yet have a clear plan for transitioning to the new policies.

Additionally, many air traffic control policies and procedures have not been updated to incorporate the increased capabilities of satellite-based technologies. For example, FAA has not updated the controller handbook to provide guidance on phraseology, separation, and other requirements to safely manage performance-based operations in a mixed equipage environment.

- **Training controllers on new advanced procedures.** While FAA has begun training controllers on NextGen initiatives, FAA’s training on existing and emerging advanced procedures has been limited. National Air Traffic Controllers Association officials stated that training on new performance-based flight procedures should be timely and include simulator training to be effective. Yet, FAA’s recent NextGen-related training often consisted solely of high-level briefings. Without comprehensive training and familiarity with the new instrument flight procedures, controllers are reluctant to allow pilots to use these procedures—especially in a mixed equipage environment, where many aircraft are not equipped or approved to use the new procedures.

If FAA does not resolve these issues, its metroplex effort and implementation of other recommendations will likely face delays, and benefits may not be realized within recommended timeframes. In an August 2012 report, we made recommendations to improve FAA’s ability to effectively implement the task force’s recommendations and resolve barriers in a timely manner.<sup>18</sup> FAA agreed to integrate other NextGen capabilities into its metroplex initiative when they mature, streamline its metroplex process where

<sup>16</sup> OIG Report Number AV-2011-025, “FAA Needs To Implement More Efficient Performance-Based Navigation Procedures and Clarify the Role of Third Parties,” December 10, 2010.

<sup>17</sup> OIG Audit Announcement Number 12A3007A000, “Audit Initiated of FAA’s Efforts to Streamline its Processes for Implementing New Performance-Based Flight Procedures,” May 09, 2012.

<sup>18</sup> OIG Report Number AV-2012-167, “Challenges With Implementing Near-Term NextGen Capabilities at Congested Airports Could Delay Benefits,” August 1, 2012.

possible, and report barriers identified at each metroplex site to appropriate offices for resolution.

### **UNRESOLVED PROBLEMS WITH ERAM CONTINUE TO IMPACT THE COST AND PACE OF NEXTGEN**

Central to realizing benefits from FAA's NextGen efforts is the successful implementation of ERAM—a multibillion dollar enabling program for processing flight data. However, extensive software-related problems have significantly delayed ERAM's nationwide implementation, resulting in hundreds of millions of dollars in increased costs. While FAA is making progress in using ERAM to manage air traffic at several locations, it has not fully resolved critical software-related issues that impact the system's ability to separate and control aircraft. These problems raise significant concerns about the Agency's program management and contract oversight. Prolonged problems with ERAM also pose risks to other NextGen initiatives.

#### **ERAM Software-Related Problems Have Caused Cost Overruns and Schedule Delays**

ERAM is up and running at nine sites—full-time at five sites<sup>19</sup>—a significant step forward since testing at the two key initial sites in Salt Lake City and Seattle revealed extensive software problems with the system's core capabilities to safely manage aircraft. Recent progress at the two initial sites has also allowed FAA to decommission legacy systems at these locations. FAA's progress with ERAM is largely due to a sustained commitment by senior leadership to resolve problems, improve risk mitigation, and work closely with controllers. However, the facilities using ERAM continue to identify software problems, such as errors that display flight data to the wrong aircraft and aircraft handoff problems among facilities, which distract controllers from their primary task of safely managing aircraft. As a result, FAA is currently spending about \$24 million a month in deploying ERAM, integrating other systems, and fixing identified problems. In June 2011, FAA rebaselined ERAM, estimating that the cost to complete the program would increase by an additional \$330 million. FAA now believes that it can deploy ERAM at the remaining 11 sites by the end of fiscal year 2013, completing deployment and declaring the system operationally ready nationwide by 2014—a delay of nearly 4 years from the original schedule of December 2010. However, our work and a study by the MITRE Corporation show that if problems persist, cost increases could exceed \$500 million and further delay implementation.

Input from controllers and technicians at the nine sites currently using ERAM, along with the national user work group, have identified and reported in excess of 900 new high-priority software issues that need to be addressed. Until FAA is able to assess these new issues and determine the nature and extent of corrective actions needed, the impact to the ERAM cost and schedule is unknown. Moreover, in the fall of 2012, FAA will

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<sup>19</sup> The five sites are Albuquerque, Denver, Minneapolis, Salt Lake City, and Seattle.

resume deployment of the remaining sites, such as New York and Boston—several of which are even more complex than any of the previous locations. The addition of all the remaining sites will likely result in the identification of new problems, which raises the risk that program costs will grow.

In March 2012, FAA’s Joint Resources Council (JRC)<sup>20</sup> approved funds for ERAM software release 4 that will add additional NextGen capabilities and address software problems. This new ERAM software package is projected to cost in excess of \$400 million in capital costs alone and will include work that will extend past fiscal year 2016. However, FAA documentation shows that a portion of those funds—in addition to the \$330 million already added to the program baseline—will be used to address ERAM maintenance problems and other software changes.

### **Problems With ERAM Exposed Fundamental Weaknesses in Program Management and Contract Oversight**

Our ongoing work shows that initial problems with ERAM were directly traceable to weaknesses in program management and contract oversight. During ERAM’s planning and deployment stages, FAA did not establish program management controls that would put FAA in a position to address significant problems as they occurred. For example:

- FAA and its contractor significantly underestimated the complexity in fielding ERAM. They were overly optimistic that ERAM could be fielded to all 20 sites within 1 year, and did not consider the impact of early problems during initial site deployment.
- Software testing at FAA’s Technical Center was too limited to allow FAA to fully understand the maturity and stability of the software prior to deployment. As a result, the software was released to the key sites with significant defects.
- FAA did not implement required program management tools to ensure ERAM would achieve performance and schedule goals. First, the program office did not review the ERAM budget when major increases in contract value occurred (those over \$100 million). FAA will now conduct detailed budget reviews for all major contract modifications. Second, FAA did not correctly implement earned value management (EVM), which OMB and FAA require for all major information technology investments. EVM is a management tool intended to forecast performance trends and help managers identify cost and schedule problems early on. FAA’s EVM measurement baseline was based on the contract’s structure, rather than the overall program structure and milestones, as required by EVM standards. As a result, the EVM system did not detect significant schedule and cost variances, which began to occur when the program experienced software problems at the initial key test site. Third, FAA’s risk management process did not begin to detect and mitigate

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<sup>20</sup> The JRC is an FAA executive governance board responsible for the approval and oversight of major systems acquisitions.

significant risks, such as not achieving deployment milestones for ERAM at key sites due to core functionality software issues, until almost 2 years after software problems surfaced at a key test site. Recently, FAA's new program manager significantly improved ERAM's risk management process by providing a more accurate portrayal of active ERAM risks.

In addition to lacking critical program management controls, FAA did not structure or administer its ERAM contract to effectively manage costs and achieve desired outcomes. For example:

- FAA did not fully adopt best practices for major information technology acquisitions when designing ERAM's contract structure. Specifically, FAA did not fully apply modular contracting concepts, which call for dividing a large contract into manageable contract segments delivered in shorter increments. Instead, FAA designed larger contract segments that could span several years, an approach that does not offer as much flexibility. In May 2012, in response to our draft audit report on ERAM, FAA modified the ERAM contract to implement a more modular structure for contract segments related to software development. However, other line items in the contract could also benefit from a modular approach.
- ERAM's cost incentive fee did not motivate the contractor to stay below predefined cost targets because FAA simply increased the target costs as requirements grew. At the time of our review, FAA paid the contractor over \$150 million in cost incentives for meeting target costs even though ERAM costs exceeded the budget by at least \$330 million. In May 2012, FAA modified the ERAM contract to revise its incentive fee structure related to new ERAM software releases. A significant portion of the cost incentive is now being allocated to five performance targets for new software releases.

#### **Prolonged Problems With ERAM Pose Risks to NextGen Initiatives**

ERAM's implementation is central to realizing the key benefits of several other programs, such as new satellite-based surveillance systems and data communications for controllers and pilots. Continued problems with ERAM have already had implications for FAA's NextGen transformational programs, such as DataComm and ADS-B. FAA plans to allocate almost \$500 million to integrate and align these systems with ERAM. In addition to the transformational programs, delays with ERAM will impact other NextGen efforts, including the following:

- Implementing FAA's new performance-based navigation routes and procedures that allow aircraft to fly more flexible routes, based on aircraft avionics and satellite-based navigation. New performance-based navigation routes are an important stepping stone for near-term NextGen initiatives and boosting capacity at already congested airports.

New automated systems for controllers, such as ERAM, are key to maximizing the benefits of new routes.

- Managing aircraft strategically through all phases of flight through trajectory-based operations. This capability is expected to predict the path of each aircraft in time and space and thereby facilitate the transition from today's ground-based radar to more accurate satellite-based systems and reduce fuel consumption by the airlines and aircraft emissions. Progress with ERAM is important because this new way of managing traffic will require many other systems to use flight information from ERAM.
- Introducing new capabilities at facilities that manage high-altitude traffic, such as flexible and dynamic airspace that will allow controllers to shift airspace segments to other controllers based on weather and traffic pattern changes. However, FAA must fix core capabilities for managing aircraft before the new capabilities can be implemented.
- Combining both terminal and en route operations into a common automation system. Currently, FAA operates and maintains diverse automation systems with unique displays, software, and hardware. FAA believes that a common automation platform will reduce costs, improve air traffic and airspace management, and allow the Agency to consolidate and realign its facilities. Problems with ERAM contribute significantly to FAA's inability to determine when it can begin to develop and transition to a common automation platform.

Schedule delays and corresponding cost growth with ERAM have forced FAA to reprogram funds from other FAA capital programs. According to Agency officials responsible for capital planning and budgeting, FAA thus far has reallocated funds from development efforts for NextGen capabilities and procedures, tower replacement, electrical power systems for air traffic control facilities, and planned technical improvements to communications and oceanic automation systems. Continuing cost growth with ERAM, especially in the current budget environment, will crowd out other capital programs.

Throughout the course of our work, we communicated our views to FAA officials on actions needed to reduce programmatic risk and strengthen contract oversight. In response, FAA is taking steps to address our concerns. For example, FAA has made strides toward improving the way it tracks ERAM costs by modifying the contract to begin definitizing its implementation efforts. However, achieving NextGen's goal of more efficient airspace for the future will ultimately depend on FAA's ability to effectively manage, within cost and schedule, large-scale acquisitions such as ERAM to support its NextGen portfolio.

## **COSTS, SCHEDULES, AND BENEFITS ARE UNCERTAIN FOR NEXTGEN'S TRANSFORMATIONAL PROGRAMS**

Between fiscal years 2013 and 2017, FAA plans to spend \$2.4 billion on NextGen's six transformational programs. While FAA is making some progress implementing these programs, their costs, schedules, and performance remain uncertain because FAA has yet to baseline the total programs or develop an integrated master schedule to manage and coordinate NextGen's implementation. Three programs in particular—ADS-B, SWIM, and DataComm—will provide critical technologies and infrastructure for NextGen and allow for more efficient data sharing among airspace users, a key NextGen goal.

### **FAA Has Not Fully Addressed ADS-B Requirements and System Risks**

Successful implementation of ADS-B—a satellite-based surveillance technology that combines the use of aircraft avionics and ground-based systems—will require resolving critical issues related to system requirements and security risks. FAA plans to implement ADS-B in four segments and has approved approximately \$2.7 billion through 2020 for the initial three segments to deploy the system's ground infrastructure, develop baseline services and applications, and expand services in the Gulf of Mexico.

As of July 2012, FAA has deployed 400 of the planned 730 radio ground stations, and the Agency published a final rule mandating airspace users to equip ADS-B avionics by 2020. However, as we have previously reported,<sup>21</sup> FAA faces a number of challenges to realize the full range of ADS-B benefits. These include (1) finalizing requirements for capabilities to display traffic information in the cockpit, (2) modifying the systems controllers rely on to manage traffic, (3) addressing broadcast frequency congestion concerns, (4) implementing procedures for separating aircraft, and (5) assessing security vulnerabilities. We recently initiated an audit to update our prior work on FAA's implementation of ADS-B and will continue to monitor the Agency's progress in these critical areas.<sup>22</sup>

### **FAA Faces Challenges in Establishing Clear Lines of Accountability for Managing and Implementing SWIM**

While FAA recently revised its implementation strategy for the SWIM program, key challenges remain in stabilizing requirements and establishing firm timelines. SWIM is expected to form the basis for a secure network that manages and shares information more efficiently among the air traffic systems that will comprise NextGen. Key benefits expected from SWIM are streamlined data communications and real-time information that will improve air traffic management, enhance airspace capacity, reduce flight delays,

<sup>21</sup> OIG Report Number AV-2011-002, "FAA Faces Significant Risks in Implementing Automatic Dependent Surveillance-Broadcast System and Realizing Benefits," October 12, 2010.

<sup>22</sup> OIG Audit Announcement Number 12A3004A000, "Audit Initiated of FAA's Automatic Dependent Surveillance – Broadcast (ADS-B) Program," May 14, 2012.

and decrease costs for FAA and aviation users. In June 2011,<sup>23</sup> we reported that FAA had yet to establish clear lines of accountability for overseeing SWIM's development and management, making it difficult to implement requirements and control the program's cost and schedule. As a result, FAA increased costs for SWIM's first segment by more than \$100 million (original estimate was \$179 million) and delayed its completion by at least 2 years.

Since our 2011 report, FAA has revised its implementation approach, due in part to cost and schedule issues with ERAM. FAA now plans to develop and deploy a new system to provide SWIM en route flight plan services without impacting ERAM. Additionally, FAA has approved an additional \$120 million to support the first phase of the second segment, which will assist FAA in transitioning to a new common infrastructure for SWIM air traffic systems. This is a critical first step in FAA's goal of moving from a decentralized to a centralized process where all NAS data are managed and shared over a common infrastructure to support NextGen improvements. However, FAA's previous management challenges remain. Without stable and consistent requirements and clearly defined program priorities, the true cost and timeline to deploy SWIM and the realization of expected benefits will continue to be unknown.

#### **FAA Faces Industry Concerns With DataComm Plans**

Developing and implementing DataComm will be a complex, high-risk effort, and industry officials have expressed skepticism about FAA's ability to deliver the program. DataComm will provide two-way data communications between controllers and pilots, similar to wireless e-mail. Like ADS-B, FAA faces challenges with integrating DataComm with multiple FAA automation systems. Total acquisition costs for DataComm are uncertain, but FAA estimates that they could be as much as \$3 billion.

FAA plans to implement DataComm in two segments. In May 2012, the Agency approved approximately \$741.5 million through 2019 for the first phase of segment one to implement departure clearance services in the tower environment. However, this phase relies on using a data link capability that already exists, which the Agency acknowledges provides limited benefits. The majority of NextGen benefits from DataComm will emerge from the second phase of segment one, which will support the development of en route services. However, FAA has already delayed plans to deploy DataComm's en route capabilities from 2016 to 2018, and the Agency has yet to schedule a final investment decision for this phase to approve the effort's cost and schedule.

Until FAA makes a final investment decision on when the majority of the benefits for the en route services (e.g., routine data communications) will be provided, users are likely to remain skeptical and reluctant to equip—especially since the Agency abandoned a similar

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<sup>23</sup> OIG Report Number AV-2011-131, "FAA's Approach to SWIM Has Led to Cost and Schedule Uncertainty and No Clear Path for Achieving NextGen Goals," June 15, 2011.

communications program<sup>24</sup> in 2005 due to concerns about cost growth and schedule delays. These concerns resulted from unplanned, additional integration requirements that posed a risk to the program as well as concerns over how quickly airlines would equip with the avionics.<sup>25</sup>

### **FAA Lacks an Integrated Master Schedule To Manage NextGen**

Dividing larger programs into smaller more manageable segments—as FAA has done for ADS-B, SWIM, and DataComm—can reduce some risks in the short-term. However, this approach also obscures visibility into the true total timelines and costs of FAA’s overall NextGen efforts. As requirements continue to evolve, programs are left with no clear end-state, and decisionmakers lack sufficient information to assess progress. Moreover, delays with one program can significantly slow another, since the programs have complex interdependencies with FAA’s existing automation and communications systems.

In an April 2012 report, we recommended that FAA establish firm costs and schedules and an integrated master schedule to manage the implementation of all NextGen programs.<sup>26</sup> Since our report, FAA has begun developing an integrated schedule and populating it with some of the transformational programs’ planned capabilities. However, the Agency continues to identify the additional type of data required, such as key system dependencies, to fully populate the schedule. Without a complete master schedule, FAA will continue to be challenged to fully mitigate operational, technical, and programmatic risks, and prioritize trade-offs among its NextGen programs.

### **CONCLUSION**

While FAA has demonstrated its commitment to improve the management of NextGen and its major acquisitions, the Agency continues to face significant challenges and risks with developing and implementing NextGen initiatives and delivering the benefits envisioned by the RTCA task force. FAA’s efforts to reorganize to better manage NextGen are in the early stages, and must be done in concert with effectively improving airspace efficiency at congested airports, resolving problems with ERAM, and addressing uncertainty with the NextGen transformational programs. These challenges are significant and will require sustained management attention and action to safeguard taxpayers’ investment while improving NAS efficiency and safety. We will continue to monitor the results of FAA’s organizational changes and efforts to improve the management of NextGen.

<sup>24</sup> Controller-Pilot Data Link is a method by which air traffic controllers can communicate with pilots over a datalink system, similar to wireless email.

<sup>25</sup> OIG Report Number AV-2004-101, “Observations on FAA’s Controller-Pilot Data Link Communications Program,” September 30, 2004.

<sup>26</sup> OIG Report Number AV-2012-094, “Status of Transformational Programs and Risks to Achieving NextGen Goals,” April 23, 2012.

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**GAO**

Testimony  
Before the Subcommittee on Aviation,  
Committee on Transportation and  
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## NEXT GENERATION AIR TRANSPORTATION SYSTEM

### FAA Faces Implementation Challenges

Statement of Gerald L. Dillingham, Ph.D.  
Director, Physical Infrastructure Issues





Highlights of GAO-12-1011T, a testimony to the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

### Why GAO Did This Study

To prepare for forecasted air traffic growth, FAA is planning for and implementing NextGen in partnership with other federal agencies and the aviation industry. NextGen is a complex undertaking that requires acquiring new integrated air traffic control systems; developing new flight procedures, standards, and regulations; and creating and maintaining supporting infrastructure to create a more automated aircraft-centered, satellite-based air transportation system. GAO has made recommendations to address delays in NextGen's acquisitions, improve FAA's processes, and focus on accountability and performance, which FAA is implementing.

This statement discusses five key challenges that GAO and others have previously identified that affect NextGen implementation, as well as steps FAA has taken to address these challenges. These challenges are (1) delivering and demonstrating NextGen's near-term benefits; (2) developing a cost-effective mechanism to encourage operators to equip with NextGen technologies; (3) maintaining timely delivery of acquisitions; (4) clearly defining NextGen leadership roles and responsibilities; and (5) balancing the needs of the current radar-based systems and NextGen systems through the transition. This statement is based on GAO's previous reports and testimonies, ongoing work for the committee, and updates on FAA's responses to these challenges through a review of FAA documents and interviews with FAA officials.

View GAO-12-1011T. For more information, contact Gerald L. Dillingham at (202) 512-2834 or [dillingham@gao.gov](mailto:dillingham@gao.gov).

September 12, 2012

## NEXT GENERATION AIR TRANSPORTATION SYSTEM

### FAA Faces Implementation Challenges

#### What GAO Found

**Delivering and demonstrating the Next Generation Air Transportation System's (NextGen) benefits:** The Federal Aviation Administration (FAA) must deliver capabilities that provide aircraft operators with a return on their investments in NextGen avionics to convince operators to continue making equipment investments. However, operators have expressed concerns that FAA has not produced the navigational procedures needed to achieve benefits from existing avionics, such as reduced fuel burn and flight time. To help produce more beneficial procedures, FAA is, among other things, involving air traffic controllers and other stakeholders in the design of new procedures.

**Encouraging acquisition of NextGen equipage:** For some technologies, realizing NextGen benefits requires a critical mass of properly equipped aircraft. Reaching that critical mass is a significant challenge because the first aircraft operators to purchase and install NextGen avionics will not obtain a return on their investment until many other operators are similarly equipped. FAA has begun to solicit industry input about how to design and implement a public-private financing program for equipment but has yet to make decisions about how to incentivize the airline operators' transition to NextGen.

**Maintaining timely delivery of key systems:** NextGen has significantly increased the number, cost, and complexity of FAA's acquisition programs, which must remain on time and within budget, particularly given current budget constraints and the interdependencies of many NextGen-related acquisitions. While these acquisitions are generally proceeding on time and within budget, previous challenges with the En Route Automation Modernization (ERAM) program—a critical program for NextGen—illustrate how delays can increase the costs and schedules of other acquisitions as well as the maintenance costs of the system that is meant to be replaced. Overall, NextGen implementation will be affected by how well FAA manages program interdependencies.

**Clearly defining NextGen leadership roles and responsibilities:** Although FAA has made organizational changes to increase visibility and accountability for NextGen, it has not made management changes called for by the FAA Modernization and Reform Act of 2012. According to FAA, those changes will not occur until a permanent FAA Administrator is in place. Further, FAA has not clearly defined the relationships among the Deputy Administrator (responsible for NextGen implementation and also the current Acting Administrator); the new Chief NextGen Officer position; and the Director of the Joint Planning and Development Office (responsible for NextGen planning and coordination).

**Managing the transition to the NextGen system:** Particularly in light of constrained budget resources, FAA will have to balance its priorities to help ensure that NextGen implementation stays on course while sustaining the current legacy infrastructure that will continue to be the core of the national airspace system for a number of years. For example, while FAA has an initial plan to consolidate facilities, the agency will need to keep long-term plans in mind so that it does not invest unnecessarily in facilities that may not be needed for NextGen.

United States Government Accountability Office

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Chairman Petri, Ranking Member Costello, and Members of the Subcommittee:

I appreciate the opportunity to testify today on progress toward implementing the Next Generation Air Transportation System (NextGen). The Federal Aviation Administration (FAA) predicts that, by 2025, the annual number of airline passengers in the United States will increase from about 700 million to about 1 billion per year and that the daily number of flights will increase from about 80,000 to more than 95,000. If FAA's predictions hold true, today's air transportation system will be strained under such demands, especially on some routes to and from hub airports and major cities. Accordingly, FAA, other federal agencies, and aviation industry stakeholders have worked in partnership to develop a plan for NextGen.<sup>1</sup> NextGen is an enormously complex undertaking that requires acquiring new integrated air traffic control systems; developing new flight procedures, standards, and regulations; and creating and maintaining supporting infrastructure to create a modern air transportation system that relies on satellite-based surveillance and navigation and network-centric operations.<sup>2</sup> NextGen is intended to increase air transportation system efficiency and capacity while maintaining its safety.

The initial planning for NextGen, starting with Vision 100<sup>3</sup> in 2003, focused on having NextGen in place by 2025. The improvements required to realize the full benefits of NextGen are numerous and involve many offices within FAA. In many cases, these improvements also depend on substantial investment and buy-in from aircraft operators. Recently, FAA has emphasized improvements that can be implemented through 2018<sup>4</sup>

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<sup>1</sup>NextGen was designed as an interagency effort to leverage various agencies' expertise and funding to advance NextGen while avoiding duplication. In addition to FAA, federal partner agencies include the Departments of Commerce (particularly its National Oceanic and Atmospheric Administration), Defense, Homeland Security, and Transportation; the National Aeronautics and Space Administration; and the White House Office of Science and Technology Policy.

<sup>2</sup>Network-centric operations involve the instant sharing of information and data among users, systems, and networks. These operations use infrastructure and information services to provide the critical exchange of digital information for air-to-air and air-to-ground applications as well as applications involving satellite-based information sources.

<sup>3</sup>Vision 100—Century of Aviation Reauthorization Act, Pub. L. No. 108-176, §§ 709-710, 117 Stat. 2490, 2582-2585 (2003).

<sup>4</sup>According to FAA, midterm implementation for NextGen has shifted from 2018 to 2020.

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as a means to respond to industry skepticism about FAA's ability to implement NextGen, build support for long-term NextGen investments, and more immediately address inefficiencies and delays in the current air traffic control system.<sup>5</sup> In past reports, we have made a number of recommendations to FAA to address delays in NextGen's development and acquisitions, improve FAA's processes, and focus on accountability and performance. Over the last 2 years, FAA has taken several steps and instituted a number of changes to address these issues.

My statement highlights five key challenges that we and others have previously identified that affect NextGen's implementation, as well as steps FAA has taken to address these challenges. These challenges are

- delivering and demonstrating NextGen's near-term benefits;
- developing a cost-effective mechanism to encourage operators to equip with NextGen technologies;
- maintaining timely delivery of acquisitions;
- clearly defining NextGen leadership roles and responsibilities; and
- balancing the needs of the current radar-based system as well as the NextGen system through the transition.

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<sup>5</sup>FAA requested that RTCA—a private, not-for-profit corporation that develops consensus-based recommendations on communications, navigation, surveillance, and air traffic management system issues—create a NextGen Midterm Implementation Task Force, composed of industry stakeholders, to reach consensus within the aviation community on the operational improvements that can be implemented between now and 2018. The task force provided recommendations to FAA in September 2009.

This statement is based primarily on our previous reports and testimonies<sup>6</sup> and on ongoing work for this subcommittee that includes challenges associated with near-term NextGen implementation and FAA's efforts to transition from the current air traffic control system to the NextGen system. We updated information on FAA's responses to the five challenges that we discuss through a review of FAA documents and interviews with FAA officials. The GAO reports cited in this statement contain more detailed explanations of the methods used to conduct our work. We conducted all of our work in accordance with generally accepted government auditing standards.

### FAA Is Taking Steps to Address Challenges in Delivering and Demonstrating NextGen's Benefits

#### Delivering NextGen Benefits

FAA must deliver systems, procedures, and capabilities that provide operators with a return on their investments in NextGen avionics in order to convince operators to continue making such equipment investments. For example, a large percentage of the current fleet is equipped to fly more precise performance-based navigation (PBN) procedures, such as following precise routes that use the Global Positioning System or glide

<sup>6</sup>GAO, *Next Generation Air Transportation System: FAA Has Made Some Progress in Implementation, but Delays Threaten to Impact Costs and Benefits*, GAO-12-141T (Washington, D.C. Oct. 5, 2012); *Air Traffic Control Modernization: Management Challenges Associated with Program Costs and Schedules Could Hinder Implementation*, GAO-12-223 (Washington, D.C. Feb. 16, 2012); *Aviation and the Environment: Systematically Addressing Environmental Impacts and Community Concerns Can Help Airports Reduce Project Delays*, GAO-10-50 (Washington, D.C. Sept. 13, 2010); *NextGen Air Transportation System: FAA's Metrics Can Be Used to Report on Status of Individual Programs, but Not of Overall NextGen Implementation or Outcomes*, GAO-10-629, (Washington, D.C. July 27, 2010); *Next Generation Air Transportation System: Challenges with Partner Agency and FAA Coordination Continue, and Efforts to Integrate Near-, Mid-, and Long-term Activities are Ongoing*, GAO-10-649T (Washington, D.C. Apr. 21, 2010); *Next Generation Air Transportation System: FAA Faces Challenges in Responding to Task Force Recommendations*, GAO-10-188T (Washington, D.C. Oct. 28, 2009); and *Next Generation Air Transportation System: Issues Associated with Midterm Implementation of Capabilities and Full System Transformation*, GAO-09-481T (Washington, D.C. Mar. 25, 2009).

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descent paths, which can save the operators money through reduced fuel burn and flight time.<sup>7</sup> However, aircraft operators have expressed concerns that FAA has not produced the most useful or beneficial PBN routes and procedures to date. As a means to leverage existing technology, provide immediate benefit to the industry, and in response to the RTCA Midterm Implementation Task Force's (Task Force) recommendations, FAA began an initiative to better use PBN procedures to resolve airspace problems in and provide benefits to areas around busy airports, known as "metroplexes." This initiative, the Optimization of Airspace and Procedures in the Metroplex (Metroplex), is under way in eight metropolitan areas across the country and planning is under way for other areas (see fig. 1).<sup>8</sup>

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<sup>7</sup>The term procedures refers to the routes flown by aircraft and the rules governing those routes, such as required speeds and altitudes.

<sup>8</sup>The eight current Metroplex sites include: D.C.; North Texas; Charlotte, North Carolina; Northern California; Houston, Texas; Atlanta, Georgia; Southern California; and South/Central Florida. Five additional sites are planned to begin in 2012 or 2013: Phoenix, Arizona; Chicago, Illinois; Memphis, Tennessee; Detroit, Michigan; and Boston, Massachusetts.



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<sup>8</sup>The Operational Evolution Partnership (OEP) airports are 35 of the busiest commercial U.S. airports identified in 2000 based on lists from FAA and Congress, as well as a study on the most congested U.S. airports, these airports serve major metropolitan areas and also serve as hubs for airline operations.

FAA is working to design its Metroplex and other PBN initiatives to avoid some of the challenges that have limited the use and, in turn, potential benefits of existing PBN procedures. For example, FAA has found that some PBN procedures developed without air traffic controllers' involvement have been used infrequently, if at all, because of problems with the procedure design or other challenges. In response, FAA has worked to include stakeholders, such as air traffic controllers and airlines, in the study and design of new PBN procedures. For example, FAA included airlines and local air traffic controllers in the design of PBN procedures under the Metroplex and Greener Skies over Seattle initiatives.<sup>9</sup> This inclusion, according to stakeholders involved, should help to ensure that the new PBN procedures can be used by local controllers and produce quantifiable benefits to aircraft operators. Greener Skies also formally involved local airports in the PBN procedure development process to help avoid adverse environmental—largely noise-related—community impacts. As we have previously reported, effective outreach to affected stakeholders can help anticipate and address potential community concerns—particularly with regard to noise.<sup>10</sup> If not addressed, these concerns can delay efforts to use airspace more efficiently.<sup>11</sup>

Many of FAA's near-term improvement efforts have focused on developing new PBN procedures rather than on other near-term improvements recommended by the Task Force, such as airborne or

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<sup>9</sup>Greener Skies is a collaborative effort involving FAA, Alaska Airlines, Boeing, and the Port of Seattle. The effort resulted in new PBN procedures that route flights over local waterways—rather than over residential areas—and optimized profile descents (OPDs). OPD procedures use PBN capabilities to enable aircraft to descend from cruise altitude to final approach using a more efficient, idle glide, thereby eliminating what is referred to as the "level offs" or "step downs" of a traditional descent, resulting in fuel savings. These PBN procedures are expected to be implemented in 2013. Alaska Airlines estimates the Greener Skies procedures will cut fuel consumption by 2.1 million gallons annually, reduce carbon emissions by 22,000 metric tons, and reduce overflight noise exposure for an estimated 750,000 people. The effort was begun by Alaska Airlines, Boeing, and the Port of Seattle in 2008, and FAA assumed leadership of it in 2010.

<sup>10</sup>GAO-10-50.

<sup>11</sup>GAO-09-481T.

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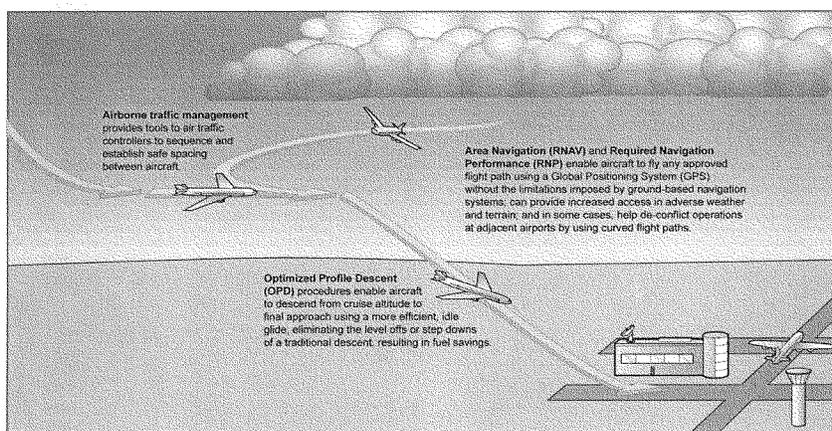
surface traffic-management improvements. Following up on the Task Force's work, the NextGen Advisory Committee (NAC)<sup>12</sup> made recommendations in May 2012 to help FAA identify and prioritize improvements—including and in addition to PBN procedures—that could provide near-term benefits. FAA is assessing the extent to which it can make these other improvements in later rounds of the Metroplex initiative. In the meantime, the agency has turned its attention to expanding or developing some of these improvements—including the air-traffic-management tools that allow for the sequencing of planes—at some of the facilities that are the focus of ongoing Metroplex efforts. Generally, these efforts are still in the planning phase. Figure 2 shows the complexity of merging or sequencing traffic that is approaching an airport using PBN procedures, such as precision Required Navigation Performance (RNP) turns and optimized profile descents (OPD).<sup>13</sup> This complexity can be mitigated with the use of new airborne traffic management tools. Given the integrated nature of near-term NextGen improvements, it will be important for FAA to determine how its Metroplex initiative and airborne and surface traffic management improvements—as well as other improvements prioritized by the NAC—will be implemented and will work together so that the full benefits of these improvements can be realized.

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<sup>12</sup>The NAC is comprised of aviation stakeholders from the government and industry. The committee works to develop a common understanding of priorities in the context of overall NextGen capabilities and implementation constraints, with an emphasis on improvements through 2018. The committee primarily focuses on implementation issues, including prioritization criteria at a national level, joint investment priorities, and location and timing of capability implementation.

<sup>13</sup>PBN includes Area Navigation (RNAV) and RNP. RNAV provides greater flexibility by reducing the limitations imposed by ground-based navigation systems. RNP is a form of RNAV that adds monitoring and altering capabilities to guide aircraft more precisely to and from airports.

Figure 2: Examples of Integrated Near-Term NextGen Operational Improvements



Source: GAO.

In addition, although FAA has made progress in developing new PBN procedures with its Metroplex and other PBN initiatives, much work remains to be done to improve the overall process for amending and implementing PBN procedures. According to FAA, the current process for implementing or amending flight procedures consists of a bundle of interconnected, overlapping, and sometimes competing processes, which, on occasion, results in the implementation of low or no-benefit flight procedures that have to be reworked or amended. Likewise, RTCA has recommended that FAA address problems with what it has termed FAA's inefficient processes for validating and certifying new technologies, which are critical steps in the process for allowing the use of new procedures. We have also expressed concerns about the time and human resources required for the validation and certification processes

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and have identified these processes as a significant risk to the timely and cost-effective implementation of NextGen. To address these challenges, FAA has undertaken a Navigation Lean (NAV Lean) project to streamline the implementation process for flight procedures. The agency anticipates this project will be mostly in place by the end of 2015.<sup>14</sup> We have ongoing work for this committee that further explores issues and challenges associated with near-term NextGen implementation.

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#### Demonstrating NextGen Benefits

As we have previously reported, FAA should regularly provide stakeholders, interested parties, Congress, and the American people with a clear picture of where NextGen's implementation stands, and whether the capabilities being implemented are resulting in positive outcomes and improved performance for operators and passengers.<sup>15</sup> We have recommended that FAA develop a timeline and action plan to work with industry and federal partner agencies to develop an agreed-upon list of outcome-based performance metrics, as well as goals for NextGen broadly and specific NextGen improvement areas. In addition, the FAA Modernization and Reform Act of 2012 requires FAA to report on measures of the agency's progress in implementing NextGen capabilities and operational results.<sup>16</sup> In 2011, the NAC recommended that FAA adopt a set of performance metrics to address operational changes affecting capacity, efficiency, predictability, and access. In addition, the NAC has continued to work on outcome-based metrics to inform the public about the overall status of NextGen implementation and the program's contribution to national aviation policy goals.<sup>17</sup> To date, FAA has established metrics for five of its key performance areas—capacity, efficiency, predictability, environment, and safety—but metrics for the three other key performance areas—access, equity, and flexibility—are

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<sup>14</sup>FAA's NAV Lean project is an effort to streamline all policies and processes used to implemented instrument flight procedures, which includes PBN procedures. There are 21 recommendations in the final NAV Lean report, and the last of these will be implemented in 2017. See FAA, *Navigation (NAV) Procedures Project Final Report* (Washington, D.C.: September 2010).

<sup>15</sup>GAO-10-629.

<sup>16</sup>Pub. L. No. 112-95, § 214, 126 Stat. 11, 50-51 (2012).

<sup>17</sup>In May 2012, the NAC forwarded preliminary recommendations for high-level performance metrics to FAA. The NAC will formally address the recommendations in October 2012.

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still preliminary. FAA has also set performance goals for NextGen through 2018, including goals to improve the throughput of air traffic at key airports by 12 percent over 2009 levels in order to reduce delays by 27 percent from 2009 levels, and achieve a 5 percent reduction in average taxi-time at key airports.<sup>18</sup>

Developing metrics and NextGen performance goals are positive steps, but much work remains, including finalizing agency targets for specific improvement areas and making a link between NextGen performance goals and metrics and NextGen improvements. For example, public information about FAA's near-term plans for implementing additional capabilities lacks specifics about the timing and locations of implementation. According to RTCA, a lack of published information with specific implementation dates and locations for NextGen capabilities is an obstacle to incentivizing airlines to equip their aircraft with additional NextGen avionics. Without a clearer picture of the return on investment—and the progress being made—aircraft operators may be hesitant to make business and operational decisions necessary to fully realize NextGen benefits. Measuring performance of near-term NextGen improvements will be critical for FAA management and stakeholders to assess various impacts, make investment decisions, and monitor NextGen progress. We will report on this issue in more detail as part of our ongoing near-term NextGen implementation work for this committee.

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<sup>18</sup>The goals include improvements from the implementation of NextGen technologies, as well as other infrastructure improvements, such as new or improved runways.

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**FAA Is Working to Identify and Develop a Cost-effective Mechanism to Encourage Operators to Equip with NextGen Technologies**

While some operational improvements can be made with existing aircraft equipment, realizing more significant NextGen benefits requires a critical mass of properly equipped aircraft. Reaching that critical mass is a significant challenge because the first aircraft operators to purchase and install NextGen-capable technologies will not obtain a return on the investment until many other operators are similarly equipped. FAA estimates that NextGen avionics needed on aircraft to realize significant midterm NextGen capabilities will cost private operators about \$5 billion to \$7 billion through 2020. For example, according to the RTCA, it would cost from \$150,000 to \$650,000 to equip a regional jet with an RNP package, which is one of the technologies that allows for precision approaches.<sup>19</sup>

The FAA Modernization and Reform Act authorized the creation of a program to facilitate public-private financing, such as loan guarantees and other credit assistance tools, for equipping general aviation and commercial aircraft with NextGen technologies.<sup>20</sup> According to FAA, the goal for an equipage program would be to encourage deployment of NextGen-capable aircraft sooner than would have occurred without such funding assistance in place. FAA is soliciting industry input about how to design and implement such a program but has yet to decide on how to incentivize this transition. Although authorized, no funding has been appropriated to establish a public-private financing program. According to FAA, it is working to understand what options exist for establishing a program even if it receives no appropriations toward the program.

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<sup>19</sup>See RTCA, *NextGen Equipage: User Business Case Gaps*, A Report of the NextGen Advisory Committee in Response to Tasking from the FAA, September 2011.

<sup>20</sup>Pub. L. No. 112-95, § 221, 126 Stat., 54. This act also requires FAA to identify options to encourage the equipage of aircraft with NextGen technologies, including a policy that gives priority to aircraft equipped with Automatic Dependent Surveillance-Broadcast (ADS-B) technology and the costs and benefits of each option. Id., § 222, 126 Stat., 54-55. The NAC has identified the specific avionics required to achieve NextGen midterm capability goals, as well as the types of operational benefits that would be necessary to incentivize particular parts of the fleet to further equip their aircraft with such avionics. In response, FAA has developed a set of potential solutions to ensure that early adopters reap early operational benefits—such as decreased flight times and fuel burn.

### FAA Faces Challenges in Maintaining Timely Delivery of Key Acquisitions

NextGen has significantly increased the number, cost, and complexity of FAA's acquisition programs, and it is imperative that these programs remain on time and within budget, particularly given current budget constraints and the interdependencies of many NextGen-acquisitions. In February 2012, we reported that most of the key NextGen-related acquisition programs were generally proceeding on time and on budget.<sup>21</sup> See appendix I for the current cost and schedule performance of select baselined NextGen and related acquisition programs. However, delays with the En Route Automation Modernization (ERAM) program—a critical program for NextGen—illustrate how delays can affect overall acquisition and maintenance costs as well as time frames for other programs. As we previously reported, ERAM's schedule delays and cost increase of \$330 million over 4 years were associated with

- unanticipated risks associated with operational complexities at the selected sites,
- insufficient testing to identify software issues before deployment at key sites,
- insufficient communication between the program office and field sites, and
- insufficient stakeholder involvement during system development and deployment.<sup>22</sup>

The delays with ERAM added an estimated \$18 million per year to the costs of maintaining the system that ERAM was meant to replace. Additionally, ERAM is important to the on-time implementation of two other key NextGen acquisitions—Data Communications (Data Comm)

<sup>21</sup>GAO-12-223.

<sup>22</sup>These factors are consistent with the factors that we reported in GAO-12-223 as part of our overall assessment of FAA's major air traffic control acquisition programs—many of which have been long-standing challenges for FAA. These challenges, if they persist, will impede the implementation of NextGen, especially given interdependencies among many acquisition programs in which cost increases or delays in one program can affect the costs and schedules of others. We recommended that FAA further incorporate best practices into its acquisition processes by requiring cost and schedule risk analysis, independent cost estimates, and integrated master schedules that take into account acquisition time frames for entire programs and not just individual segments. FAA generally concurred with our recommendation and is working to further incorporate best practices into its acquisition process.

and System Wide Information Management (SWIM).<sup>23</sup> In part because of ERAM's delay, FAA pushed the Data Comm program's start date from September 2011 to May 2012,<sup>24</sup> revised the original plan for the first segment of SWIM to mitigate the impact of ERAM delays on the SWIM program, and delayed the start date for segment 2A of SWIM from 2010 to July 2012.<sup>25</sup> Looking more broadly, the implementation of NextGen—both in the midterm (through 2020) and in the long term (beyond 2020)—will be affected by how well FAA manages program interdependencies.<sup>26</sup>

### NextGen Organizational Structure Has Undergone Changes, but Leadership Roles and Responsibilities Remain Unclear

As we have previously reported, industry stakeholders have expressed concerns about the fragmentation of authority and lack of accountability for NextGen, two factors that could delay its implementation.<sup>27</sup> We have also found that programs can be implemented most efficiently when managers are empowered to make critical decisions and are held accountable for results.<sup>28</sup> To ensure accountability for NextGen results, several stakeholders have suggested that an office is needed that would report directly to the FAA Administrator or the Secretary of Transportation. Stakeholders have also cited challenges with coordinating implementation of NextGen capabilities across FAA lines of business.

<sup>23</sup>Data Comm is intended to provide capabilities for pilots and controllers to transmit digital messages, eventually replacing the current analog voice communication system. SWIM will provide an information technology infrastructure that will enable information sharing among the multiple systems that make up the NAS.

<sup>24</sup>According to FAA, the DataComm start date was also influenced by changes to the fiscal year 2011 budget environment.

<sup>25</sup>As noted in appendix I, SWIM Segments 1 and 2A are currently on schedule.

<sup>26</sup>According to FAA progress reports, since the ERAM program was rebaselined in June 2011, the program has made progress toward its target of declaring operational readiness date (ORD) of ERAM by 2014, including five en route centers with continuous use of ERAM and an additional four en route centers having passed initial operating tests using ERAM for at least part of the day. However, ERAM capabilities have yet to be installed and tested in the remaining 11 centers, which include New York, Washington, and Florida.

<sup>27</sup>GAO-09-481T.

<sup>28</sup>See GAO, *Best Practices: Better Support of Weapon System Program Managers Needed to Improve Outcomes*, GAO-06-110 (Washington, D.C.: Nov. 30, 2005). In this study of private sector best practices that could be applied to federal programs, we found that program managers at highly successful companies were empowered to decide whether programs were ready to move forward and to resolve problems and implement solutions. In addition, program managers were held accountable for their choices.

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With multiple FAA lines of business responsible for various NextGen activities, including offices within FAA's Air Traffic Organization (ATO)<sup>29</sup> and outside ATO, coordination and integration is vital since delays in actions required from several offices could prevent or delay NextGen benefits. FAA has made organizational changes in the past in an effort to address these concerns.<sup>30</sup>

Beginning in 2011, FAA made additional changes to its NextGen organizational structure to address these long-standing issues. Specifically, FAA reorganized the structure of the office responsible for carrying out NextGen implementation, moving the office from within the ATO to under FAA's Deputy Administrator (who is currently serving as the Acting Administrator). According to FAA, this change increased NextGen's visibility within and outside the agency and created a direct line of authority and responsibility for NextGen. However, in February 2012, the FAA Modernization and Reform Act designated that the Director of the Joint Planning and Development Office (JPDO)—who is responsible for NextGen planning and coordination—report directly to the FAA Administrator<sup>31</sup> and created a new leadership position—the Chief NextGen Officer<sup>32</sup>—who will also report directly to the Administrator. The Chief NextGen Officer position has not yet been filled. FAA has not yet made the organizational changes called for by the act or clearly defined the relationships among the Deputy Administrator, Chief NextGen Officer, and JPDO director. According to FAA, no organizational changes will be made until the agency has a permanent FAA Administrator in place.

FAA also reorganized its NextGen efforts around its "Ideas to In-Service Management" (I2I) process. According to FAA, the I2I will support enterprise-level, cross-program management in bringing capabilities into the national airspace system and will formalize collaboration among

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<sup>29</sup>The ATO is responsible for operating, maintaining, and modernizing the nation's air traffic control system.

<sup>30</sup>For example, in May 2008, FAA announced a reorganization of its NextGen management structure and created a new Senior Vice President for NextGen and Operations Planning who reported to ATO's Chief Operating Officer (COO). It also made the JPDO director report directly to this newly created position. Prior to this change, the JPDO director reported directly to both the COO and the FAA Administrator.

<sup>31</sup>Pub. L. No. 112-95, § 204, 126 Stat., 37.

<sup>32</sup>Pub. L. No. 112-95, § 208(a), 126 Stat., 40.

NextGen program offices, ATO, and other relevant FAA organizations such as Aviation Safety. Within ATO, a new Program Management Office has been established to improve oversight of ATO's NextGen implementation efforts. According to FAA, by combining acquisition program managers into one organization, ATO will ensure more coordinated program management throughout the full life cycle of NextGen acquisitions. While an increased focus on accountability for NextGen implementation is a positive step, it remains to be seen whether this latest reorganization will produce the desired results without a clarification of NextGen leadership roles and the fulfillment of all the necessary leadership positions. As we have previously reported, leadership is a critical element of success for large-scale systems integration efforts like NextGen.

### FAA Faces Challenges in Balancing the Needs of the Current and NextGen Systems and Addressing Infrastructure and Operational Issues That Transcend NextGen

Particularly in light of constrained budget resources, FAA will have to balance its priorities to help ensure that NextGen implementation stays on course. Sustaining the current legacy infrastructure remains critical, as it will continue to be the core of the national airspace system for a number of years, and some of its components will be part of NextGen. For example, while FAA transitions to satellite-based surveillance through the deployment of Automatic Dependent Surveillance-Broadcast (ADS-B) technology, the agency expects to continue to operate and maintain current radar technology through at least 2020. At that time, FAA is scheduled to make decisions about which radars the agency will decommission and which will be maintained as the back-up system for ADS-B. If either ADS-B's deployment or airlines' efforts to equip with this technology should slip, then FAA may have to maintain and operate some of its radars longer than expected. We have ongoing work for this committee that is further exploring how FAA is preparing for the transition to NextGen and balancing the demands of the legacy and NextGen systems, including potential implications for the legacy systems and FAA budgets if NextGen implementation is delayed.

In addition, to fully realize NextGen's capabilities, reconfiguring facilities that handle air traffic control will be required. FAA recently approved an initial plan to consolidate en route centers and terminal radar approach-control facilities (TRACONs) into large, integrated facilities over the next two decades. However, FAA has yet to make key decisions, such as where to build the first integrated facility. These decisions could affect future consolidation plans. While FAA develops its facilities plan, it faces the immediate task of maintaining and repairing existing facilities so that the current air-traffic control system continues to operate safely and reliably during the expected 20-year transition. According to FAA, in 2011,

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65 percent of its terminal facilities and 74 percent of its en route facilities were in either poor or fair condition with a total deferred maintenance backlog of \$310 million for these facilities. Once FAA develops and implements a facility consolidation plan, it can identify which legacy facilities to continue to repair and maintain and, in doing so, potentially reduce overall facility repair and maintenance costs.<sup>33</sup> FAA has acknowledged the need to keep long-term plans in mind so that it does not invest unnecessarily in facilities that will not be used for NextGen.

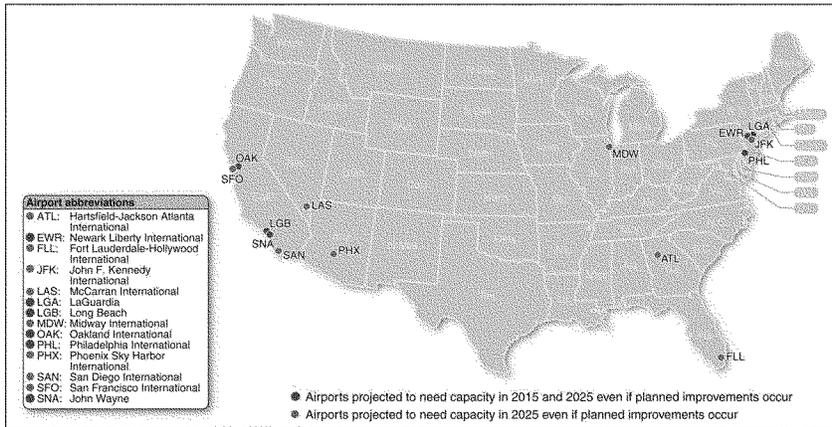
Moreover, although NextGen is projected to keep delays at many airports from getting worse than would be expected without these improvements, NextGen alone is not likely to sufficiently expand the capacity of the national airspace system. For example, FAA's NextGen modeling indicates that even if all ongoing and planned NextGen technologies are implemented, 14 airports—including some of the 35 busiest—may not be able to meet the projected increases in demand (fig. 3).<sup>34</sup> The transformation to NextGen will also depend on the ability of airports to handle greater capacity. For example, decisions regarding using existing capacity more efficiently include certifying and approving standards for using closely spaced parallel runways. At some airports, policies may need to be developed to address situations where demand exceeds capacity (e.g., pricing, administrative rules, service priorities, and so forth). Planning infrastructure projects to increase capacity, such as building additional runways, can be a lengthy process and will require substantial advance planning and safety and cost analyses. Also, the improved efficiency in runway and airspace use that should result from some NextGen technologies may exacerbate capacity constraints in other areas, such as taxiways, terminal gates, or parking areas. Finally, increasing capacity must be handled within the context of limiting increases in emissions and noise that can affect the communities around airports.

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<sup>33</sup>As required by the FAA Modernization and Reform Act, we are reviewing FAA facility conditions, including identifying any conditions that could interfere with employees' ability to effectively and safely perform their duties. Pub. L. No. 112-95, § 610(a)(3), (c), 126 Stat., 117.

<sup>34</sup>FAA is in the process of updating this analysis and anticipates completing its report in June 2013.

Figure 3: Airports Projected to Need Additional Capacity in 2015 and 2025, Even If Planned Improvements Occur



Chairman Petri, Ranking Member Costello, and Members of the Subcommittee, this concludes my prepared statement. I would be pleased to answer any questions that you may have at this time.

### GAO Contact and Staff Acknowledgments

For further information on this testimony, please contact Gerald L. Dillingham, Ph.D. at (202) 512-2834 or dillinghamg@gao.gov. In addition, contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals making key contributions to this testimony include Heather Krause and Ed Laughlin (Assistant Directors), Jessica Bryant-Bertail, Bert Japikse, Delwen Jones, Molly Laster, Dominic Nadarski, and Melissa Swearingen.

## Appendix I: Selected Baseline NextGen and Related Programs Cost and Schedule Performance as of July 2012

Dollars in millions

Program	Description	Start date	Original completion date	Projected completion date	Difference between original and projected completion dates (in months)	Original cost	Projected cost as of July 2012	Difference between original and projected cost
Automatic Dependent Surveillance Broadcast (ADS-B)	A satellite-based information broadcasting system to enable more precise control of aircraft	Aug. 2007	Sept. 2014	Sept. 2014	0	\$1,662	\$1,726	\$45*
Collaborative Air Traffic Management (CATM)- includes work packages 1-3	Encompasses the development of systems to manage airspace and flight information	Aug. 2005	Dec. 2015	Dec. 2015	0	561	561	0
Data Communications- includes segment 1 phase 1	Provides data transmissions directly to pilots and their flight management systems	May 2012	Fiscal year 2019	Fiscal year 2019	0	1,519	1,519	0
System Wide Information Management (SWIM)-includes segment 1	The information management architecture for the national airspace system	July 2009	Sept. 2015	Sept. 2015	0	310	310	0
System Wide Information Management (SWIM)-includes segment 2A	The information management architecture for the national airspace system	July 2012	Dec. 2017	Dec. 2017	0	120	120	0
Time-Based Flow Management (TBFM)	Modernizes the Traffic Management Advisor (TMA) system aimed at integration of airport and air traffic control information	April 2010	Nov. 2014	Nov. 2014	0	115	115	0

**Appendix I: Selected Baseline NextGen and Related Programs Cost and Schedule Performance as of July 2012**

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En Route Automation Modernization (ERAM)	A new enroute air traffic control system for high altitude traffic	June 2003	Dec. 2010	Aug. 2014	44	2,155	2,485	330

Source: GAO analysis of FAA data.

\*According to FAA, this difference is the result of additional work added to the ADS-B program baseline in March 2011 and includes congressional earmarks of \$9.3 million in fiscal 2008 and \$6.8 million in fiscal year 2009 as well as an additional \$15 million held in reserve to mitigate potential automation risks. In addition, the Colorado Wide Area Multilateration Phase II was added to the program (\$13.6 million).

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STATEMENT  
OF  
DAVE BARGER

**PRESIDENT**  
**and**  
**CHIEF EXECUTIVE OFFICER**  
**JETBLUE AIRWAYS CORPORATION**

Before the

Committee on Transportation and Infrastructure  
Subcommittee on Aviation

Wednesday, September 12, 2012

Introduction

Chairman Petri, Ranking Member Costello and distinguished members of the Subcommittee, on behalf of the more than 14,000 Crewmembers of JetBlue Airways, thank you for the opportunity to be here this morning to discuss NextGen.

This morning, I'd like to begin by taking a moment to thank you Mr. Chairman for your genuine passion on the topic of educating Americans about the importance of NextGen.

While your home-state, proud home of the badgers, has a robust general aviation community, indeed the world's busiest for one spectacular week each summer at Oshkosh, and a healthy commercial aviation sector, the issues plaguing commercial aviation, the focus of today's hearing, finding solutions to chronic delays and congestion, are something far more associated with a few large airports in the northeast than with airports in Wisconsin. Here, I think of JFK, LaGuardia, Newark, Philadelphia and the airports here in the Washington region.

Yet, Mr. Chairman, in all of my meetings with you over the years, you have been as passionate about pursuing real, meaningful fixes to these problems as if they all emanated in your own Congressional District, in your own backyard. You have held hearings and conducted informational sessions and have always had an open door as you sought not to assign blame, but rather to find shorter paths to progress.

As the Chief Executive Officer of a large airline based in the northeast, with its two largest bases of operations in New York City and Boston, right in the bulls-eye of where NextGen is needed most, I thank you for this leadership.

As a member of the Board of the A4A, a trade group here in Washington representing more than 90 percent of the airline seats flying in America today, I also thank you and this subcommittee.

And perhaps most poignantly for this morning, having served for the past two years as Chairman of the RTCA's NextGen Advisory Committee, a group of aviation sector leaders who volunteer their time to reach common ground recommendations for the FAA to pursue in implementing NextGen, I thank you and members of this committee for holding today's hearing.

Briefly, this morning I will share with you two perspectives on NextGen: that of NAC Chairman and that of CEO of a northeast based airline.

On the NextGen Advisory Committee, where I will soon conclude my two-year role as Chairman, we are a diverse group of twenty-eight aviation leaders<sup>1</sup> that is Volunteer Driven, Volunteer Lead and we provide consensus-based recommendations on complex policy issues to the FAA in response to specific questions they present to us in the form of official Taskings.

Seated by then-Administrator Randy Babbitt nearly two years ago to the day, the NAC has reported back to the FAA's Taskings, with recommendations or initial reports, on seventeen different items critical to the implementation of NextGen. These are listed as an attachment<sup>2</sup> to my statement and range from Metroplex airport deployment priorities, and an approach to DataComm deployment, to Equipage Incentives and Performance Metrics.

As I have undertaken the equivalent of a graduate level studies course on all things NextGen over the past two years, in my "spare time", I am delighted to report that I could not be

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<sup>1</sup> Attachment 1, List of NAC Members.

<sup>2</sup> Attachment 2, NextGen Advisory Committee Taskings.

more pleased with the group I have chaired, including my fellow panelists here with me this morning, or our partners at the FAA with whom we work so closely.

My fellow NAC members are participating in our meetings, voting with their feet, at each and every meeting. These are held over two days at disparate locations from here in the Nation's capitol to Boeing's facility in Seattle to Embry Riddle Aeronautical University in Florida to Gracie Mansion with Mayor Bloomberg in New York. In fact, in a few weeks, we will be holding our next Committee meeting at Wright Patterson Air Force Base in Dayton, Ohio, which will be my final meeting as Chairman. They show up at these various locations and contribute through active and robust discussions reflecting the government-industry partnership that is the hallmark of the NAC.

The NAC is engaged. The NAC is addressing relevant issues affecting NextGen from diverse viewpoints, including operators, commercial and general aviation and the military; suppliers and providers of equipment, pilots, controllers, airports and the international community as well. This reflects the important role of an RTCA Federal Advisory Committee in providing consensus recommendations, in a public process, reflecting the broad aviation community.

Finally, I am pleased to report that the NAC is committed. The members of the NAC desire to stay engaged, support the hard work of our subcommittee, chaired by Tom Hendricks and Steve Brown, its work groups and task groups. The NAC continues to be the most constructive and effective venue for FAA-industry partnership for the successful implementation of NextGen.

Just as the NAC members are engaged in their work, I have been quite pleased with the knowledge and level of engagement by Acting-Administrator Michael Huerta. First, as the Designated Federal Official to the NAC while serving as the FAA Deputy Administrator, Michael has become more, not less, active in our work since being elevated to the role of Acting Administrator.

With Michael at the helm and his interest in working closely with the aviation community; I am very confident of our collective ability to overcome some of the barriers to implementing NextGen.

As I plan my transition from the role of Chairman to that of non-Chair NAC member, I am excited to support the work of the NAC as it will be chaired by Bill Ayer, Chairman of the Alaska Air Group. Not only is Bill an experienced aviator and former CEO of Alaska Airlines over the past decade, now serving as its Chairman, he was intimately involved with the pioneering work of Alaska Airlines and the FAA in developing the multi-faceted Greener Skies initiative in Seattle.

The Greener Skies initiative over Seattle is a great example of partnership, not only between the FAA and Alaska Airlines, but all of the stakeholders necessary for success, from the controllers, flight procedures office, the military, airports, manufactures and others. I firmly believe that without this level of collaboration at the start of any new program, NextGen simply cannot succeed.

In Seattle, the Greener Skies initiative will allow carriers to move flight tracks over water, reducing miles flown, while optimizing descent profiles and altering Air Traffic Control procedures to enhance required navigational performance. As a result, Alaska Airlines, the

largest carrier in Seattle, along with others, will reduce fuel burn and emissions, reduced noise exposure for communities nearby to the airport, enhance capacity, increase safety and save more than 2 million gallons of fuel annually.

This great example of collaboration and success is precisely the motivation the NAC seeks to replicate with its work as we look to implement NextGen in more complex environments.

Mr. Chairman, the success taking place in Seattle was as much about technological improvements, much of it already in existence and simply needing a home to be applied in, as it is about surmounting the non-technical barriers to implementing NextGen. I am expecting that the final tasking from the FAA to the NAC during my Chairmanship will be to explore these non-technical barriers and recommend paths to effectively cut through them.

While the work of the NAC is ongoing and prospective into the short and medium term, the work we undertake at my particular airline, JetBlue, on behalf of our 30 million annual customers, is focused in the immediate and near-term.

JetBlue operates primarily in the congested Northeast airspace, with our two biggest focus cities being in New York, at JFK, and Boston, where we are the largest carrier.

While JetBlue believes in the promise of NextGen, candidly, in our airspace, we require solutions today.

Under the leadership of JetBlue's operational experts, such as Joe Bertapelle, Director Strategic Airspace Programs, and Bill Cranor, Director Air Traffic Services, we have not taken a

back seat to the work of the NAC, but rather we have actively engaged with FAA and are making progress on enhancing the efficiency and safety of the airspace.

At JetBlue, in the winter of 2011, we announced with the FAA and a private vendor, ACSS, an agreement to equip thirty-five JetBlue Airbus A320 jets with Automatic Dependent Surveillance Broadcast – Out technology. This agreement will have procedural, operational and infrastructure improvements put in place, that when coupled with the ADS-B-out equipment will measure and demonstrate the benefits of this technology in complex airspace such as New York.

This summer, we obtained our first supplemental Type Certificate for the equipment to be placed on our fleet and we are in the process of installing the equipment now, with completion by year's end. Simultaneously, the FAA is upgrading its en route work station platform in the New York region, which in early 2013, along with enhanced controller training and modified procedures, will allow our sub-fleet to fly new routes and actually capture the data and measure our success. Initial plans call for the testing to take place between the New York and Boston airspace and the Florida and northern Caribbean airspace, specifically Puerto Rico and the Dominican Republic – where JetBlue is the largest operator.

In another example of JetBlue and the FAA partnering, this summer we became the first carrier to utilize a new satellite-based special required navigation performance (authorization required) approach to runways 13L and 13R at JFK with our Airbus A320 fleet. These unique performance-based navigation procedures utilize a constant vertical descent in conjunction with a precise curved flight path resulting, like with Greener Skies in Seattle, a stabilized approach path, shorter flight times as well reduced fuel burn, emissions and noise. This also helps de-

conflict precious airspace in the tight corridors separating JFK and LaGuardia airports in certain wind conditions, maximizing capacity by making JFK independent of other area airports.

In closing, NextGen is a vital and necessary evolution for the aviation industry and it is just as important for our nation's economy. NextGen will reduce aviation fuel burn, save energy and improve the environment.

Implementing NextGen will also improve the efficiency and safety of aviation while adding jobs and strengthening our economy.

The case for NextGen is compelling.

I would again like to thank you Chairman, Ranking Member Costello and the entire subcommittee for your continued interest in advancing NextGen and I would be delighted to answer any questions you may have.

Thank you.

## Attachment I: NextGen Advisory Committee Membership, September 2012

Domain	Member
Designated Federal Official	Michael Huerta, Acting Administrator, FAA
Chair	Dave Barger, President and Chief Executive Officer, JetBlue Airways
FAA	Vicki Cox, Assistant Administrator, NextGen Christa Fornarotto, Associate Administrator for Airports David Grizzle, Chief Operating Officer Air Traffic Organization John Hickey, Deputy Associate Administrator for Aviation Safety Julie Oettinger, Assistant Administrator of Aviation Policy, Planning & Environment
Operators	Bill Ayer, Chairman, President & CEO, Alaska Air Group Ed Bolen, President & CEO, National Business Aviation Association Craig Fuller, President & CEO, Aircraft Owners & Pilots Association Dave Barger, President and Chief Executive Officer, JetBlue Airways Jim Rankin, President & CEO, Air Wisconsin (Regional Airline Association Chairman) Bob Gray, VP of Flight Operations, ABX Air, (Cargo Airline Association Chairman)
International	Patrick Ky, Executive Director, SESAR Joint Undertaking David McMillan, Director General, Eurocontrol
Airports	Sue Baer, Director of Aviation Department, Port Authority NY&NJ Kim Day, Manager of Aviation, Denver International Airport
DOD	James Jones, Major General, United States Air Force
FFRDC	Agam Sinha, Sr. VP & General Manager, The MITRE Corporation
RTCA	Margaret Jenny, President, RTCA
Labor	Lee Moak, President, Air Line Pilots Association Paul Rinaldi, President, National Air Traffic Controllers Association Tom Brantley, President, Professional Aviation Safety Specialists
Aircraft Manufacturer	Sherry Carbary, VP of Flight Services, Boeing Commercial Airplanes, The Boeing Company

Domain	Member
	Eric Stefanello, CEO, Airbus Pro Sky SAS
ATC Automation	Stephanie Hill, President, Lockheed Martin IS&GS John Harris, President, Raytheon Technical Services Company
Avionics	Carl Esposito, Vice President, Honeywell Aerospace
Environment	Arlene Mulder, Mayor, Village of Arlington Heights

Attachment 2: NextGen Advisory Committee Taskings

Date of FAA Tasking	Category of Tasking	Description	Date of NAC Approval	Associated NAC Recommendation	Work Complete?
October 22, 2010	NextGen Metroplex	Prioritizing and selecting Metroplex sites for implementing NextGen capabilities and identifying the steps needed to apply the criteria for improving aviation operations by defining <i>what</i> integrated capabilities should be deployed, <i>where</i> and <i>when</i> .	Preliminary recommendations addressed at several meetings, the final May 2012	Metroplex Prioritization Criteria (May 2011) Integrated Capabilities Scoping & Requirements (May 2011) Findings and Recommendations: Metroplex Prioritization and Integrated Capabilities Scoping & Requirements (September 2011)	Yes, May 2012
October 22, 2010	NextGen Metroplex	NextGen future operations – Trajectory Operations (Top5) mid-term (2011-2018) operational concepts and scenarios (follow-on work from the previous Air Traffic Management Advisory Committee).	September 2011	Applying the Metroplex Prioritization Criteria & Mapping the Integrated Capabilities to Identified Metroplexes (February 2012) Refinement of Integrated Capabilities Definitions and Completion of Mapping Exercises (May 2012) Recommendations for Implementing Trajectory Operations in the Mid-Term (2011-2018) (September 2011)	Yes, September 2011
October 22, 2010	NextGen Metroplex	Expanding the use of Special Activity Airspace – Making available real-time information on the status of Special Activity Airspace to maximize the use of this airspace and improve the efficiency of aircraft operations.	May 2011	Special Activity Airspace Concept of Operations – A Recommendation for Improving the Information Available for Special Activity Airspace (May 2011)	Yes, May 2011
October 22, 2010	NextGen Metroplex	Leveraging work between aircraft operators, air traffic controllers and the FAA in specific regions in the country to improve operations.	September 2011	Recommendations for Enhancing Operations in Specific Regional Airspace (September 2011)	Yes, September 2011 with on-going requirements
October 22, 2010	NextGen Metroplex	Near-term priorities for regional airspace analysis (OAPM1) – Support for the FAA-industry-controller collaborative initiative to optimize airspace and procedures in Metroplex areas. At the request of the FAA and in transition from the Air Traffic Management Advisory Committee, these were delivered at the September 2010 NAC meeting in advance of the broader Taskings.	September 2010	Metroplex Airspace and Procedures Optimization Study Teams Recommendations for the NextGen Advisory Committee (NAC) from the NextGen Implementation Work Group (NIGWG), Requirements & Planning Work Group (R&P WG) and Airspace Work Group (AWG) of the Air Traffic Management Advisory Committee (September 2010)	Yes, September 2010, OAPM1 process underway

Date of FAA Tasking	Category of Tasking	Description	Date of NAC Approval	Associated NAC Recommendation	Work Complete?
October 22, 2010	NextGen National Airspace System performance metrics	Commonly understood set of metrics for measuring both the implementation status of NextGen programs and the operational and financial impacts of NextGen capabilities as they are implemented.	Preliminary reports delivered September 2011, February and May 2012, final October 2012	Key NextGen Performance Indicators and NextGen Measurement Methodology (May 2011) Measuring NextGen Performance: Recommendations for Operational Metrics and Next Steps (September 2011) Measuring NextGen Performance (May 2012)	No, to be completed October 2012, with potential follow-on data sources development and refinement
January 28, 2011	NextGen operational and economic equipment incentives	User groups and capabilities as well as the equipment incentives needed to close the business case for NextGen capabilities.	May 2011 and September 2011	Phase One of the Equipage Incentives Tasking – Who (Which User Groups) Should be Incentivized to Equip for NextGen? (May 2011) Phase One of the FAA Equipage Incentives Tasking – What Capabilities? (May 2011) What Types of Incentives Should Be Used to Equip for NextGen? (September 2011) NextGen Equipage: User Business Case Gaps (September 2011) DataComm Roadmap (February 2012)	Yes, September 2011
September 29, 2011	DataComm Roadmap	Recommendations for Tower and domestic En Route DataComm services and associated technologies.	February 2012		Yes, February 2012 potential future Tasking after DCIS award

**National Air Traffic Controllers Association**  
AFL-CIO



Testimony of  
Paul Rinaldi, President  
National Air Traffic Controllers Association

Before the  
House Transportation and Infrastructure  
Subcommittee on Aviation  
September 12, 2012

“A Review and Update of the Management of FAA’s NextGen Program”

### **Introduction**

The National Air Traffic Controllers Association (NATCA) is the exclusive representative of over 15,200 air traffic controllers serving the Federal Aviation Administration (FAA), the Department of Defense (DOD) and the private sector. In addition, NATCA represents FAA's Alaska flight service specialists and approximately 1,200 FAA engineers, 600 traffic management coordinators, 500 aircraft certification professionals, agency operational support staff, regional personnel from FAA's logistics, budget, finance and computer specialist divisions, as well as agency occupational health specialists, nurses and medical program specialists.

Air traffic controllers are dedicated to ensuring that our National Airspace System (NAS) is the safest and most efficient in the world. In order to maintain that safety and efficiency, our controllers work to improve safety procedures, modernize the NAS and promote new technology. We have professional controllers involved in nearly every modernization and NextGen-related program the FAA is currently working on. Controller skills are put to work every day as they handle an impressive volume of flights – air traffic controllers separate more than 70,000 flights each day, safely moving nearly two million passengers through our skies daily. Air traffic controllers handle these flights in the busiest and most complex airspace in the world with roughly 5,000 planes in the sky at any given moment.

### **NextGen**

The Next Generation Air Transportation System (NextGen) is the FAA's effort to modernize the nation's air traffic control system. NATCA fully supports NextGen modernization, which will allow the FAA to meet increased demand while improving the safety of the NAS, reducing delays and protecting the environment. According to the FAA's vision, NextGen will enable more aircraft to safely fly closer together on more direct routes, reducing delays, carbon emissions, fuel consumption and noise.

NextGen will transform the national air transportation system, using new and existing technologies including satellite navigation and control of aircraft, advanced digital communications, and enhanced connectivity between all components of the NAS.

NATCA is proud to be involved in all aspects of the process as an essential stakeholder. NATCA and the FAA both recognize that stakeholder involvement is the key to continued success to NextGen. In addition to being present on NextGen projects, NATCA is represented as a member of the Radio Technical Commission for Aeronautics (RTCA), the FAA Management Advisory Council (MAC), and the NextGen Advisory Committee. Our presence, as well as that of industry leaders, has been an important addition to the discussion on modernization.

NATCA can point to two instances where collaboration has produced concrete benefits and savings for the FAA and the flying public. First, in the Optimization of Airspace and Procedures in the Metroplex (OAPM) program, early returns in the Washington, D.C. area indicate substantial fuel savings and reduced carbon emissions. A total of four new procedures have been implemented which optimize descents, allowing for fuel savings. The OAPM team credits collaboration for the success seen so far on the project.

Second, NATCA helped save the FAA \$7 million dollars during a monitor upgrade. Controllers discovered a problem in newly installed monitors that made them flicker. The company offered to fix the problem for \$9 million, but NATCA instead suggested assembling a tiger team to resolve the issue internally, and was successful in finding a solution. The NATCA/FAA team spent about \$1 million, and the company offered to make the change to the rest of the monitors for \$500,000, saving about \$7 million in the process.

NATCA, the FAA, and other stakeholders have acknowledged the RTCA's 2009 recommendations, and as the 2012 Department of Transportation Inspector General (IG) report notes, the FAA is incorporating the RTCA's recommendations into NextGen plans. However, delays have occurred for a variety of reasons, including lack of funds, lack of personnel, and management issues. Nonetheless, NATCA believes NextGen is making significant progress. We are here today to testify about key areas of NextGen that we see as successfully moving forward. Those areas are OAPM (also known as Metroplex), Area Navigation (RNAV), Automatic Dependent Surveillance-Broadcast (ADS-B), DataComm, Greener Skies Over Seattle, and En Route Automation Modernization (ERAM). In addition, we will discuss controller training.

### **Progress in NextGen Projects**

**Optimization of Airspace and Procedures in the Metroplex:** The Optimization of Airspace and Procedures in the Metroplex (OAPM), also known simply as Metroplex, is a joint effort by the FAA and industry aimed at integrating airspace and deconflicting traffic flows over major metropolitan areas (known as metroplexes). OAPM study teams rely on current aircraft navigation capabilities to enhance airport arrival and departure paths, provide diverging departure paths to get aircraft off the ground more quickly, and add more direct, high-altitude RNAV navigation routes between metroplexes.

*Progress:* Through collaboration involving all stakeholders including airports, airlines, the military, managers, labor and the government, we have already progressed to the design and implementation stage in Charlotte, Atlanta, and Northern California.

*Value of Collaboration:* During each OAPM, collaboration has been the key to success throughout the process. All stakeholders have been invited to participate in the study teams in which participants analyze and describe the operational challenge in a given metroplex, then assess planned solutions, and develop theoretical airspace and procedures. The study teams also conduct initial estimates of costs, benefits and risks, and make recommendations. Their theoretical solutions, analyses, data, and recommendations then go to the Design and Implementation Teams, which execute the design and conduct operational, safety, and environmental analyses and assessments. Working collaboratively, we have reduced the number of metroplex test sites because the FAA didn't have the resources, and because we have been strategic about site selection. Collaboration allowed the FAA to eliminate OAPM sites that had pre-existing projects such as Greener Skies or legacy airspace projects (down to 13 from 21 in Round One).

*Success:* OAPM is already yielding positive results. For example, teams in Dallas for the North Texas OAPM team recently began reviewing their work with MITRE Corporation. Based on their joint calculations, savings for airlines could be as much as \$21 million annually through reduced fuel consumption while also easing controller workload and making controllers more efficient. In Atlanta, the OAPM teams found savings by re-working existing routes, saving airlines as much as \$22 million annually in reduced fuel consumption.

*Barriers to complete efficiency:* Everyone involved is excited about the efficiencies OAPM has to offer, yet we are not currently able to reach optimal efficiency. There are several barriers to achieving this goal, including the need for new aircraft spacing and sequencing technologies, harmonizing aircraft equipage, and streamlining the rule-making process at the FAA to better take advantage of the new procedures.

- One key part of OAPM involves optimizing descents so that aircraft can fly idle throughout their descent, which vastly reduces fuel consumption. As an aircraft approaches, there is an ideal point for the aircraft to begin its descent, but that point is 150 to 200 miles out from the airport. Controllers currently space and sequence aircraft when they are much closer to the airport, so in

order for optimized profile descents to work, controllers will need a new tool for spacing and sequencing the aircraft from a greater distance before they reach the point of descent. This will require new technology that at present has yet to be established.

- Equipage is another barrier to optimization, as not all aircraft are equipped equally. Those aircraft without vertical navigation (VNAV) are workload intensive for the pilot because the pilot has to manually add the new approaches developed by OAPM. As long as "mixed equipage" prevails in the NAS, we will have difficulty implementing approaches that work for everyone. While NATCA takes no position on how best to incentivize or assist in the purchase of the equipment for airlines and aircraft owners, it is clear that proper equipment will be needed in order for every aircraft to gain maximum efficiencies.
- The long and laborious rulemaking process for the FAA wastes valuable time. Changes are needed in order to streamline the rulemaking process to better implement the new efficiencies being developed by OAPM.

**DataComm:** DataComm is a program that will allow controllers and pilots to send text messages back and forth, reducing or eliminating the need for voice communications. A majority of these messages will be integrated into the flight deck avionics to help save time and remove issues of incorrect data entry.

DataComm is currently in Segment 1 Phase 1, which involves sending departure clearances and revised clearances directly to the flight deck from the tower. Known as Tower Departure Clearance (DCL), this will connect the tower to the flight deck to send initial and revised clearances without the need for voice communications. It will also load clearances into the flight management system (FMS) for pilot review and acknowledgment. Essentially it provides pre-departure clearance (PDC) that connects directly to the flight deck and allows controllers to send revisions. Currently, a PDC is sent to the aircraft through a third party, which sends the message to the Airlines Operations Center (AOC). AOC then sends the message to the flight deck or to the gate. These communications require on average three to five minutes to send via voice. With DCL, it takes one to two minutes to complete the same transaction via DataComm, saving several minutes for each departure for revised departure. This saves time, and leaves fewer opportunities for miscommunication via voice.

*Progress:* Currently no facilities use DataComm. The program office is preparing trials at three towers: Memphis Tower (MEM), Newark Tower (EWR), and Atlanta Tower (ATL) for tower services. The first rollout is slated for November 2012 at MEM with EWR beginning around April 2013 and ATL around July 2013. Segment 1 Phase 1 DCL will be going into 41 sites beginning March 2016, with initial deployment taking place at those sites over several years. Segment 1 Phase 2 is scheduled for a 2018/2019 initial deployment with Segment 2 Phase 1 scheduled for 2025.

*Example of Benefits DataComm Will Bring:*

- During severe weather, an aircraft may currently receive several different routes within a period of thirty minutes. With DataComm, revised routes can be sent with a few clicks to the flight deck, saving valuable time as the aircraft is rerouted. This is especially helpful when there is a language barrier that could occur with non-English speaking pilots.
- DataComm also benefits surface operations when it saves time – saving time while aircraft are holding for departure clearance reduces the backlog that could otherwise occur.

*Benefits of Collaboration:* Overall, NATCA has been participating with other stakeholders on DataComm. Three sites have been selected for initial tests, and all local stakeholders have been engaged. While the focus is now on terminal facilities, NATCA continues to have a full-time representative

working on the en route side. Field collaboration is going well, but that same collaborative attitude is not reflected throughout the FAA management ranks. Nonetheless, through some successful collaboration, NATCA and the FAA have been able to address functionality problems earlier in the process and prevent them from compounding in later stages.

*Barriers:* Like other NextGen programs, DataComm relies on equipage to function. To achieve maximum benefits, aircraft must equip with the DataComm technology.

**ADS-B:** Automatic Dependent Surveillance-Broadcast (ADS-B), one of the cornerstone components of NextGen, is the broadcast of the GPS-derived position report of an aircraft or vehicle. As this technology continues to evolve, and aircraft equip with ADS-B Avionics, controllers will see an increase in surveillance coverage not provided by traditional radar sources.

*Progress:* The automation platforms STARS, CARTS, and ERAM accept ADS-B Data, and the ground infrastructures are all well underway. Approximately 500 Radio Stations of the 730 planned, will be operational by the end of fiscal year 2012. As of August 30, 2012, a total of six terminal facilities have gone operational with FUSION/ADS-B: Philadelphia (PHL), Louisville (SDF), Houston (I90), New Orleans (MSY), El Paso (ELP), and Southern California (SCT). SCT identified an issue and reverted back to Single Sensor, but is expected to return after verifying the fix has resolved the issue. At en route facilities, Houston ARTCC (ZHU) has completed limited runs of ERAM with ADS-B adapted in Domestic Airspace. An additional 12 terminal and four en route facilities are expected to be operating with ADS-B capabilities by the end of FY 2012.

*Benefit of Collaboration:* Collaboration has been an important part of the success – the Surveillance Broadcast Services (SBS) office is heavily in favor of collaboration. NATCA has been involved in all aspects of ADS-B and has identified shortcomings that save money in the long run.

*Example of Success:* ADS-B is providing unprecedented surveillance in the Gulf of Mexico and Alaska. This surveillance replaced the use of a grid system that was at best confusing on most days. The surveillance has allowed for more direct routes, which increases the efficiencies of the operations for helicopters. Areas that had no radar surveillance coverage now provide controllers the ability to offer services and assistance to pilots. Required safety work is being completed to allow ADS-B Surveillance into areas of Domestic Non-Radar Airspace.

*Barrier: Equipage:* The benefit of having increased surveillance coverage is limited to the number of aircraft that have certified Minimum Operational Performance Standards (MOPSB) avionics (this meets the certification requirements in the FAA ADS-B Mandate of 2020). As of September 4, 2009 aircraft had MOPSB avionics. Incentivizing aircraft operators to equip prior to the FAA Mandate of 2020 is one of the biggest challenges facing the FAA. The FAA has entered into and is currently pursuing agreements with Jet Blue, UPS, United, and US Airways, as well as the original Capstone aircraft in Alaska and the helicopters in the Gulf of Mexico to upgrade their legacy avionics to MOPSB.

**RNAV and RNP:** Area Navigation (RNAV) and Required Navigation Performance (RNP) are the two main components of Performance Based Navigation (PBN). The FAA describes PBN as a framework for defining performance requirements in “navigation specifications” that contain detailed aircraft operator/pilot requirements. PBN flight routes and procedures allow aircraft to fly more direct routes and the FAA to optimize the use of airspace, which will increase airspace capacity and reduce delays. RNAV enables aircraft to fly without relying solely on ground-based navigation aids. Aircraft can fly on any desired flight path within the coverage of ground- or space-based navigation aids, within the limits of the capability of aircraft self-contained systems, or a combination of both capabilities. RNP is RNAV with

the addition of on-flight monitoring of an airplane's performance. The pilot receives an alert if the aircraft is not performing in accordance with the requirements for a specific procedure.

*Progress:* RNAV and RNP are already saving fuel and money through more efficient approaches. There are many more gains to be found once RNP is better understood and is used to de-conflict airspace such as the airspace around New York City. RNP is the answer to increasing efficiency between Kennedy (JFK), Teterboro (TEB), and Newark (EWR).

*Examples of Success:*

- Phoenix has been very successful since October 2006 when terminal use of RNAV approaches generated five gallons per flight of fuel savings. Their reductions in carbon monoxide emissions were estimated at 2,500 metric tons annually.
- Midway – RNP with curved paths enables simultaneous arrivals to Midway (MDW) and departures from O'Hare (ORD) where they weren't possible before. Previously, ORD departures would have to be stopped to accommodate MDW arrivals on certain runway configurations. RNP allows the two to occur simultaneously without disrupting either.

*Barriers:* Equipping all aircraft will be necessary in order to achieve the maximum gains. Industry buy-in will be necessary to accelerate RNP usage. Use, deployment, equipage, and awareness all continue to increase. Operational use from pilot's perspective is also increasing.

**Greener Skies:** The Greener Skies Over Seattle program's primary goal is to conduct a safety analysis of satellite navigation arrivals and approaches in close proximity to or in conjunction with other approaches. The results from this program will be applied nationwide. Greener Skies is fundamentally similar to OAPM. The key difference is the collision risk safety analysis that would be lost in the OAPM process. The interaction and potential risks between satellite and ground surveillance is unknown. Early results of how they interact are promising. The FAA, including Oversight and Safety, are involved in this risk analysis.

*Progress:* The FAA determined that Seattle was an ideal location due to the runway configuration at the Seattle-Tacoma Airport (SEA) and the close proximity of SEA Boeing Field airport (BFI). The safety analysis includes aircraft interactions using multiple runways at SEA, in addition to aircraft interactions arriving concurrently at SEA and BFI. This safety work should lead to air traffic control rule changes that will allow controllers to more efficiently approve the use of satellite navigation approaches more efficiently in the Seattle area. Additionally, these rule changes may be applicable to the entire national airspace system. The need for these rule changes was recently identified as a major inhibitor to the expanded use of satellite navigation approaches system wide.

*Benefits of Collaboration:* NATCA has been collaboratively involved throughout the entire Greener Skies project and the team has acknowledged our organization as essential to the expediency and quality of the effort thus far. The data gathered during testing of the arrival and approach will be submitted to a vendor that is responsible for development of the safety analysis.

**ERAM:** En Route Automation Modernization (ERAM) will replace the 40-year-old en route host computer and backup system used at 20 FAA Air Route Traffic Control Centers (ARTCC) nationwide. ERAM will increase capacity and improve efficiency, allowing controllers to track 1,900 aircraft simultaneously, compared to the current 1,100 flight limitation. ERAM will extend coverage beyond facility boundaries, enabling controllers to handle traffic more efficiently. This extended coverage is possible because ERAM will process data from 64 radars versus the 24 radars currently processing with the Host system. Although not technically a NextGen program, ERAM's increased processing power is

the backbone of many of the NextGen technologies, that rely on successful ERAM deployment. For example, DataComm requires ERAM, as do Traffic Flow Management System (TFMS), Ground Based Interval Management (GIM), Flight Deck Based Interval Management (FIM), Time Based Flow Management (TBFM), and NextGen Network Enabled Weather (NNEW)/Reduced Weather Impact (RWI).

*Progress:* The controller workforce is eager to begin using ERAM, and is enthusiastic about its testing and rollout across the country. As of August 20, 2012, nine of the 20 ARTCCs are running ERAM operationally to control traffic. Five of the ARTCCs Salt Lake City (ZLC), Seattle (ZSE), Denver (ZDV), Albuquerque (ZAB), Minneapolis (ZMP)), have achieved continuous operations with ERAM utilized 24/7 for air traffic operations in approximately 1.5 million square miles of airspace. ERAM is installed and being tested in Chicago (ZAU), Oakland (ZOA), and California (ZLA). Houston (ZHU), New York (ZNY), Kansas City (ZKC), and Boston (ZBW), will be testing by the end of 2012 according to the FAA's schedule. The remaining eight ARTCCs in Indianapolis (ZID), Washington (ZDC), Cleveland (ZOB), Atlanta (ZTL), Miami (ZMA), Memphis (ZME), Fort Worth (ZFW), and Jacksonville (ZJX), are due to begin operations by the end of 2013. According to the FAA, final, continuous operations are expected at all 20 ARTCCs by August 2014, according to the FAA. NATCA is optimistic and will continue doing what we can do to make sure ERAM is implemented on time and on budget.

*Benefits of Collaboration:* Over the past few years, the FAA and NATCA have developed a strong relationship based on respect and trust. That relationship has led to smooth resolution of disagreements over ERAM rollout. For example, at one facility (ZLA), a problem was discovered right before ERAM was scheduled to go online. NATCA's position was that the problem needed further investigation, but the management team wanted to move forward immediately. The disagreement went through the established process and NATCA and the FAA were able to resolve the issue without any drawn out arguments. This kind of collaborative relationship has contributed to ERAM's progress.

*Barriers:* ERAM faces one significant challenge: insufficient resources to test and deploy. There simply aren't enough Certified Professional Controllers in the field to assist the facilities in testing ERAM software, especially when multiple facilities are scheduled to conduct tests simultaneously. Additional trained personnel will be necessary in order to stay on schedule and on budget

### **Additional Concerns:**

**Training and Procedures:** NATCA has been working to keep controllers informed of new rules and procedures as they are being developed. However, it is difficult to criticize the FAA's training process when the rules and procedures for RNAV and RNP are still being written – controllers can't be trained for procedures that don't yet exist. We need a controller handbook for performance based navigation (PBN), and we will begin training once that is complete.

However, NATCA agrees with the IG that the controller workforce lacks a basic understanding of the technologies and capabilities of RNAV and RNP. The sooner the controller workforce can be exposed to and made aware of new technologies, the easier it will be to train and reach proficiency once the rules and procedures are finalized.

NATCA agrees with the IG that the FAA lacks a consistent training program for new technology and procedures. RNAV and RNP in particular require more training. A high ratio of trainees to controllers at busy metroplex facilities also creates a problem, as many of the senior controllers will be retiring in the next few years, leaving a training gap. The impending retirement wave coupled with the influx of new hires will place a strain on many facilities that will not have the personnel to adequately train trainees.

NATCA and the FAA have been aware of this issue for several years, and acknowledge it will be a hurdle to overcome when training for new rules and procedures.

**Recommendations:**

- **Continued Collaboration:** Continue to focus on collaboration and stakeholder involvement in order to reach realistic deadlines.
- **Industry Buy-In:** As discussed in OAPM, ADS-B, and RNP, all aircraft must be adequately equipped in order to achieve maximum safety and efficiency gains. The aviation industry must have confidence in the FAA and their projects before they will invest millions of dollars on new technology. Equipage is indispensable for NextGen projects such as ADS-B and RNP.
- **Streamlining the Rulemaking Process:** The long and laborious rulemaking process for the FAA wastes valuable time. Changes are needed in order to streamline the rulemaking process to better implement the new efficiencies being developed by OAPM.
- **Middle Management:** The FAA needs to follow through at every level to ensure organizational alignment that delivers the efficiencies outlined in the Monitor Report. Collaboration amongst managers is essential.

We appreciate the opportunity to appear before the Committee to provide our input on the NextGen. We also welcome opportunities to work with the FAA and other members of the aviation community in a collaborative manner to provide the safest and most efficient air traffic control system in the world. Thank you.



**STATEMENT OF THE  
NATIONAL BUSINESS AVIATION ASSOCIATION**

**ED BOLEN  
PRESIDENT AND CEO**

**BEFORE  
THE COMMITTEE ON TRANSPORTATION AND  
INFRASTRUCTURE  
AVIATION SUBCOMMITTEE  
U.S. HOUSE OF REPRESENTATIVES**

**REGARDING  
A REVIEW OF AND UPDATE ON THE MANAGEMENT OF  
FAA'S NEXTGEN PROGRAM**

**SEPTEMBER 12, 2012**

Chairman Petri, Ranking Member Costello, members of the of the Subcommittee, on behalf of the National Business Aviation Association and RTCA, I am pleased to have the opportunity to provide our views on the future of our national air transportation system and the next generation air traffic control technology (Next Gen). As you know, I am the President and CEO of the National Business Aviation Association (NBAA). In addition, I am the immediate past chairman and current vice chairman of RTCA.

NBAA was founded 65 years ago to represent companies that utilize general aviation aircraft as a tool for meeting some of their transportation challenges. NBAA and our members are committed to working with the government to transform and modernize the nation's aviation system. Likewise, we are committed to policies that support the continued growth of each aviation segment, including general aviation, which plays a critical role in driving economic growth, jobs and investment across the U.S. We strongly support the shared goal of keeping our national aviation system the largest, safest and most efficient in the world.

General aviation is an essential economic generator, contributing more than \$150 billion to annual U.S. economic output, and directly or indirectly employing more than one million people. Most general aviation aircraft operating around the world are manufactured and/or completed in the U.S., and our industry is continuing to build a strong American manufacturing and employment base that contributes positively to our national balance of trade.

I commend the Subcommittee for your commitment to improve our nation's aviation system and on-going efforts to foster economic growth and job creation during these challenging economic times. NBAA and all of the other members of RTCA strongly support these efforts and believe that the importance of a robust aviation system cannot be overemphasized.

Aviation, including general aviation, is a vital link in our transportation system and powerful engine for job creation and economic growth. Ensuring that the United States has the largest, safest, and most efficient air transportation system is clearly in our country's interest and should be a national imperative.

My testimony today will make four overarching points:

1. **RTCA helps forge the consensus voice of the aviation industry**, including general aviation, military and the airlines. RTCA should continue to be the forum for receiving FAA tasks, achieving industry consensus, and providing the FAA with consensus-based recommendations regarding NextGen.
2. **NextGen must provide clear benefits**. The general aviation community has begun to see the benefits of NextGen through the development and implementation of WAAS/LPV

approaches and T-routes. Creating new WAAS approaches and T-routes should continue to be a priority for NextGen implementation.

3. **NextGen raises significant cost realities for system users.** To address these realities, implementation should be benefits driven with a clear cost-benefit case that firmly establishes system requirements, incentivizes early adoption, and provides accountability through the establishment of a comprehensive timeline and budget.
4. **Maintaining legacy infrastructure during the transition to NextGen is critical to safety and ensuring access.** Consideration must be given to how existing infrastructure maintenance will be funded and managed.

Each of these points is addressed in detail below.

#### **The role of RTCA**

Founded in 1935 as the Radio Technical Committee for Aeronautics, RTCA works in response to requests from the FAA to develop comprehensive, industry-vetted and endorsed recommendations on a wide range of technical, operational, and policy issues related to air transportation. RTCA provides a forum in which all participants can be heard and provides the leadership to achieve consensus among all parties. In doing so, RTCA brings a single industry voice to the FAA on issues critical to the development and implementation of NextGen. I see this play out consistently in my role as vice chairman of RTCA and a member of the RTCA NextGen Advisory Committee (NAC).

The recommendations of RTCA's Task Force 5 have provided the basis for establishing industry needs and operator expectations during the transition from a ground-based to a satellite-based system. The FAA has subsequently created the NAC to provide relevant and actionable recommendations to implement NextGen. General aviation operators expect the transition to deliver tangible benefits through key technologies, including ADS-B, Datacomm, and Performance Based Navigation (PBN). The critical benchmarks for general aviation operators are increased all-weather access to airports nationwide, the ability to navigate efficiently through busy metroplex airspace when necessary, and the reduction of conflicts with commercial traffic operating at vital airports such as JFK, EWR, or LGA.

Continuing to address these recommendations and expectations is critical to ensuring that system users are equipped to operate in the NextGen environment and the necessary benefits are delivered to the user community. NBAA believes that RTCA should continue to be the forum for achieving industry consensus on FAA tasks and providing the FAA with consensus-based recommendations regarding NextGen.

**The need for clear benefits and requirements**

The general aviation community and RTCA recommendations agree that WAAS/LPV approaches that allow all-weather access to thousands of runway ends and T-routes that allow precise and efficient navigation through busy metroplex airspace are among the key early benefits of NextGen for a wide range of aviation users. The industry also concluded that RNP approaches should be implemented where beneficial or necessary.

General aviation users have begun to see clear benefits from the transition to a satellite based system with the establishment of performance based navigation including WAAS/LPV approaches and T-routes. As of July 2012, there were 12,131 approaches that rely on GPS operating in the United States, compared to only 6,628 ground-based instrument approaches. Where they have been established, T-routes provide more efficient and economical routing while reducing pilot and controller workload in busy terminal areas. T-routes can overcome the limitation of ground-based navigational aids, such as line-of-site requirements and signal reception. And, because of the accuracy of GPS signals, T-routes can offer lower minimum altitudes giving pilots more options for avoiding icing conditions, a major safety consideration for general aviation.

The early success of these efforts and the tangible benefits they deliver to system users should make continued development and implementation of WAAS/LPV approaches and T-routes an ongoing priority for the FAA, with a clear timeline established for completing the implementation process.

While the majority of general aviation aircraft are already equipped with GPS, and more than 74,000 WAAS-capable GPS units have been sold, additional equipment is needed to take advantage of the promised benefits of ADS-B and other system enhancements. At present, both the full costs and the ultimate benefits of equipping for these enhancements remain unclear.

**Cost concerns**

For general aviation users, the entire cost of equipping for NextGen must be borne by the aircraft owner or operator and cannot be passed along to passengers. Because the costs associated with equipping for NextGen are significant, operators need to be able to plan ahead for necessary expenditures. NBAA acknowledges the work that the FAA is doing to develop a plan on public-private partnerships and loan guarantees to incentivize Equipage. We have offered input to the agency and have encouraged them to move forward quickly on this critical initiative.

An integrated budget and timeline for achieving key NextGen milestones would help users determine how and when to equip their aircraft while adding accountability for the continued progress of NextGen implementation.

Currently, budgetary uncertainties and the lack of a single comprehensive timeline for achieving important implementation milestones leave users uncertain about what equipment will be needed, ultimately slowing adoption.

In addition, concerns over the prospect of sequestration have created an added level of uncertainty for system users. Potential cuts in FAA funding overall, and NextGen funding in particular, would have a severe impact on the NextGen implementation process.

**Maintaining the legacy system**

As we've seen, the final implementation of the NextGen air traffic system will not happen overnight. With so many uncertainties remaining, time will be required for the FAA to implement the system and train personnel to use the new technology, procedures, and policies. The aviation industry, too, will need time to understand the benefits; develop, manufacture, and install the necessary equipment; and train pilots in its use. In the meantime, existing ground-based infrastructure will serve a critical role in ensuring safety and providing access.

The FAA has committed to bringing stakeholders together on the development of a future navigation plan and components of that plan must include a "transition strategy" rather than a light switch approach. To that end, funding to maintain this legacy infrastructure must be established in order to ensure the continued safe operation of the national airspace system. This is particularly true in the face of potential sequestration budget cuts, which could impose long delays on NextGen implementation. It is critical that adequate attention be given to ensuring the maintenance and state of good repair to the legacy air traffic system - particularly in an environment in which sequestration may force spending cuts.

**Conclusion**

On behalf of NBAA and RTCA, I thank you for the opportunity to testify today and for your leadership in ensuring that the ongoing investment in NextGen achieves its goals. NextGen modernization holds the promise of a safer, more efficient, more accessible, and more cost-effective national transportation system. By acting to ensure that NextGen implementation is managed responsibly and guided by industry consensus, you are protecting the extensive investment in this new approach to air traffic management and the many benefits that will accrue from a thoughtfully designed implementation process.

**Testimony by Susan M. Baer  
Director of Aviation  
The Port Authority of NY & NJ  
Before the U.S. House of Representatives Committee on Transportation and Infrastructure  
Subcommittee on Aviation  
September 12, 2012**

Chairman Petri, Ranking Member Costello, and Members of the Committee:

Thank you for inviting me to speak today. I am Susan Baer, Director of Aviation for the Port Authority of New York & New Jersey.

Our bistate agency is responsible for some of the nation's most important transportation infrastructure assets, including the busiest commercial aviation system in the United States. This includes LaGuardia, John F. Kennedy and Stewart International airports in New York and Newark Liberty International and Teterboro airports in New Jersey. Together, these airports serve more than 107 million passengers annually. Approximately 20 percent of all U.S. flights operate through the New York metropolitan region's airspace.

I would like to begin by commending the members of this Committee for delivering on the long-awaited FAA Reauthorization. You have provided the aviation industry with the foundation necessary to advance critical initiatives and I appreciate the inclusion of metrics to help all of us analyze the benefits of NextGen.

I also want to thank Michael Huerta, the acting administrator of the FAA and a champion for the NextGen cause. He has made countless contributions through his work reorganizing the FAA's NextGen Office and as the Designated Federal Officer on the NextGen Advisory Committee. Together with Dave Barger, CEO of JetBlue who has led the NextGen Advisory Committee, they have provided thoughtful and necessary guidance on how to move the NextGen agenda forward, while including critical input from all stakeholders. I am proud to be a member of that committee.

I also was honored to be part of Transportation Secretary Ray LaHood's Future of Aviation Advisory Committee. NextGen was a fundamental element of nearly every conversation and a prevailing theme throughout all of the committees: Environment, Financing, Labor & Workforce, Safety and Competitiveness and Viability.

Ultimately, the committee delivered a series of NextGen-related recommendations that included:

- Advocating for investment to accelerate the installation of Next-Gen equipment at airports and aboard aircraft;
- Implementing policy and procedures to facilitate NextGen, including Best Equipped, Best Served;
- Confronting barriers to access, and using NextGen as a capacity-enhancing alternative for slot controlled airports; and
- Ensuring safety concerns are addressed before new NextGen procedures are implemented.

Very simply, our nation's air traffic control system is the same one that has been in use since the 1940s. GPS systems in New York City's taxicab fleet are more sophisticated than our radar-based air traffic control system.

Our country needs to implement NextGen and we need to do it now. Aviation drives our global economy. The cost of inaction is simply too great. It is no secret that the New York and New Jersey region's airports consistently rank at or near the bottom in on-time performance. While the problem often originates in our region, it certainly doesn't stop there. *One in three U.S. flights are affected by delays in the New York/New Jersey/Philadelphia airspace*, and 40-50 percent of national airspace ground stops and ground delays occur in New York. That means about half of all flights in the country held at the gate or delayed on the tarmac can trace their delays to one of our region's airports.

Delays are not just an annoyance. They cost money and stifle productivity. The ineffectiveness of our air transportation system has real economic consequences. Extra fuel, a new flight crew, hotel vouchers, missed meetings, extra meals at an airport, and so on. In 2010, a University of California at Berkeley study found that flight delays cost the United States \$32.9 billion a year. Unfortunately, the flying public bears the largest burden.

We need to implement NextGen in the New York/New Jersey region as soon as possible because that is where it can deliver the greatest benefit to the country. At the Port Authority, we have made important investments to make our airport system more efficient. At JFK, we have put in place a revolutionary and much-needed ground-management system in response to the relentless onslaught of delays that threatened to overwhelm the airport in recent years. That threat persists, not just at JFK, but at Newark and LaGuardia too, which is why we're working with the FAA to expand the program to those two airports. We know that at JFK alone, the ground metering system has saved nearly five million gallons of fuel and 14,800 hours of taxi time annually.

Over the last decade, our agency has invested more than \$1 billion to make airport ground operations more efficient. Our initiatives have delivered. We have invested with precision and a sharp focus on efficiency, building high-speed taxiway exits and multiple-entrance taxiways, minimizing runway occupancy time and enabling a more efficient queuing procedure. Our measures have helped avert tens of thousands of hours of delays. In turn, this has led to greatly reduced emissions and other environmental benefits that come from curbing delays and relieving congestion.

As we take steps to advance NextGen, we are making efforts to be better neighbors to those who live near our airports. We recently launched a single phone number that consolidates all our airports' noise complaint hotlines and a website that allows the public to express concerns about aircraft noise. These new systems provide feedback in real-time and help us to better understand the complexity of the problem. The standardized data repository also helps us collect and analyze noise complaints better than ever, giving us the ability to measure the number and origin of complaints, including which airport neighbors are making complaints. As we have in the past, we will share complaint statistics with the FAA to ensure the agency is aware of the volume and origin of complaints so it may consider operational adjustments, such as runway selection, if feasible.

All this is well and good, except there is only so much you can accomplish on the ground without corresponding improvements to our airspace. While we are in better shape today than we were a couple of years ago, in some ways, we are still stuck in neutral.

Today, my three major commercial airports effectively have a “No Vacancy” sign, because the federal government has capped the number of hourly operations we are permitted to handle. Until we can find new capacity—such as the improvements full implementation of NextGen will deliver—these massive economic engines are idling.

As a nation, we cannot afford that. Together, JFK, Newark and LaGuardia support nearly half a million jobs paying more than \$20 billion in annual wages and generating more than \$60 billion in annual sales and economic activity. We know airlines—both incumbent carriers and new entrants—want to expand air service in our market, but because of slot restrictions, they cannot. Our economists have calculated that for every one million potential additional passengers we fail to serve, 5,000 jobs do not get created.

Again: We cannot afford that, not in this economy, not in any economy.

I am a realist. I understand a wholesale revamping of the way our national airspace functions cannot happen overnight. As an aviation professional, I want to help advance and shape NextGen’s implementation, because inasmuch as the nation needs NextGen, I believe opening it in the New York/ New Jersey region will provide the greatest immediate nationwide benefit.

By attacking the problem where it is most acute, NextGen can deliver improvements to constituents from Green Bay to Tampa Bay ... Portland, Oregon, to Portland, Maine ... and all points in between. According to a 2010 GAO report, our three airports, along with Philadelphia, Atlanta, O’Hare, San Francisco, account for 80 percent of departure delays across the entire country. Fix it here ... at our airports and a few select others ... and you can fix the problem nearly everywhere.

Recognizing this is an issue of national urgency, in 2009, the Port Authority established the National Alliance to Advance NextGen, a coalition of business, civic and industry groups and organizations devoted to getting out the message about NextGen.

We continue to grow, and last month, we reached 1,000 members. In fact, the 1000<sup>th</sup> member was the Chicagoland Chamber of Commerce from ranking member Costello’s home state.

In all, we have members from all 50 states, Washington D.C., the Virgin Islands, and 13 foreign countries—firms like Sherwin Industries from Wisconsin ... organizations like the Los Angeles Chamber of Commerce ... AirDat LLC from North Carolina .... Klamath Falls Airports in Oregon ... The St. Louis Business Travelers Association ... and hundreds more.

Together, these organizations represent tens of millions of U.S. air travelers who are demanding improvements to our national air traffic control system through the implementation of NextGen technology.

In a time of tightened budgets and other fiscal restrictions, it will prove challenging to fully fund NextGen. But do we instead continue to risk the mounting challenges we will face as a nation stuck with a World War II-era, radar-based air traffic control system?

With so much at stake, I urge members of this committee and Congress to move quickly to implement NextGen technology. The Port Authority of New York and New Jersey stands ready, willing and able to assist in any way we can.

Thank you.



TESTIMONY OF MARION C. BLAKEY

PRESIDENT AND CEO

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA

"A REVIEW OF, AND UPDATE ON, THE MANAGEMENT OF FAA'S NEXTGEN PROGRAM"

SUBCOMMITTEE ON AVIATION

HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

SEPTEMBER 12, 2012

*Introduction*

Chairman Petri and Ranking Member Costello, thank you for allowing the Aerospace Industries Association (AIA) to submit testimony in support of this important hearing. I am Marion Blakey, President and Chief Executive Officer of AIA, the nation's premier trade association representing aerospace and defense manufacturers.

Mr. Chairman, approximately seven months ago Congress passed, and the President signed into law, landmark legislation for the transformation of our air traffic control system. The aerospace industry is very appreciative of this committee's leadership in bringing the FAA Modernization and Reform Act of 2012 (Public Law 112-95) to reality after years of struggle and compromise. Title II of the Modernization Act was solely dedicated to advancement of FAA's Next Generation Air Transportation System (NextGen), and if implemented properly, those provisions will accelerate the transformation of today's safe but aging and inefficient system.

NextGen provisions of the Modernization Act require the FAA to take the following action:

- Establish the new executive position of *Chief NextGen Officer* (CNO), appointed to a five-year term and reporting directly to the FAA Administrator. This was designed to focus accountability for NextGen implementation, and help break down "stovepipes" among different organizations within the FAA;
- Approve and implement *advanced approach procedures* (RNAV/RNP) at U. S. commercial airports along a mandated schedule, with larger airports complete by June 2015 and smaller airports by June 2016; and
- Monitor the performance of the National Airspace System using specified *performance metrics*, within six months of enactment.

The Act also:

- Authorizes the establishment of a new *avionics equipment incentive program* to provide credit assistance to public-private partnerships for the purpose of accelerating NextGen; and

- Directs FAA to safely integrate *unmanned aircraft systems* (UAS) into the national airspace by 2015 and establish six test sites around the country to assist in this effort.

Collectively, these and other provisions of the Modernization Act will go a long way toward accelerating NextGen. However, seven months after enactment, progress remains slow and internal resources to achieve the Act’s goals are uncertain.

***The Act’s Near-Term Timelines Are Not Being Met***

The Modernization Act created a number of important new initiatives and established both long-term and short-term milestones to measure progress. AIA is concerned that, seven months after enactment, progress has been slow and many of the near-term milestones have not been met. The table below provides a few examples of some near-term milestones established in the Act:

Subject	No. of Days	Date Due
National facility realignment and consolidation report (Sec. 804)	120	6/14/2012
Analysis and report on ways to streamline certification process for NextGen (Sec. 215)	180	8/14/2012
Establish and begin using NAS performance metrics (Sec. 214)	180	8/14/2012
Establish a UAS integration program at six test ranges (Sec. 332)	180	8/14/2012
Report on options to encourage NextGen avionics equipage (Sec. 221)	182	8/16/2012
Report on accelerating advanced procedures at OEP airports (Sec. 213)	182	8/16/2012
Finalize a comprehensive plan for UAS integration into the NAS (Sec. 332)	270	11/10/2012

AIA is concerned that delays in meeting these initial milestones could mean delays in implementation of the Act’s overall objectives. We encourage the committee to determine whether resource constraints, lack of clarity, or other issues are causing these delays, and work with the FAA to come as close to the Act’s milestones as possible.

The Modernization Act called for significant actions in the next two to three years, and it is not clear whether FAA intends to meet all of these goals. For example, the Act requires the agency to publish 30% of the required RNP and RNAV procedures at OEP airports, and 25% at non-OEP airports, within 18 months of enactment, which is roughly the middle of next August. This is a significant undertaking, and it is unclear whether the agency intends to meet this milestone. The development, publication, and use of these advanced procedures is a key building block for NextGen, and it is critical for the agency to

identify the resources needed to accomplish these goals. While the House recommended additional funding for this effort in its version of the FY2013 Transportation-Housing Appropriations Bill, the recent decision to fund the government under a Continuing Resolution for the first six months of the fiscal year could eliminate these needed resources for next year.

***FAA Budget Constraints Remain a Concern***

Three years ago, the FAA's long-range Capital Investment Plan (CIP) built an overall modernization program that ramped up from \$2.9 billion in FY 2010 to an average of \$3.5 billion in the FY 2012-2014 timeframe. However, last year's plan cut each year of this budget by 20%, dropping the forecast down to \$2.8 billion a year. The Modernization Act and proposed appropriations bills for FY 2013 both reflect these reduced levels.

In addition, FAA's operating budget – where an increasing amount of NextGen work is being performed – is under significant pressure. The recent agreement of Congressional leadership to accept a Continuing Resolution for the first six months of FY 2013 means the FAA will be operating at a rate that is \$68 million less than their budget request. This figure is much less than was recommended by either the House or Senate Appropriations Committees for next year. Because the agency received only a small increase for the current fiscal year, this action means FAA will, for the second consecutive year, be managing an operating budget with an increase of 0.5% to 1.0%.

And these are existing constraints that do not factor the potential effects of a Budget Control Act sequester next January 2<sup>nd</sup>. AIA recently commissioned a study, conducted by Econsult Corporation, to consider the effects of a BCA sequester on FAA's budget.<sup>1</sup> The final study projected: (1) Reductions of 5 to 10 percent in passenger enplanements and air freight-related activity, leading to net job losses of 55,000 to 109,000 jobs annually; (2) Reductions of 1 to 2 percent in aircraft manufacturing, leading to net job losses of 11,000 to 22,000 jobs annually; (3) Lost economic output of \$9.2 to \$18.4 billion, with \$2.7 to \$5.4 billion in lost personal earnings to workers; and (4) Loss in federal and state tax revenue of \$500 million to \$1 billion annually. That is the mindless nature of a sequester. To reduce the deficit, it cuts even those agencies supporting economic activity on a 24/7 basis -- resulting in lost federal revenues. If the sequester is implemented on a line-item basis, the full brunt of it will be borne by FAA's operating budget, most of which is needed to meet payroll for air traffic controllers, certification staff,

<sup>1</sup> "Economic Impacts of FAA Budget Sequestration on the U.S. Economy", Econsult Corporation, August 2012, located at [http://www.aia-aerospace.org/newsroom/aia\\_news/new\\_report\\_faa\\_sequestration\\_will\\_ground\\_air\\_travelers\\_cargo/](http://www.aia-aerospace.org/newsroom/aia_news/new_report_faa_sequestration_will_ground_air_travelers_cargo/).

and other FAA employees. The Office of Management and Budget is estimating sequestration would cut FAA's budget by \$1.035 billion, including \$792 million from their operating budget and \$229 million from Facilities and Equipment. The acceleration of NextGen and other Congressional initiatives in the Modernization Act will come to a grinding halt if a sequestration order is issued next January.

AIA is concerned that, even without sequestration, the agency's baseline constraints will affect their ability to meet many of the milestones and reporting requirements established in the Modernization Act. For example, the Act requires FAA to perform a detailed review of its facilities and begin a process for decommissioning those that are no longer needed. FAA currently has over 22,000 operational facilities, 28,000 sites, and a supply chain of over 62,000 national stock numbers. Many of these systems will be rendered obsolete by NextGen, but the agency currently has no plan to decommission most of them. Section 804 of the Modernization Act called for the FAA to develop and submit a National Facility Realignment and Consolidation Report to the Congress. This is a key first step, but this review will tax the agency's existing resources.

In addition, the agency must make its certification process more efficient and responsive if it is to free up resources for the review and certification of NextGen equipment. They must find the resources – and make greater use of industry performers – to develop the new NextGen approach procedures. And they must find resources to address the emerging requirements of UAS in our national airspace. All of these were required in the Modernization Act. However, if this vision is to become a reality, the agency needs the resources to begin this transformation. We hope the committee will inquire how the FAA intends to meet the Act's requirements while running today's air traffic control system under these budget constraints, and request the agency to submit a cost estimate of the resources to carry out the Act within the established timeframes.

#### ***Legal and Regulatory Questions Continue to Delay Key Initiatives***

FAA acknowledges that billions of dollars will be needed by commercial airlines, private pilots, and other users of the national airspace system to retrofit their aircraft with NextGen compatible systems. This is a sizable and risky investment for an airline industry with historically low operating margins, and for the general aviation community as well. Unlocking the benefits of NextGen requires a large percentage of aircraft to be equipped. However, the carrier that equips first is subject to high debt-carrying costs well in advance of receiving the benefits. We have known about this "early adopter" issue for several years, and AIA has been advocating for legislation that encourages the participation of private sector capital.

Recognizing this problem, one of the Modernization Act's critical new programs authorizes the Secretary to establish an avionics equipage incentive program. The Act (section 221) authorizes the issuance of loan guarantees and other credit assistance even in the absence of an appropriation for administrative expenses and credit default risk, as long as fees and premiums are sufficient to cover those costs. Congress directed that applications be reviewed under procedures similar to those established for the Railroad Rehabilitation and Improvement Financing (RRIF) program administered by the Federal Railroad Administration.

AIA applauds this committee for its leadership in fighting to have this initiative included in the final bill. However, in briefings to industry this year, FAA attorneys have asserted that they cannot move forward on the program until a technical correction is passed or language is included in the annual appropriations bill. We hope the committee will work with the FAA in the coming months to determine what language is required and seek an appropriate legislative vehicle to clear a path for this important program.

We are also concerned about FAA's implementation of Section 211 of the Act, concerning Automatic Dependent Surveillance Broadcast (ADS-B) Services. The ADS-B program comes in two variants – "Out" and "In". ADS-B "Out" is the onboard equipment that transmits GPS position and other flight information to ground stations, enabling air traffic controllers to track and identify aircraft more accurately and safely. This program is already being implemented. By contrast, ADS-B "In" provides aircraft the ability to receive in the cockpit not only the ADS-B "Out" air traffic data transmitted by other aircraft, but also flight information, weather updates and other data. Obtaining the full potential of NextGen – especially for commercial aviation -- requires a transition to ADS-B In. Realizing this, section 211 of the Modernization Act mandated all aircraft operating in capacity constrained airspace, or at capacity constrained airports, to be equipped with ADS-B In technology no later than the year 2020. AIA is supportive of this requirement and schedule, and hopes the committee will ensure there are no further slippages in this important program.

### *Conclusion*

In summary, Mr. Chairman we applaud the committee for its leadership in passing the FAA Modernization and Reform Act of 2012. When I appeared before this committee in February 2011, on behalf of aviation manufacturers I strongly supported legislation to address NextGen equipage, NAS performance metrics, acceleration of performance-based navigation procedures, and NAS-UAS

integration. Congress addressed each of these issues in the final bill, and more. However, now it is equally important to make sure the agency has the resources, commitment, and technical clarifications to implement these provisions in a timely manner.

It is also critical for Congress to resolve the set of issues known as the "fiscal cliff" prior to January 2, 2013, when the Budget Control Act sequester is scheduled to take place. FAA has never faced a reduction of this magnitude – approximately \$1 billion – and the effects would be immediate and catastrophic, reverberating throughout our aviation system for decades. AIA believes this is a blow that could set NextGen's implementation back for years. We urge this committee to get detailed plans from the FAA on how the agency would implement a sequester, and we hope you will do all you can to make sure these draconian cuts do not take place.