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NEXTGEN: LONG-TERM PLANNING AND INTERAGENCY COOPERATION

(111–104)

HEARING

BEFORE THE

SUBCOMMITTEE ON AVIATION

OF THE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

April 21, 2010

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April 20, 2010

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SUMMARY OF SUBJECT MATTER

TO: Members of the Subcommittee on Aviation

FROM: Subcommittee on Aviation Staff

SUBJECT: Hearing on "NextGen: Long-term Planning and Interagency Cooperation"

PURPOSE OF HEARING

The Subcommittee on Aviation will meet on Wednesday, April 21, 2010, at 2:00 p.m., in room 2167 of the Rayburn House Office Building. The purpose of the hearing is to explore how the near- and mid-term targets of the Next Generation Air Transportation System (NextGen) are being reconciled with long-term goals and how the Joint Planning and Development Office (JPDO) is leveraging, or plans to leverage, its agency partners' resources to achieve these goals.

Background

The present-day national airspace system (NAS) consists of a network of en route[1] airways, much like an interstate highway grid in the skies. Airways are routes in space between fixed points that include 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 an extensive network of radar sites and air traffic controllers who are directly responsible for ensuring adequate separation between

[1] The Federal Aviation Administration (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 about five nautical miles and ending about 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 approaches to some airports, generally controlling the airspace around and above terminal areas.

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.

Under the current system, controller workload, radio frequency voice-communication congestion, limitations of air traffic control (ATC) radar accuracy, and the coverage and accuracy of ground-based navigational signals impose practical limitations on the capacity and throughput of aircraft in the system, particularly in busy terminal areas near major airports and around choke-points where many flight paths converge.

Currently, the U.S. air transportation system transports about 700 million passengers a year and, combined with general aviation activity, results in about 80,000 flights over a 24-hour period. The FAA predicts that, by 2025, increases in passengers (up 57 percent to 1.1 billion per year) and general aviation activity will result in air traffic increasing to more than 95,000 flights every 24 hours. It is widely acknowledged that the current U.S. air transportation system will not be able to meet these air traffic demands. In 2003, Congress passed H.R. 2115, Vision 100 – the Century of Aviation Reauthorization Act (Vision 100) (P.L. 108-176), which created the JPDO within the FAA, and tasked it to plan for and coordinate, with Federal and nonfederal stakeholders, a transformation from the current air traffic control system to the NextGen system to meet anticipated traffic demands of 2025.

The NextGen plan will consist of new concepts and capabilities for air traffic management and communications, navigations, and surveillance that will involve: transitioning from a ground-based radar system to a more automated, aircraft-centered, satellite-based surveillance system; developing more direct and efficient routes through the airspace; improving aviation weather systems; developing data communications capabilities between aircraft and the ground to reduce controller and pilot workload per aircraft; and creating shared and distributed information technology architectures. To date, the FAA has focused its effort to implement NextGen on deploying five core "transformational" infrastructure programs: Automatic Dependent Surveillance – Broadcast (ADS-B); System Wide Information Management (SWIM); NextGen Networked Enabled Weather (NNEW); Data Communications; and NAS Voice Switch (NVS).[2]

I. The JPDO Mission and Structure

Pursuant to Vision 100, the JPDO was created within the FAA to manage work related to the transition to NextGen. To achieve that goal, the JPDO must leverage the expertise and resources of the Department of Transportation (DOT), Department of Defense (DOD), Department of Commerce (DOC), and Department of Homeland Security (DHS), as well as the National Aeronautics and Space Administration (NASA) and the White House Office of Science and Technology Policy, for the purpose of completely transforming the NAS by the year 2025. In developing NextGen, JPDO must work cross-departmentally within the government and with the industry to define the NextGen vision. The JPDO organizational structure includes:

- A Director who works with the JPDO's government and industry partners to strategically integrate their respective activities, commitments, and contributions.

[2] *ATC Modernization and NextGen: Near-Term Achievable Goals*, Before the H. Comm. on Transportation and Infrastructure, 111th Cong. vii-xx (2009).

- A NextGen Institute (Institute) to provide a structure for direct industry involvement in NextGen. Members of the Institute include stakeholders from private industry, State and local governments, and academia. The Institute's governing body is the Institute Management Council and is composed of 15 top officials and representatives from the aviation community.

- While the JPDO has its own staff of approximately 18 full-time employees, it relies heavily on the contributions of nine workgroups. These include workgroups on: Aircraft, Aircraft Equipage, Airports, Environment, Global Harmonization, Safety, Security, Net-Centric Operations, and Weather. These teams are made up of representatives from industry and government and each team has an industry co-chair and a government co-chair.

Vision 100 requires the JPDO to produce an integrated NextGen plan. To fulfill this requirement, the JPDO developed several key planning documents, which include a Concept of Operations, an Enterprise Architecture, and an Integrated Work Plan (IWP). The Concept of Operations provides written descriptions of how the NextGen system is envisioned to operate in 2025 and beyond. The Enterprise Architecture is a technical blueprint for NextGen. It provides a means for coordinating among the partner agencies and the private sector, aligning relevant research and development activities, and integrating equipment. The IWP provides the research, policy and regulation, and acquisition timelines necessary to achieve NextGen by 2025. Whereas the Enterprise Architecture serves as a loose blueprint for NextGen, the IWP is meant to outline specific steps required to achieve the long-term goals.

In addition, Vision 100 created a Senior Policy Committee (SPC) that provides advice to the Secretary of Transportation on national goals and strategic objectives for NextGen to meet future U.S. air transportation needs. SPC members, heads of partnering departments and agencies, provide policy guidance for the JPDO's IWP, identify resource needs, and make recommendations for funding for planning, research, and development (R&D) activities within their organizations.[3]

Although the JPDO is housed within the FAA, its mission is primarily an interagency mission. According to the FAA, the "JPDO is responsible for monitoring cross agency budgets, facilitating cross-agency collaborations and longer-term (>10 yrs) planning."[4] The JPDO's newly appointed Director has also indicated that the JPDO may serve as a sort of long-term NextGen "think tank." In addition to undertaking research planning and interagency coordination, the JPDO will look at critical NextGen policy issues that will shape the long-term vision for NextGen. For example, the JPDO will consider key policy decisions in areas such as aircraft equipage, expediting environmental reviews, division of responsibility between air and ground, balancing human verses computer involvement in traffic management and separating aircraft, and creating new standards and procedures to assess the impact of unmanned aircraft systems, human factors, and facilities consolidation.

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[3] In November 2008, President Bush issued Executive Order 13479 that affirms Executive Branch support for the policy regarding NextGen as set forth in Vision 100. It outlines functions of the Secretary of Transportation and the SPC, strengthening their roles and increasing their accountability. Specifically, the Order calls for quarterly SPC meetings, thus increasing SPC visibility into NextGen issues; provides a Department-level support staff to assist the Secretary and SPC in conducting their duties; and adds an advisory committee to provide private-sector advice to the SPC on aviation-related subjects and related performance measures.

[4] FAA, *NextGen Organizational Relationships* (Feb. 10, 2010).

II. Leveraging Interagency Resources

Leveraging the resources of JPDO's partner agencies is essential to NextGen's success. In August of 2005, the JPDO began work to establish a memorandum of understanding (MOU) with its partner agencies to broadly define those agencies' roles and responsibilities. On June 9, 2008, DOT, NASA, DHS, DOD, and DOC signed an MOU with JPDO.

It is also essential that the JPDO identify *existing research and technologies* within each partner agency that may benefit the NextGen effort. For example, DOD's satellite-based Joint Precision Approach and Landing System, which allows aircraft to land in low ceiling and visibility using new technology, is an existing research program that may contribute to future NextGen capabilities. However, DOD officials note that for FAA to fully take advantage of the inventory of accomplished DOD R&D, the FAA must more clearly define NextGen needs to match DOD technologies with those needs so that the technology may be transferred for civilian use.

Nevertheless, according to the Government Accountability Office (GAO), questions remain over which entities will fund and conduct some of the necessary R&D and demonstration projects that will be key to achieving certain NextGen capabilities. In the past, NASA has performed a significant portion of aeronautics R&D, including intermediate technology development (i.e., developmental and demonstration projects with technology ready to be transferred to industry for production). However, when President Bush announced his vision for space exploration, NASA shifted its focus toward space. Aeronautics R&D budgets declined and in January 2006, NASA reconfigured its Aeronautics Mission Directorate to focus on fundamental aeronautics research (i.e., basic research).

Though NASA still plans to perform JPDO research, it will perform only fundamental research and not developmental work and demonstration projects. NASA's focus on fundamental research leaves other agencies the job of taking fundamental research and transitioning and applying it to a product that can be tested, certified and used in the field. However, the FAA Research, Engineering, and Development Advisory Committee points out that placing a greater reliance on the FAA to perform intermediate technology development would require FAA to establish additional infrastructure and that NASA's restructuring has the potential to delay NextGen implementation by five years. The JPDO Concept of Operations lists 167 research issues that need to be investigated.

III. Organizational Issues

Stakeholders have expressed concerns over the organizational structure of the FAA vis-à-vis the development and implementation of NextGen. In 2007, the GAO reported that the JPDO's placement within FAA and its dual reporting to both the FAA Administrator and the FAA's Air Traffic Organization's (ATO) Chief Operation Officer (COO) hindered its ability to interact on equal footing with ATO and other Federal agencies. In addition, industry stakeholders expressed concerns that the dual reporting structure would subordinate the JPDO's long-term planning mission to the COO's day-to-day operational priorities. Therefore, the GAO suggested that the JPDO should have some independence from the ATO and recommended that the JPDO Director report directly to the FAA Administrator.

Nevertheless, in May 2008, the FAA announced a reorganization of its NextGen management structure and named a Senior Vice President for NextGen and Operations Planning

who reports to the COO. As part of this reorganization, JPDO was housed within the new NextGen and Operations Planning Office and reported through the Senior Vice President for NextGen and Operations Planning only to ATO's COO. Because the JPDO was no longer a separate, independent office within the FAA and no longer reported directly to the FAA Administrator, its organizational position within the FAA declined. To increase the authority and visibility of the JPDO, the House FAA reauthorization bill elevates the Director of the JPDO to the status of Associate Administrator for NextGen within the FAA, reporting directly to the FAA Administrator.

In February 2010, the JPDO Director's responsibilities were again redefined to include serving as the NextGen senior staff advisor for the Senior Policy Committee Chair, Secretary LaHood. The Director now reports directly to the FAA Deputy Administrator[5] as well as to the Secretary of Transportation. According to the FAA, the Director's new responsibility expands the opportunity for collaboration among agencies and elevates interagency policy decision-making. The JPDO has been elevated for increased responsibility and visibility within the FAA and DOT, as well as throughout the government.

IV. The FAA's Role – Near-and Mid-term Implementation

Although the JPDO's ability to coordinate with its partner agencies is critical, coordination across the FAA and the JPDO is particularly important. The JPDO's planning must build upon the FAA's existing ATC modernization program, and the FAA's near-term planning horizon and investments must be aligned with the JPDO's longer-term mission to transform the NAS. Moreover, the implementation of the ATC component of NextGen will be financed primarily by the FAA's capital budget, and the JPDO needs to draw heavily upon the FAA's expertise to support its mission.

For these reasons, the House FAA reauthorization bill calls for the JPDO Director to be a voting member of FAA's Joint Resources Council and ATO's Executive Council. It would also require the FAA to develop and publish each year a consolidated work plan that gives a detailed description of how the FAA is implementing NextGen and also include in the annual report to Congress how the JPDO agencies respective budgets support specific operational improvements for NextGen.

Yet, while NextGen has been planned over a long horizon, with a target date of 2025, many stakeholders have come to the conclusion that more can and must be done now to address inefficiencies and delay in the system by more fully taking advantage of existing technologies, procedures, and capabilities rather than waiting for deployment of new systems and equipping aircraft with new technology. Because of the airline industry's economic distress, there has been more urgency to improve the efficiency and effectiveness of the ATC system in the near- to mid-term (i.e., 2018 and sooner) without damaging the long-term NextGen goals. In addition, industry stakeholders have urged the FAA to provide more detail on commitments needed to deliver real operational benefits in the mid-term that would help the industry justify and plan for the investments it needs to make in aircraft equipage.

[5] Under the FAA's restructuring plan, the Deputy Administrator will be the accountable FAA official for NextGen implementation.

On January 16, 2009, Hank Krakowski, the COO of the FAA ATO, and Margaret "Peggy" Gilligan, FAA Associate Administrator for Aviation Safety, sent a letter to RTCA, Inc. (RTCA)[6] requesting that it establish a government-industry NextGen Mid-Term Implementation Task Force (RTCA Task Force) to forge an aviation community consensus on NextGen operational improvements to be implemented between now and 2018, maximizing NextGen benefits in the near-term, and developing a business case for industry investment. On September 9, 2009, the RTCA Task Force issued its final report. According to the RTCA Task Force, a challenge will be integrating near- and mid-term capabilities with long-term plans and guaranteeing that work is in progress now to realize capabilities imagined in the future.[7] In March 2010, the FAA released its NextGen Implementation Plan to provide an overview of FAA's ongoing transition to NextGen incorporating many of the RTCA Task Force recommendations.

WITNESSES

Dr. Karlin Toner
Director
Joint Planning and Development Office

Dr. Gerald Dillingham
Director, Physical Infrastructure Issues
U.S. Government Accountability Office

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

Dr. Jaiwon Shin
Associate Administrator
Aeronautics Research Mission Directorate
National Aeronautics and Space Administration

Mr. Steven Pennington
Executive Director
Department of Defense Policy Board on Federal Aviation

Ms. Lorraine A. Bolsinger
President and CEO
General Electric Aviation Systems LLC

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[6] RTCA is a private, not-for-profit corporation that develops consensus-based recommendations regarding communications, navigation, surveillance, and air traffic management system issues. RTCA functions as a Federal Advisory Committee and includes roughly 335 government, industry, and academic organizations from the United States and around the world. Members represent all facets of the aviation community, including government organizations, airlines, airspace users and airport associations, labor unions, aviation service and equipment suppliers.
[7] GAO, *NextGen System: FAA Faces Challenges in Responding to Task Force Recommendations*, GAO-10-188T (Oct. 29, 2009).

NEXTGEN: LON-TERM PLANNING AND INTERAGENCY COOPERATION

Wednesday, April 21, 2010

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

The Subcommittee met, pursuant to call, at 2:04 p.m., in Room 2167, Rayburn House Office Building, Hon. Jerry F. Costello [chairman of the Subcommittee] presiding.

Mr. COSTELLO. The Subcommittee will come to order. The Chair will ask all staff, Members and everyone to turn electronic devices off or on vibrate.

The Subcommittee is meeting today to receive testimony regarding NextGen: Long-term Planning and Interagency Cooperation. I will give a brief opening statement and I will submit a longer statement for the record. Then I will recognize the Ranking Member, Mr. Petri, for his statement or any remarks that he may have, and then we will go to our panel of witnesses.

Let me welcome everyone to the aviation Subcommittee hearing today on NextGen: Long-term Planning and Interagency Cooperation. Today's hearing will explore how the Federal agencies responsible for implementing NextGen are reconciling near, mid-term and long-term goals. This hearing will also examine how the Joint Planning and Development Office will work in collaboration with partner agencies.

This is the fourth hearing that Ranking Member Petri and I have held in the 111th Congress on NextGen. I will continue to hold regular hearings on NextGen-related issues to provide congressional oversight and a forum for open dialogue to explore the challenges that lie ahead.

The FAA has made progress in planning and developing NextGen, and has tested key technologies such as ADS-B that allows an aircraft to transmit its own position and receive information from similarly equipped aircraft. I want to continue to work with the FAA and industry stakeholders to ensure these near-term programs stay on schedule for long-term advancements, in order for them to be made.

Successful implementation of NextGen depends on strong leadership and a clear organizational structure. The JPDO is responsible for facilitating coordination among partner agencies on how to apply each agency's respective expertise, research and technology to the task of building the NextGen system. To increase the authority and visibility of the JPDO, the House FAA reauthorization bill

elevates the director of the JPDO within the FAA reporting directly to the administrator. Clarity on the JPDO director's leadership and role is essential.

In our NextGen near-term hearing in March 2009, the Government Accountability Office testified about uncertainty over the JPDO's authority and role and a lack of leadership to clarify and define their role. Almost a year later, the FAA announced several changes to the JPDO structure and named Dr. Toner the director of the organization.

As the FAA implements near and mid-term NextGen capabilities, near to mid-term plans must be connected to the long term vision. In addition, I firmly believe there needs to be greater White House involvement in facilitating collaboration among partner agencies. I am hopeful that the recent changes to the JPDO signal this administration's support.

With that, I welcome all of our witnesses here today and I look forward to hearing their testimony.

Before I recognize Mr. Petri for his opening statement, I ask unanimous consent to allow 2 weeks for all Members to revise and extend their remarks and to permit the submission of additional statements and materials by Members and witnesses. Without objection, so ordered.

At this time the Chair recognizes the Ranking Member of the Subcommittee, Mr. Petri.

Mr. PETRI. Thank you very much, Mr. Chairman, and thank you for calling this hearing. The transition to NextGen is a complex undertaking worthy of rigorous oversight. Sometimes I think when the government is involved, it is more complex and it takes longer than it might otherwise be. And one of the reasons we are having this hearing is to see if we can't make it more efficient and actually get NextGen deployed in a reasonable period of time.

In October of 2003, we approved the Vision 100 FAA reauthorization that, among other things, created, as you pointed out, the Joint Planning and Development Office to manage the interagency coordination implementation of the effort to move us to NextGen. The goal was to leverage existing resources of JPDO partner agencies to facilitate the NextGen transition as well as to ensure that the future modernized national airspace system capabilities will meet the needs of JPDO partner agencies. Vision 100 requires the JPDO to develop annual integrated work plans to provide step by step work plans for the JDPO partner agencies.

I am interested to learn how and to what extent the partner agencies are dedicating resources to the development of NextGen. There are plenty of examples of NASA and Department of Defense research and developed technologies that have found their way into daily civilian life. So I am interested to hear how human factors research and technology transfer efforts between JPDO partner agencies are facilitating the advancement of NextGen.

Vision 100 also established the Senior Policy Committee comprised of cabinet secretaries and agency heads of the JDPO partner agencies along with the head of the White House Office of Science and Technology. The purpose of the Senior Policy Committee is to provide guidance on key NextGen policy questions and to maintain senior level accountability for advancing the NextGen effort.

The bipartisan NextGen provisions of the pending House FAA reauthorization bill elevates the position of the JPDO director within the FAA. In November of 2008, President Bush signed an executive order that restores the focus of senior administrative level officials on the NextGen planning and implementation process, and the current administration has seemingly endorsed this approach.

I look forward to hearing the IG and GAO's assessments of the current levels of engagement between the JPDO and the Senior Policy Committee and the FAA executives. I am also interested in hearing from all of the witnesses on just who they believe is in charge of NextGen.

A challenging factor within NextGen is that the transformation must happen on a system that can never be turned off for repairs. In addition, the exigencies of the day-to-day operation of the national air space system can overpower any long-term planning focus. I would like our witnesses to address how the JPDO is handling the challenges associated with balancing the needs of the current system integration of long-term improvements and planning for future needs. It must also address the need to ensure international harmonization of satellite-based surveillance and air traffic control modernization. Not only must we ensure air traffic control sources are interchangeable, but timelines matter, too.

With regard to satellite-based surveillance, it is not just a matter of keeping up with the Joneses. We must be sure to keep with Europe, Australia, and even Mongolia's accelerated ADS-B timetables. The value of being first means that you set the standard to which avionics are built. That could mean good-paying jobs here in the United States, a benefit not lost on Americans given the current unemployment levels.

I am interested in hearing about the JPDO's efforts to keep the U.S. the world's leader for air traffic modernization. Finally, it is argued that NextGen will result in significant cost savings and environmental benefits, more direct precise routing, and improved air traffic management which will result in significant reductions in fuel burn and emissions.

According to an October 2009 GAO report, the procedures that will result in many environmental benefits are often mired in review processes mandated by Congress under NEPA that can take years and can cost millions of dollars. We should seriously explore how to best get the environmental benefits of new navigation procedures in the most timely and efficient way. I believe that the slow pace of the environmental review of new air traffic control procedures threatens the entirety of the NextGen enterprise. It is impossible to achieve the goals of NextGen if the FAA can only clear a limited number of high quality procedures through the environmental review process each year.

Both the environmental benefits promised and the overall success of the NextGen enterprise seem to depend on our ability to overcome this challenge. I think we can preserve the goals of NEPA while improving the FAA's ability to implement more environmentally friendly air traffic procedures, and I welcome any specific proposals on this issue from our witnesses. And I understand we do have several of these from the General Electric witness.

So I thank all of you for participating, and thank you for your testimony.

Mr. COSTELLO. The Chair thanks the Ranking Member and now I will recognize our witnesses.

First is Dr. Karlin Toner, director of the Joint Planning and Development Office with the FAA and senior staff adviser to the Secretary of Transportation on NextGen; Dr. Gerald Dillingham is the director, physical infrastructure issues for the U.S. Government Accountability Office; the Honorable Calvin Scovel, III, Inspector General for the U.S. Department of Transportation; Dr. Jaiwon Shin, associate administrator, Aeronautics Research Mission Directorate for NASA; Steven Pennington, Headquarters Air Force, Director of Bases, Ranges and Air Space, and the executive director for the Department of Defense Policy Board on Federal Aviation; Lorraine Bolsinger, President and CEO of GE aviation systems.

I understand, Ms. Bolsinger, you have to leave at 4 p.m. We appreciate you being here to testify before the Committee, and hopefully we will be able to get your testimony and adhere to the time you have to leave.

STATEMENTS OF KARLIN TONER, DIRECTOR, JOINT PLANNING AND DEVELOPMENT OFFICE; GERALD DILLINGHAM, DIRECTOR, PHYSICAL INFRASTRUCTURE ISSUES, UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE; HON. CALVIN L. SCOVEL, III, INSPECTOR GENERAL, UNITED STATES DEPARTMENT OF TRANSPORTATION; JAIWON SHIN, ASSOCIATE ADMINISTRATOR, AERONAUTICS RESEARCH MISSION DIRECTORATE, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; STEVEN PENNINGTON, EXECUTIVE DIRECTOR, DEPARTMENT OF DEFENSE POLICY BOARD ON FEDERAL AVIATION; AND LORRAINE A. BOLSINGER, PRESIDENT AND CEO, GENERAL ELECTRIC AVIATION SYSTEMS LLC

Mr. COSTELLO. Before I call on our first witness to testify, you will see me leave about 2:40 and another Member, Mr. Boswell, will take the Chair for a short period of time. I am going down the hall to the Financial Services Committee where I will be testifying on a bill that I have an interest in, and after my testimony is completed, I will be back here in the Chair.

With that, the Chair now recognizes Dr. Toner. All of your statements will be entered into the record in their entirety and we ask that you adhere to the 5-minute rule to summarize your statements so we have time for discussion.

Dr. Toner.

Ms. TONER. Good afternoon, Chairman Costello, Ranking Member Petri and Members of the Subcommittee. First, I want to thank you for inviting me to talk with you today about what the Joint Planning Development Office work is in long-term planning and interagency cooperation for NextGen.

Today I am appearing before you as the new Director of the JPDO, a position I have had the privilege of serving for just 60 days now and I realize that this is not an easy job. I first worked with the JPDO 6 years ago at that time as a NASA researcher. Back then I served on an integrated product team and helped brainstorm the ideas and the concepts that are NextGen.

Since then, Administrator Babbitt has realigned the Joint Planning Development Office so that the director reports directly to the FAA Deputy Administrator. And I note from Ranking Member Petri's opening comments, the FAA Deputy Administrator is the point person on NextGen.

I also continue to meet regularly with Secretary LaHood's office to advise him on NextGen progress and plans, a practice that started when I served as his NextGen Senior Adviser.

My job as the Director is to refine our longer term goals and to account for the changing realities of our aviation world. NextGen capabilities are beginning to be implemented today. And as we gain experience, our past work will help us chart a realistic course forward.

Today's world is different than the one in which NextGen was originally envisioned. The economy, the airlines, the environment, and our security needs have changed dramatically. I think we have observed the economic impacts in the past week with volcanic eruptions. To account for these changes in our world, we must take a more flexible approach to longer-term NextGen planning. We must blend evolution and transformation to meet the national needs for air transportation.

Of equal importance, my responsibilities also include expanding the opportunities for collaboration among the partner agencies. The JPDO provides a forum for interagency engagement and monitors the follow-up of the partners. JPDO will develop strategic issues for the Senior Policy Committee, a cabinet-level decision making body. We will continue to identify long-term research needs, making sure that they are integrated into current implementation. And we will continue to consult with industry and assess how they can best contribute to policy and R&D planning today.

I am looking at all of the possibilities for successful interagency cooperation. We are very fortunate that with the increased visibility and responsibility of the JPDO and the Administration's focus on NextGen, we now have even more tools to choose from to ensure productive partnerships across the government.

Of course the more productive these cooperative efforts are, the better the service that the FAA can provide to the traveling public.

Chairman Costello, Ranking Member Petri, Members of the Subcommittee, thank you again for inviting me to share my views with you today. This concludes my prepared remarks and I will be happy to answer questions.

Mr. COSTELLO. The Chair thanks you, Dr. Toner, and now recognizes Dr. Dillingham.

Mr. DILLINGHAM. Thank you, Mr. Chairman, Ranking Member Petri.

My written testimony focus on two issues. First, the challenges FAA faces in coordinating planning and implementation of NextGen internally across the various lines of business and externally with the partner agencies; and second, FAA's efforts to integrate near term and mid term implementation plans with the long term NextGen vision.

Regarding internal coordination challenges, we have previously reported to this Committee that FAA would find it challenging to shift from a focus on systems acquisition and individual programs

to a focus on integration and coordination. Two recent organizational changes may help to address this ongoing challenge. First, FAA has determined that the deputy administrator will be the executive in charge and responsible across all FAA lines of business for the implementation of NextGen. This development adds to the urgency of filling this critical position.

Additionally, FAA has begun coordinating some office functions and moving towards a portfolio approach for implementation. These are positive, but relatively recent developments, and it remains to be seen how well they will address concerns expressed by industry and the Congress about exactly what is NextGen and who is in charge of NextGen and whether that official has sufficient authority and accountability to ensure effective implementation.

With regard to the challenges related to interagency coordination, we have identified several issues that have impeded the effectiveness of two key mechanisms designed to facilitate this kind of coordination, the Senior Policy Committee and JPDO.

The senior policy Subcommittee is the highest level coordinating body and includes all of the partner agencies. Our research has shown that the Senior Policy Committee has met infrequently. According to senior JPDO officials, they are working with Senior Policy Committee Members to improve its operations. JPDO is tasked with managing the partner agency's day-to-day coordination and collaboration. It has several mechanisms to support its efforts such as advisory boards, working groups, and research transition teams. However, our work has identified some issues which have limited JDPO's effectiveness.

For example, JPDO's leadership and organizational position has undergone frequent changes. JPDO now has its fourth Director in 7 years and its placement within the NextGen structure has changed several times. These changes have created uncertainty about JPDO's role and authority among stakeholders.

Some other issues have affected FAA's coordination with the partner agencies, including the limited funding and staffing that some partner agencies dedicate to NextGen activities, differences in agency mission priorities, particularly those of FAA, DHS and DOD as well as a relative lack of specificity in key NextGen planning documents as to how partner agencies will be involved.

Provisions in both the House and Senate FAA reauthorization bills could help address some of these challenges.

Turning to FAA's efforts to integrate near term and mid-term implementation plans with the long-term NextGen vision, currently FAA is modeling the potential impact on the NextGen vision of a variety of scenarios which could be implemented in the mid term and the long term. The relative cost benefits and risks that are identified through these scenario modelings will help to shape policy decisions about how programs, technologies and capabilities can best be implemented in the mid term and become stepping stones for the long term NextGen vision. These policy decisions include developing a strategy for equipping the Nation's aircraft fleet, expediting standards development, certification, and environmental reviews.

And finally, realigning air traffic control facilities and planning for new runways to help address problems with system delays that

NextGen technologies alone are not likely to fully resolve. These efforts are very much works in progress and FAA should continue to seek and include the input and buy-in of stakeholders.

Thank you, Mr. Chairman, and Members of the Subcommittee.

Mr. COSTELLO. Thank you, Dr. Dillingham.

Mr. COSTELLO. The Chair recognizes the inspector general, Mr. Scovel.

Mr. SCOVEL. Thank you, Chairman Costello, Ranking Member Petri and Members of the Subcommittee. I appreciate the opportunity to testify today on FAA's progress in implementing the Next Generation Air Transportation System, NextGen. FAA is developing NextGen to create a new air transportation system that will handle three times more traffic than today. NextGen involves a significant overhaul of the current national air space system, to shift from a ground-based to a satellite-based operation. Accomplishing this will require multibillion dollar investments from both government and industry.

Since the effort began in 2005, we have testified before this Subcommittee on the operational and management challenges that must be addressed to successfully implement NextGen in the near and midterm. Today I will discuss three areas that will have a significant impact on advancing NextGen's long-term goals. One, risks with ongoing FAA modernization projects that form the platforms for NextGen; two, fundamental research and development issues that will impact performance; and three, actions needed to maximize the multi-agency approach.

FAA is making progress in its efforts to implement NextGen but continues to face challenges in implementing ongoing modernization project that provide platforms for new NextGen capabilities. Key multibillion-dollar programs have experienced problems, and FAA has yet to fully determine their NextGen-specific requirements.

For example, FAA's $2.1 billion en route automation modernization, or ERAM program, for managing high-altitude traffic is experiencing software-related problems at its key initial operating site in Salt Lake City. These include problems in handing off traffic between controllers and matching critical flight information to the right aircraft. FAA is spending about $14 million a month to resolve these problems and deploy ERAM at other sites. However, FAA officials acknowledge that it is unlikely that all 20 systems will be operational nationwide by December 2010 as originally planned. FAA must take steps to ensure that problems with ERAM are resolved and that they don't impact NextGen efforts now and in the future.

Likewise, recent problems with FAA's telecommunications infrastructure, FTI, raise questions about whether the system can be relied on for NextGen initiatives and whether FAA is adequately overseeing the FTI contractor. An FTI failure last November delayed over 800 flights nationwide, and it took FAA and the contractor over 5 hours to diagnose, correct, and restore service. In response to the outage, FAA established review teams to assess the overall system design and FAA's oversight. However, it remains unclear if the planned FTI network as designed or planned can support future NextGen initiatives. Therefore, it will be important

for FAA to follow through on its plans to examine the broader implications of the November outage with respect to NextGen and the agency's management of FTI.

A critical step to avoid risks with NextGen's cost schedule and capabilities is leveraging resources between FAA and partner agencies. FAA and the JPDO have made important progress in coordinating diverse research and multi-agency efforts. For example, NASA is playing a major role in developing software for NextGen capabilities. Overall, we found that NASA's work is fairly well aligned with JPDO plans. However, FAA needs to resolve issues with the Departments of Commerce, Defense, and Homeland Security regarding integrating weather information, determining joint surveillance needs, and determining how to incorporate unmanned aircraft systems into the mix.

We have identified a number of actions that can strengthen the multi-agency approach, better leverage resources, and prevent duplicative efforts. These include clarifying the roles and responsibilities of the JPDO, establishing research priorities and developing an integrated NextGen budget document that aligns with these priorities, completing an assessment of partner agency research, making use of already developed technology, and securing the skill sets necessary to execute NextGen and oversee its contracts.

In closing, Mr. Chairman, let me reiterate that FAA is making progress in addressing NextGen's challenges. However, a number of critical actions are still needed for successful implementation of this multibillion-dollar effort, and these issues must be effectively addressed in the near term in order for NextGen to deliver the long-term benefits needed to meet the expected demand for air travel.

This concludes my statement, Mr. Chairman. I would be happy to address any questions you or other Members of the Subcommittee may have.

Mr. COSTELLO. Inspector General Scovel, thank you for your testimony, and the Chair now recognizes Dr. Shin.

Mr. SHIN. Thank you, Chairman Costello and Ranking Member Petri and Members of the Subcommittee. I appreciate the opportunity today to discuss how NASA works with the JPDO and how NASA's research efforts support NextGen.

Advancements to aircraft and aircraft operations produced dollars and jobs for the U.S. economy, improve the environment, and supports energy and independence. Aviation is also a major contributor to U.S. exports. However, the increase in air traffic congestion and the noise and emissions generated by aircraft is a significant issue facing our Nation and the world. Current air traffic management processes and procedures do not provide enough flexibility for innovative solutions to address these growing demands. In order to meet the need for increased capacity and efficiency, while improving safety, new technologies and processes must be implemented. Addressing this problem will require research and development in both efficient air traffic operations and in new vehicle concepts.

The intricate cross-cutting nature of national air space systems requires cooperation and coordination among Federal agencies as

well as the aerospace industry in order to achieve both the near-term improvements and the NextGen vision.

From the earlier days of JPDO, NASA has made significant contributions to the development of NextGen vision and key planning documents. We have aligned our research programs to address research needs identified by the JPDO's integrated work plan, and continue to make vital science and technology investments with the goals of realizing near-term improvements and enabling the long-term NextGen vision. The need for increased levers of cooperation is ever present if the U.S. is to leverage each Federal agency's areas of expertise and ensure close coordination of research programs and investment decisions.

Among NASA's four aeronautic research programs, the air space systems program most directly addresses one of NextGen's goals to advance air traffic management. NASA's research in this area is multifaceted from near-term improvements to innovative concepts and technologies covering gate to gate operations on the airport surface, on runways, in defense terminal areas, and in the many unmarked sectors of the national air space system.

However, achieving full benefits of NextGen will require contributions from all four research programs to ensure revolutionary new air traffic capabilities are introduced, safety of the system is improved, and environmental impacts due to aviation is mitigated.

The NASA aeronautics research program is not limited to research activities at low technology resident levels. With the start of the integrated systems research program in fiscal year 2010, and through a new structure of the air space systems program, NASA is committed to develop advanced technologies and applications that target NextGen needs and support maturity of those applications for transition to implementing organizations.

NASA has also been actively making close and collaborative engagements with the FAA. For example, NASA and the FAA created research transition teams in order to accelerate progress for NextGen advancements and effectively transition advanced capabilities to the FAA for certification and implementation. The explicit intent of these cross-agency collaborations is to help bridge the maturity gap between advanced concept development and the validation of such concepts in relevant operational environments enabling the FAA to make informed investment and deployment decisions. Effective cross-agency collaboration has resulted in several recent demonstrations of advanced technology benefits.

Let me provide one example. NASA has been developing concepts, technologies and procedures to support continuous descent arrival for improved efficiency and reduced environmental impact.

A complementary project, the inroads system adviser, combines scheduling of high density flows in terminal area air space with a concept known as tailored arrival and airborne precise precision spacing. Tailored arrivals allow aircraft to fly continuous rising/descents at low-engine power from cruise altitude to the runway, thereby minimizing fuel consumption, environmental emissions and noise pollution. NASA and the FAA jointly conducted a successful field evaluation in the fall of last year with the participation of airline operators.

NASA is committed to perform collaborative efforts with the JDPO member agencies and industry partners necessary to improve the level of safety, security, efficiency, quality, and affordability of the NextGen. NASA believes interagency NextGen activities continue to be a vital element for supporting U.S. economic growth and environmental improvement.

Chairman Costello, thank you again for this opportunity to testify. I will be happy to respond to any questions you may have.

Mr. BOSWELL. [presiding.] Thank you, Dr. Shin, and we now would like to call on Mr. Pennington.

Mr. PENNINGTON. Mr. Chairman, thank you very much for your invitation to testify today. Thank you, Ranking Member Petri and the rest of the Subcommittee Members. We look forward to this testimony.

As you know, the national air transportation system is a critical asset to our national security. The Department of Defense places a high priority on being a valuable contributor and responsive partner in operating that system today. And on planning for it its transformation to meet the challenges of tomorrow, the DOD has a strong partnership with the JPDO at both the executive and the action officer levels. This partnership extends across the many domains of NextGen, and is aggressively working towards a future air transportation system that integrates to the maximum extent possible while protecting the safety of the public, manned and unmanned aircraft, point to point and special-activity users, and the management of both cooperative system participants and potential hostile actors that threaten our Nation.

This interagency team is actively engaged on initiatives such as sensing a void, adaptive air space, and integrated surveillance in support of these goals.

Mr. Chairman, you wanted to know if the agencies participating in NextGen are properly resourced. Let me preference our answer for DOD to your question by saying that we are unique in that we play several different roles related to our national air space. Not only are we the largest single user of our national air space system with over 14,000 aircraft, manned and unmanned in our fleet, we also are an air space manager, and air navigation and airport service provider to military and civilian users in the U.S. and abroad, and a regulator of our aircraft aviators and service providers.

So with the diverse missions that we have related to the national air space system, I can tell you that you won't find in the DOD portfolio any one specific budget item labeled NextGen. But what you will find are several capability areas that support the NextGen transformation.

In the fiscal year 2011 President's budget, we requested approximately $200 million to fund these NextGen capability areas over the future year's defense program, and we are building on that funding request in our input to the fiscal year 2012 President's budget for the outyears.

As a user, the DOD shares the civil aviation community's challenge with the setting aside of resources to equip our aircraft with new technologies. With over 200 types of aircraft in the DOD inventory and a 6-year budget planning cycle, this is never a small task. We are currently investigating ways to synchronize ADS-B

avionics upgrades with aircraft equipment upgrades that are already planned. But even with careful planning, proposed ADS-B upgrades represent a significant new investment for the Department of Defense in the near, mid, and long term.

We greatly appreciate the efforts that the FAA has made to coordinate with air space users, including DOD and other Federal agencies, in developing proposed ADS-B requirements, and we share the commercial aviation community's view that aircraft equipage requirements should be closely aligned with procedural changes that will yield the maximal operational benefits and cost savings to the most users.

I would like to add one point to Dr. Toner's comments by addressing the importance of GPS to the entire NextGen transformation. To date, the Department has invested over $15 billion in GPS and the precise position, navigation and timing information that it provides is a critical component of meeting the performance-based construct of the NextGen transformation. Maintaining that capability is essential to the effective functioning of NextGen and its international counterparts, as well as the ability of our civil and military aircraft to operate around the globe. The interagency partnerships we have on the NextGen team are essential. Together we can meet our challenges head on and build an air transportation system that is secure, adaptive, and responsive to the users of today and tomorrow.

Thank you again, Mr. Chairman, Ranking Member, and also the rest of the Subcommittee Members for the opportunity to provide comments to the Committee. This concludes my prepared remarks, and I am happy to address any questions you may have.

Mr. BOSWELL. Thank you very much.

Mr. BOSWELL. Ms. Bolsinger.

Ms. BOLSINGER. Mr. Chairman, Ranking Member Petri and Members of the Committee, I am currently president and CEO of GE Aviation Systems. In 2005 and for 3 years, I was privileged to lead GE's ecomagination initiative, an initiative which was to grow our business while solving some of the world's most difficult and challenging environmental problems. I mention this because elements of these principles are evident in the FAA's NextGen program; that is, to balance economic growth with environmental responsibility.

We all recognize that the transformation of our air transportation system has the potential to reduce carbon emissions that threaten our planet, and it is clear that fuel efficiencies brought about through NextGen can lessen our dependence on foreign oil and help control rising energy costs. It also will strengthen the U.S. aviation industry while preserving existing jobs and creating new ones. However, today as we arrive at the brink of NextGen implementation, Congress must recognize that all of the decades of planning and work that have brought us to this point will be for naught if we cannot solve the problem that I am about to describe.

Forty years ago, Congress passed NEPA, the National Environmental Policy Act, a landmark piece of legislation that makes us stewards of the environment. It is ironic, though, 40 years after the passage of NEPA that FAA's well-intentioned efforts to apply this law have instead become a major obstacle to achieving NextGen en-

vironmental benefits. It is to address this unfortunate and unforeseen circumstance that we seek your leadership and your help.

Within our grasp are new technologies that can significantly reduce CO2 emissions, reduce fuel consumption, and reduce the impact of aircraft noise on our communities. One of these technologies is required navigation performance or RNP. RNP makes it possible to harness GPS and the advanced flight management systems on today's aircraft to create multiple environmental benefits through the design of extremely precise, predictable aircraft paths.

The benefits of RNP are well understood, and as I speak, are reducing fuel burn and CO2 emissions and helping control community noise in Australia, China, South America and Canada. Studies show that in the U.S. alone at the 10 busiest airports, RNP could cut CO2 emissions by 2 million metric tons per year.

From real experience, we know that we can design RNP procedures for an airport in about 40 days. And in Brisbane, Australia, a medium-density airport about the size of San Diego or Dallas Love Field, RNP procedures were designed, put through environmental review and placed into service in about 4 months. But in the U.S., bureaucracy and red tape stand in the way of achieving environmental benefit. Perversely, it is the bureaucracy and red tape surrounding the administration of NEPA that is causing the problem. We now face a situation where environmental process trumps environmental progress placing the entire NextGen program at risk.

The FAA, like any government agency, must comply with NEPA requirements. And currently, environmentally beneficial navigational procedures are subjected to the same expensive and time-consuming review process as procedures that adversely affect the environment. That review process can last many years and cost hundreds of thousands of dollars. So multiply this by 1,200 or so new procedures that will be required to modernize our air space at our 100 largest airports and you can begin to see the magnitude of this problem.

The problem I am describing today does not just affect GE. FAA's own efforts to design and deploy new, environmentally beneficial navigational procedures also are impinged. So what is the answer?

We should apply a new, expedited environmental approval process when a new navigation procedure meets the following simple three-part test: One, if it reduces an aircraft's CO2 emissions; two, if it reduces fuel burn; and three, it results in a reduction or at least a no-net increase in the noise-affected area on the ground.

Congress has the opportunity to take action now to require FAA to develop its expedited environmental approval process as it conferences the FAA reauthorization bill. Section 314 of the Senate bill calls for expedited environmental review of RNP procedures. We support the concept but believe that further language is required. We look forward to working with you, others in Congress and the FAA, the Council on Environmental Quality and other interested stakeholders to accelerate the delivery of environmental benefits in the national air space through NextGen.

Thank you. I am happy to take your questions.

Mr. COSTELLO. [presiding.] Thank you.

Mr. COSTELLO. Let me ask General Scovel, you state in both your written and verbal testimony today that under the technical problems with ERAM, both cost and schedule risk for NextGen. Can you talk about those technical problems and are they problems that exist because of technology or is it personnel problems? Explain to us what the problem is.

Mr. SCOVEL. Thank you, Mr. Chairman. ERAM has been experiencing a significant number of software-related problems. So to answer one of your questions, I would say that they appear to be technical problems rather than people problems at this point.

As the Committee will remember, ERAM has been installed at Salt Lake City, its initial operating site. It is also being installed at a number of other en route traffic control centers across the Nation. However, at Salt Lake City and also in Seattle, the software-related problems have popped up, and they became serious last year. FAA realized this and has been making efforts to try to correct those.

The technical problems, as I mentioned in my statement, involve radar processing failures, difficulties with passing traffic from controller to controller, and erroneous identification information being assigned to various aircraft.

The FAA is spending about $14 million a month right now to further deploy ERAM and also to try to fix the problems. Unfortunately, on the problem-fixing side, it has been unable to properly diagnose the problem and to generate a solution that doesn't in turn cause even more problems. It has been a serious enough problem that FAA has seen the need to delay certain key decisions that had been slated for resolution in December 2009. These were the operational readiness decision and the in-service decision. Those have slipped by another 6 months. So June 2010 we hope, and FAA hopes, those will be ready for resolution.

Across the NAS among all 20 en route control centers, ERAM was to have been in service and up and running by the end of this year. It is now apparent to us and to FAA that those dates will probably slip, too.

Looking long term across NextGen, the implementation is this, Mr. Chairman. ERAM is essential for ADS-B and data communications. As final dates, installation dates, and operational decision dates slip further down the calendar, the ability for controllers at en route centers to make the most effective use of data communications and ADS-B will also move down the calendar, and that has a ripple effect across the NAS and NextGen implementation projects.

Mr. COSTELLO. What are the top three or four things that you believe need to be done to move NextGen forward?

Mr. SCOVEL. Mr. Chairman, we would ask FAA, the Secretary, who has been assigned by the executive order as having top responsibility for NextGen, FAA and the JPDO, to consider these three items. First, completing an integrated budget document. Once requirements have been developed, and I know from discussions with DOD that that is a prime concern of theirs, it has been a continuing effort on the part of FAA who realizes the significance of that as well, so it is an iterative process. It is a continuous work in progress to try to develop this integrated budget document, but

it does have the benefit of pulling together requirements, projects, helping FAA and partner agencies identify research gaps, identify funding streams, and trying to close those research gaps.

We would also assign or ask the FAA to assign as a top priority to JPDO this, a focus on technology transfer. Both NASA and DOD have recognized the importance of this. It has been done on previous occasions, especially between NASA and DOD on one side and the FAA on the other. The research transition teams that Dr. Shin has identified would be essential to this. Entrance and exit criteria and well defined hand off points will be key for FAA to receive the benefits of the transfer of technology from the other two agencies.

Mr. COSTELLO. Dr. Toner, would you agree with General Scovel's assessment that we will see at least a 6-month delay because of the technical problems that have developed with ERAM?

Ms. TONER. So I am aware of the problems that have been developed with ERAM in the Salt Lake City installation. I would need to confirm that it is indeed a 6 month delay; but yes, I understand that it is delayed. From my perspective that the JDPO, working with NextGen, and ERAM not being a NextGen program—however, it is an underpinning to NextGen— we are concerned with the linkages from the near and mid-term implementation onto the long-term path, and that is where I will be most closely monitoring.

Mr. COSTELLO. You state in your testimony that JPDO needs to have a more flexible approach to long-term NextGen planning. Tell me what you mean by that.

Ms. TONER. So I think when we look at the vision that was established beginning 6 years ago and we laid out a very bold vision, and from a researcher's perspective, at that time we laid out a vision that we needed to carefully test and identify which elements of that vision we needed to meet up with the national needs.

I think we have got a clear view of that long term and where we are going, but I think we have to take evolutionary steps. So in the next 5 years, we are much more certain on what we can do. And the 5 years after that, we are a little less certain. I think we can begin to do a better job. I think it all ties back to the technology transfer piece. How are we making sure that when the FAA has a 2018 implementation path, that we have something to move over in 2019? I think we need to carefully build out the vision in that fashion.

Mr. COSTELLO. You heard Dr. Dillingham testify about the participation with the partner agencies, and it seems to run from a significant amount of participation to not very much participation. I know you have only been on the job about 60 days, but what is your assessment?

Ms. TONER. So each of our partners is unique and brings unique aspects to the table. In terms of NASA research, FAA is really the customer who is going to be receiving that research. DOD has an abundance of knowledge that we really need to understand and see where it benefits circulation, so it is a different type of relationship.

We have also had a very good relationship with NOAA and the Department of Commerce on the weather integration. I think there are some issues in the integration in the near term, but really when we look at the NextGen piece, we are making progress to-

ward an integrated picture of the weather. And I think as everyone here knows, and weather accounts for 70 percent of the delays in our system.

DHS participates in other ways. They participate as working group members and leads. They participate in the JPDO board which advises me, and they participate in one key strategic area for us which is integrated surveillance. DOD and FAA participate there as well.

Mr. COSTELLO. How about the participation by the air traffic controllers and technicians, have they been participating in meetings since you have been on the job?

Ms. TONER. So I actually just last week met a gentleman named Mel Davis, who is the new NATCA rep for NextGen, and he and I are going to be meeting. And he actually is going to be sitting in on some of our meetings. So we are starting down that path, yes.

Mr. COSTELLO. I have expressed and I think other Members of the Subcommittee have expressed the importance of involving all of the stakeholders here. The people who design the system should be the people who are going to run the system, that they should not be left out. That has happened in the past, and we hope you recognize that and make certain that the technicians, controllers and others are involved in the planning process.

With that, I will ask my final question and then I will turn it over to the Ranking Member, Mr. Petri. Who are you reporting to in the Secretary's office?

Ms. TONER. In the Secretary's office, I report to Secretary LaHood. I directly report to the deputy administrator of the FAA and it is a matrix reporting to the Secretary.

Mr. COSTELLO. And the deputy administrator's appointment is being held up in the other body right now?

Ms. TONER. That is correct, so I am reporting to the Acting Deputy Administrator.

Mr. COSTELLO. Thank you.

The Chair now recognizes the Ranking Member, Mr. Petri.

Mr. PETRI. Thank you, Mr. Chairman. I have a number of questions. I will try to get as many in in the time allocated as possible.

The first question is for Dr. Dillingham. There is concern that the FAA will not be able to increase efficiencies, reduce costs and at the same time transition to NextGen while it continues to maintain and operate World War II era facilities, many of which may be redundant. Are you aware of any plans of the FAA to right-size FAA facilities as part of the NextGen process? Or is it going to be overlaid over the existing structure that we have in place even though it may not be necessary once the new equipment is out there?

Mr. DILLINGHAM. Thank you for the question, Mr. Petri. Based on our work, we understand that FAA would like to do realigning and right size the facilities. I think there are provisions within the reauthorization that speak to that.

I would like to add that it is very important in terms of achieving the cost effectiveness that is associated with NextGen if you, in fact, are going to take advantage of the technologies that would allow you to realign or right size. It is a very, very difficult nut to crack, though. It takes sort of the cooperation of a lot of different

parties involved in this. But we are aware that they have in fact begun to think about and want to move toward right sizing ATC facilities across the NAS.

Mr. PETRI. The sooner that process starts, the less disruptive it will be for people and their lives because you can just go through attrition and give reassignment opportunities and all of the rest of it. It will save money if it is done sooner, and it would also save inconvenience.

Mr. DILLINGHAM. Yes, sir.

Mr. PETRI. I have a question for Ms. Bolsinger. I wonder if you can expand on your discussion of RNP. You indicated that this process has tremendous environmental efficiencies and savings and that some of these new procedures and efficient flight paths and all the rest, and GE makes the technology, among others, is already deployed. Americans are flying on planes that land in Brisbane as we speak under the new procedures. FAA's job is to protect American flyers.

It hasn't approved these procedures here in the United States, shouldn't it be banning them from flying in Brisbane? Or speeding up the procedures so we can realize the environmental efficiencies? Maybe we should be putting in a procedure to find best practices all around the world and implementing them rather than not invent it here as our approach. I don't know how you operate at General Electric but you are global corporation. I suspect you probably take the latter rather than the former approach. Can you comment on any of that?

Ms. BOLSINGER. Yes. You couldn't be more right. We do steal best practices everywhere around the world. Very frankly, it is disheartening to me as an American to be implementing these procedures not in the United States first.

However, we are a global company, and we do have to respond to these customers around the world. Probably the most advanced is Australia where in Brisbane they have been able to complete all of the procedures and their environmental impact studies in about 4 months time. It is not a large airport, it is a medium-sized airport. Their plan is to role that out across the entire country of Australia through their Air Australia services, their national air space service provider, within 5 years. So it is certainly very doable.

I don't think there is any sentiment anywhere in the United States to preclude these procedures from being done. I think again it is the perverse nature of the NEPA regulations which forces us to go through environmental impact studies which actually can have deleterious effects and certainly slow down the process by years.

Mr. PETRI. I wonder if, Dr. Toner, you would care to respond on any of that? I know you are under some administrative handicaps right now and are still relatively new on the job, but will you be taking a look at trying to speed up the procedure so as to realize the environmental savings? And if something is, in fact, already in place in another country and Americans are allowed to fly on it, and it is the same kind of things that we ask the Europeans when it comes to genetically engineered foods, do they get sick at a restaurant in New York?

They are banning the food over in Europe supposedly, and we kind of wonder whether there is a hypocrisy level there. Here there is just a waste issue because we are missing the opportunity to save on energy and all of the rest.

Ms. TONER. With NextGen, when we look at efficiency and capacity, we know they are directly related. We want to be flying the most efficient routes. What I can tell you is that we want aviation to first be a good steward of the environment. We are fully aware of how tough it is getting some of these environmental impacts done.

That said, we actually are implementing some on RNP routes in the U.S. under NextGen, those where the benefit is very clear. Of course noise is the issue. And the FAA really supports streamlining the processes as long as we still are protecting the environment. So I think it is an issue that is right up front.

Mr. COSTELLO. The Chair thanks the Ranking Member and now recognizes Mr. Perriello.

Mr. PERRIELLO. I have no questions at this time.

Mr. COSTELLO. The Chair now recognizes the Chairman of the Full Committee, Chairman Oberstar.

Mr. OBERSTAR. Thank you all for your contributions, for your thoughtful and well-presented papers.

Inspector General Scovel, we have been around this now for many years. The en route system from the 9020s to display system replacement after going through several iterations of AAS and so on; STARS, standard terminal automation replacement system for the TRACONs; terminal Doppler weather radar and then terminal Doppler color radar for towers and also for TRACONs and DSCS, one of the most successful of all of these high-dollar technical systems installed which was done over one weekend without shutting down the system for 20 seconds, but all of these had delays, cost overruns, costs in the sense not of overruns but of escalating costs because of program mismanagement. And now you are saying well, we have a slippage here by 2 months and then we have ERAM and that will affect the other downstream systems. What has FAA learned from the past?

I remember some years ago when the new administrator of FAA brought in the Navy procurement office and had them review all of these multi-billion-dollar systems, and they came back and said at our Committee hearing in this room, they said they don't now how to manage multi-billion-dollar systems. They have never done anything this big, and this is what we propose to do. And it is not just a problem of the FAA, it is also the industry side because in those days, you couldn't tell where IBM left of and the FAA began. And they were hand in hand, partners in failure.

And now we have this movement to NextGen. So have they learned something about managing multi-billion-dollar contracts, engaging industry and the air traffic controllers in the design of the systems, engaging the airlines and also participating in the design of the systems, not over promising and not over designing, not over rating things?

Mr. OBERSTAR. And now we have a joint program, development office. You have got a director and an institute, an institute management counsel, and we don't seem to be getting any further

ahead. Now it is true that in two Congresses, three Congresses, the 108th 109th and the 110th, we didn't pass the appropriations necessary to provide the dependable flow of funds out into the future, but that is not an impediment to the planning and the thinking and the process that I think has been a failure here. I am just stressed with it. I want you to respond and I want to see what the others think.

Mr. SCOVEL. Chairman Oberstar, let me take one of your minor points and then I would like to address your major theme, if I could. In one of his questions, Chairman Costello asked Dr. Toner about the involvement of controllers in the design of a number of the systems that will be necessary for NextGen, and Dr. Toner responded that controllers are now involved. I think Chairman Costello's point was specifically with regard to the STARS program, where controllers had not been involved, and human factors, problems, being what they were, they cropped up when the systems began to be installed. Controllers were unable to use them effectively, which contributed to the delay and the escalating cost in the STARS program. It should be a lesson for all of us, and I know that lesson is still repeated today over at FAA. I think your larger point, sir, is this, and this is one that we have debated in my office in response to our questions back and forth about what makes some programs effective and efficient within FAA and what makes others not so. We have come down to this, stable requirements, whether those, the input in determining those requirements come from controllers, from industry, from engineers and specialists within NASA and FAA. Once those requirements are set, the program can be designed and engineered and bought, the chances of staying on time and on budget increase dramatically.

Mr. OBERSTAR. I have to interrupt you at that point because that was a problem in 1990 with FAA and IBM in the evolution of what became DSR, display system replacement. And at a hearing up at the IBM facility up in Germantown where—it was actually Mr. Mica's first year on the Committee and he was a little astonished at my anger with the way things were proceeding. And I said to Mr. Ebcur, I am going to nail your shoes to the floor. He said why? I said so you can't move. We need to freeze those requirements. Every time we have a meeting on this or a hearing, you are changing the requirements. Stay put. Fix, freeze the program, and then go forward with it. And it was thanks to Mr. Costello and his persistence and also the participation of Mr. Petri, the persistence with the FAA that engaged the controllers.

We learned that with STARS. They had the track ball embedded in the console in the upper right-hand corner. What about the left-hand controllers? You have to turn your body around and spin around? No. Why couldn't they move? They said, We asked for a movable track ball. Oh, no, we can't do that. Well, they did after a couple million dollars of wasted effort. So let's engage them. Go on. You hit on a sore point of mine. Go ahead.

Mr. SCOVEL. I was going to simply make a point, Mr. Chairman, that among the programs that we have discussed in our testimony today of course is ERAM. For years now, ERAM has enjoyed the distinction at FAA of having fairly stable requirements, and it appeared to the specialists in my office who have been working with

FAA and ERAM for all this time that ERAM was well managed, it enjoyed stable requirements and until very recently was on time and on budget. Now anytime we are dealing with software, any of us in the real world know today that things happen, and that is what has happened with ERAM and FAA now is trying to make corrections. But in comparison to other programs—and of course STARS would be one, the distinction between ERAM and others like STARS would be manifest.

Mr. OBERSTAR. Well, it seems to me that NextGen is envisioning a much more complicated structure than DSR, than TDWR, than STARS, of all of those together with VSCS. I was going to ask also for comparison of the NVS with the VSCS and what improvement there is. But you can submit that in writing. I want to ask Dr. Dillingham whether FAA has created here another headache, an overload of management within management, with the JPDO, the director and the NextGen Institute and the Institute Management Council, what is all that achieving?

Mr. DILLINGHAM. To be determined, Mr. Oberstar. Clearly there is a need that all of these plans and councils be synchronized so that all the things that come together for a complicated undertaking like NextGen you clearly have to have lots of streams going into it. At this point since things are so new in the sense of Dr. Toner's appointment and the movement that this Committee was instrumental in getting a more direct reporting to the Deputy Administrator and the Secretary, it is still to be determined if this is going to work and if this is going to just become sort of become sort of moving the Chairs around at this point in time. So we are optimistic that this is going to make a change, but we are watching it as well.

Mr. OBERSTAR. Good. That is not a very inspiring response, I must say. It is an honest response, and I appreciate it. And Dr. Toner, I hope you can wrap arms around it and do some mud wrestling with this organization. But it damn well better start doing something. We are going to, by the way—I would say for all Members and others of interest—that we are progressing toward an authorization bill. The Senate has acted. Senator Rockefeller and I have had conversations. Our staffs are meeting and ironing out the differences between our two bills and I am confident that within a couple of weeks, we are going to have first aviation authorization bill in 4 years.

Mr. COSTELLO. The Chair thanks the distinguished Chairman of the Full Committee. And let me say that that is one of the reasons why in the reauthorization bill that passed this Committee and passed the House not only in 2007 but again in 2009, we had the head of the JPDO reporting directly to the administrator as opposed to the system under the previous administration and the current system announced by this administration.

The chair now recognizes the gentlelady from Ohio, Mrs. Schmidt.

Mrs. SCHMIDT. Thank you and I will be brief. My questions are for Ms. Bolsinger. Ms. Bolsinger, in your written testimony—I don't believe you said it in your oral—but in your written testimony, you mentioned that Southwest Airlines and the investment they have made in RNP and my question to you is: How are they able to im-

plement RNP with these environmental hurdles that you have testified about today?

Ms. BOLSINGER. Thank you for that question. Unfortunately, Southwest is not able—despite the fact that they have spent tens of millions of dollars are, I would say, a maverick airline, one of the few that makes money, one that has made our industry very viable and a strong employer of U.S. citizens. But unfortunately, they are not able to get their RNP procedures finished. So they have done the equipage. They have spent the money. And I think they will stand as a terrible example to other airlines of what not to do, not to get ready. So unfortunately, without the procedures being approved, all of the investments that they have made will be for naught.

Mrs. SCHMIDT. Well, thank you for clearing that up for me, ma'am. And you also testified that ″GE is rolling out our RNP in locations around the world.″ Do these other nations have the same environmental hurdles that we have?

Ms. BOLSINGER. They all have an environmental impact study that is done, and they all go through their own procedures. They aren't identical to the United States, and of course they don't necessarily have the same regulatory—let me say the NEPA sort of oversight that we have. In some ways, newer infrastructures are easier. So China will probably be much more advanced than we are because they don't have any infrastructure today. So that is part of our issue. But again, if we were to put our minds to it, we could expedite. And what we are asking for is an expedited process not to lift NEPA but in fact to have a different implementation that says if, in fact, a procedure meets three criteria, less noise or equal noise, less emissions, and less fuel burn, that it would be considered a no impact and be able to be on an expedited path which should be determined by experts.

Mrs. SCHMIDT. Thank you. I have no further questions.

Mr. COSTELLO. The Chair thanks the gentlelady and now recognizes the gentleman from Ohio, Mr. Boccieri.

Mr. BOCCIERI. Thank you, Mr. Chairman. To Mr. Scovel, the Joint Planning Development Office states that one of their goals is to identify existing research and development in technologies within each partner agency that benefits the NextGen effort. However, the GAO has said that questions still remain over which entities are going to fund and conduct some of the necessary R&D and demonstration projects to achieve certain NextGen capabilities. So I know that you have testified that disagreements among partner agencies have delayed the decisions of implementing certain technologies. Could you summarize those disagreements and delays?

Mr. SCOVEL. I could mention one, sir. It is addressed in our statement and it has to do with the weather capabilities that FAA seeks to obtain from the Department of Commerce and NOAA specifically. There have been technical disagreements about the 4D Weather Cube that the Department of Commerce and NOAA are in the process of establishing nationwide, which of those capabilities will be made available to FAA. Commerce is proceeding with its own requirements but looks to FAA to define its requirements and also to fund those appropriately. The Agency and the Department have established the executive weather panel in an attempt

to iron out those disagreements that ease the funding concerns, and we look forward to having that happen.

Mr. BOCCIERI. Do you sense, at least from NASA's perspective, that the shift back towards research and development from the previous administration's focus on deep space exploration is going to augment and help this?

Mr. SCOVEL. Most definitely. It is a very positive development. Frankly, sir, my office is greatly encouraged to have NASA's statement that it is now moving beyond simply fundamental research and moving even into development and perhaps even a prototype development on behalf of FAA.

Mr. BOCCIERI. Thank you. And I would add just for the record that we hope that NASA Glenn Research Center in northeast Ohio plays an integral role in that as well. Thank you, Mr. Chairman.

Mr. COSTELLO. The Chair thanks the gentleman. And the Chair would ask any other Members—votes have been called on the floor. We have 5 minutes to get to the floor. The Chair would ask if any other Member has any questions of these witnesses.

Mr. OBERSTAR. I would like to express my appreciation to the Chair, to Mr. Petri and Mr. Ehlers, thank you for being here, our resident scientist on the Committee, for keeping the sharp spotlight of attention focused on this multibillion-dollar program. With your continued work, we are going to keep them on course and get this program off on the right course and achieve these initial interim objectives. But if we don't, aviation suffers. It won't be shut down worldwide like the volcano did. But that ought to be a reminder to us again of what can happen if we don't advance the state of the art of technology in air navigation guidance.

Mr. COSTELLO. The Chair thanks Chairman Oberstar and thanks our witnesses for appearing before the Subcommittee today. As Chairman Oberstar indicated and Mr. Petri have indicated many times that we intend to continue aggressive oversight on this massive project and undertaking and to make certain that not only the administration, but all of the agencies and stakeholders are in fact engaged and working together to move the process forward.

Let me, in addition to thanking the witnesses, let me thank some of the family members from the Colgan tragedy who are here today. We deeply appreciate you being here and you continuing to work with us to provide oversight and to hopefully move an FAA reauthorization bill to the President's desk in the not too distant future. As Chairman Oberstar indicated, we are negotiating at the current time, and we hope to bring that to a successful conclusion. But we deeply appreciate you being here today and we have less than 2 minutes to get to the floor to vote. So that concludes the hearing today. We thank our witnesses for being here. The Subcommittee stands adjourned.

[Whereupon, at 3:20 p.m., the Subcommittee was adjourned.]

OPENING STATEMENT OF
THE HONORABLE RUSS CARNAHAN (MO-03)
HOUSE TRANSPORTATION AND INFRASTRUCTURE COMMITTEE
SUBCOMMITTEE ON AVIATION

Hearing on
Next Gen: Long-term Planning and Interagency Cooperation

April 21, 2010

Chairman Costello and Ranking Member Petri, thank you for holding this hearing on the NextGen: Long-term Planning and Interagency Cooperation.

The current national airspace system is dependent on ground-based navigation facilities, which prevent aircraft from flying the most efficient routes. Also, it is expected that there will be a substantial increase in passengers over the coming years and with this increase our current airspace system will not be able to meet air traffic demands.

We all know an overnight modernization of our air traffic control system is not an option. That is why it is critical to examine both the near- and mid-term goals of NextGen as well as the long-term goals. It is critical that while we work toward the near- and mid-term goals that we are also working toward the long-term goals of NextGen. Specifically, it is critical that we can build on the programs implemented today to advance future technologies that will help us meet the demands of our air traffic control system.

Critical to modernizing and transforming our air traffic control system from our current system to NextGen is the work of the Joint Planning and Development Office, especially coordinating with its Federal and non-Federal stakeholders. Coordination between the Joint Planning and Development Office and its partner agencies, including the Department of Defense, the Department of Commerce, the Department of Homeland Security, and the National Aeronautics and Space Administration. It is essential for the Joint Planning and Development Office to leverage its various partner agencies research and technology resources.

In closing, I want to thank our witnesses for joining us today and I look forward to hearing your testimony.

STATEMENT OF
THE HONORABLE JERRY F. COSTELLO
SUBCOMMITTEE ON AVIATION
HEARING ON
NEXTGEN: LONG-TERM PLANNING AND INTERAGENCY COOPERATION
APRIL 21, 2010

- I welcome everyone to the Aviation Subcommittee hearing on "NextGen: Long-term Planning and Interagency Cooperation."

- Today's hearing will explore how the Federal agencies responsible for implementing the Next Generation Air Transportation System (NextGen) are reconciling near-, mid- and long-term goals. This hearing will also examine how the Joint Planning and Development Office (JPDO) will work in collaboration with partner agencies, which include the Department of Transportation, the National Aeronautics and Space Administration, the Department of Homeland Security, the Department of Defense, and the Department of Commerce.

- On June 9, 2008, these agencies signed a memorandum of understanding (MOU) with the JPDO to define roles and responsibilities of each party. They agreed to determine how research and development (R&D) and demonstration projects will be conducted to achieve key NextGen capabilities. Key officials from DOT, NASA and DOD are with us today to discuss interagency coordination and collaboration. I look forward to hearing their assessments of any challenges they may have encountered.

- This is the fourth hearing Ranking Member Petri and I have held in the 111th Congress on NextGen. As a re-cap, we have examined NextGen mid-term capabilities -- those between 2012 and 2018 -- discussed Area Navigation (RNAV) and Required Navigation Performance (RNP) procedures, and reviewed the RTCA Mid-Term Implementation Task Force report. I will

continue to hold regular hearings on NextGen-related issues to provide congressional oversight and a forum for open dialogue to explore the challenges that lie ahead. NextGen is complex and will require new integrated systems, procedures, performance capabilities, and infrastructure to improve our air transportation system. Important objectives, such as enhancing safety, expanding system capacity, reducing delays, cutting long-term costs, and reducing carbon emissions, are at stake.

- It is also essential that the JPDO identify existing research and technologies within each partner agency that can be leveraged to benefit the NextGen effort.

- Last month, the Federal Aviation Administration (FAA) released its forecast on increasing demand on our aviation infrastructure over the next two decades. From 2009 to 2030,

the total number of passengers is projected to increase by 75 percent, from 704 million in 2009 to 1.21 billion by 2030. At the nation's 35 busiest airports, operations are expected to increase 60 percent by 2030.

- The FAA has made progress in planning and developing NextGen and has tested key technologies, such as ADS-B that allows an aircraft to transmit its own position and receive information from similarly equipped aircraft. I want to continue to work with the FAA and industry stakeholders to ensure these near-term programs stay on schedule for long-term advancements to be made.

- Successful implementation of NextGen depends on strong leadership and a clear organizational structure. The JPDO is responsible for facilitating coordination among partner agencies

on how to apply each agency's respective expertise, research, and technology to the task of building the NextGen system.

- In addition, the JPDO will resolve critical NextGen policy issues. For example, the JPDO will make key policy decisions in areas such as facilitating aircraft equipage; expediting environmental reviews; and creating new standards and procedures to assess the impact of unmanned aircraft systems, human factors, and facilities consolidation. To increase the authority and visibility of the JPDO, the House FAA reauthorization bill elevates the Director of the JPDO within FAA, reporting directly to the Administrator.

- Clarity on the JPDO Director's leadership and role is essential. In our NextGen near-term hearing in March 2009, the Government Accountability Office (GAO) testified about

uncertainty over the JPDO's authority and role – and a lack of leadership to clearly define them. Dr. Karlin Toner, whose testimony I look forward to hearing today, also testified at the same hearing as the Director of the Senior Policy Committee. Almost a year later, the FAA announced several changes to the JPDO's structure and named Dr. Toner the Director of the organization. I look forward to hearing her testimony, given the recent changes to the JPDO that have coincided with her appointment as Director. I also want to hear GAO's thoughts on these organizational changes and the prospect for improved coordination across the partner agencies.

- As the FAA implements near- and mid-term NextGen capabilities to address capacity constraints and delays, long-term plans among the FAA and Federal partner agencies must be integrated. Simply put, near- to-mid term plans must be

connected to the long-term vision. In addition, I firmly believe there needs to be greater White House involvement in facilitating collaboration among partner agencies. I am hopeful that the recent changes to the JPDO signal this Administration's support.

- With that, I want to welcome all of our witnesses today, and I look forward to their testimony.

- Before I recognize Mr. Petri for his opening statement, I ask unanimous consent to allow 2 weeks for all Members to revise and extend their remarks and to permit the submission of additional statements and materials by Members and witnesses. Without objection, so ordered.

SENIOR DEMOCRATIC WHIP

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WWW.HOUSE.GOV/EBJOHNSON/
REP.E.B.JOHNSON@MAIL.HOUSE.GOV

STATEMENT OF CONGRESSWOMAN EDDIE BERNICE JOHNSON

Subcommittee on Aviation
Hearing on NextGen: Long-Term Planning and Interagency Cooperation
April 21, 2010

Chairman Costello, thank you for holding this hearing today. I applaud your ongoing oversight of NextGen's progress and future.

I would like to welcome all our witnesses and look forward to hearing their testimony.

I was pleased to learn that as of February, Dr. Toner, the Joint Planning and Development Office Director who is with us today, now reports directly to the FAA Deputy Administrator, as well as the Secretary of Transportation.

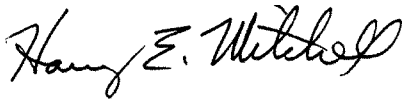
And, that Dr. Toner's new responsibility expands the opportunity for inter-agency collaboration and provides the Joint Planning and Development Office with greater visibility with both the FAA and the Department of Transportation.

As we proceed today, I am particularly interested two things:

First, in how the Joint Planning and Development Office and its partner agencies are tackling the challenge of integrating near- and mid- term capabilities with long-term plans.

And, secondly, how the reconfiguration of NASA's Aeronautics Mission Directorate will impact the timeline for the implementation of all NextGen components. It is my understanding that currently the Joint Planning and Development Office's Concept of Operations lists 167 research issues that need to be investigated.

Thank you, Mr. Chairman.



Statement of Rep. Harry Mitchell
House Transportation and Infrastructure Committee
Subcommittee on Aviation
4/21/10

--Thank you Mr. Chairman.

--By 2025, our nation's aviation system is going to need to accommodate more than a billion passengers, and we need to be ready.

--In the Phoenix metropolitan area, where the Federal Aviation Administration (FAA) has already warned that we will need additional capacity, we are taking steps to prepare. In addition to improvements at Phoenix Sky Harbor Airport, now one of the busiest in the United States, we are developing Phoenix-Mesa Gateway Airport as a reliever.

--However, all the improvements we are making in Arizona won't matter if we don't also upgrade our national aviation system as well.

--And that's where NextGen comes in.

--When implemented, we will be able to make better use of our nation's air space. It will enable us to transition from ground-based radar to a satellite based system, which will give us more direct and efficient routes.

--However, according to the Department of Transportation's Inspector General, key multibillion-dollar programs have experienced problems, and the FAA ha yet to fully determine their NextGen-specific requirements.

--I look forward to hearing from our witnesses today about how we can ensure that NextGen stays on track.

--At this time I yield back.

OPENING STATEMENT OF
THE HONORABLE JAMES L. OBERSTAR
SUBCOMMITTEE ON AVIATION
NEXTGEN: LONG-TERM PLANNING AND INTERAGENCY COOPERATION
APRIL 21, 2010

I want to thank Chairman Costello for calling today's hearing on "NextGen: Long-term Planning and Interagency Cooperation." Today's hearing is the fourth Next Generation Air Transportation System (NextGen) hearing that the Aviation Subcommittee has held this Congress. The three previous hearings focused on implementing NextGen in the near- to mid-term. This hearing focuses on how near- and mid-term NextGen targets are being reconciled with long-term goals – and how agencies such as the Department of Defense and the National Aeronautic and Space Administration, which are represented here today, are collaboratively using their resources to achieve these goals.

While recent attention has focused on near-term NextGen goals, I do not believe that work towards near- and mid-term NextGen and work towards long-term NextGen are mutually exclusive. Our air traffic control (ATC) system has evolved over time, and its future must have a firm foundation in the present. Since FAA first announced the ATC modernization program in 1981, the United States has spent a little more than $50 billion on ATC improvements and installed over 63,000 pieces of technology. NextGen will be an evolutionary process too. However, it is important

to ensure that programs implemented today will be the building blocks for advanced technologies tomorrow. It is also important to ensure that planning and resources are aligned to respond to policy decisions and research needs in the future.

Mr. Chairman, modernizing and transforming our ATC system is a national priority, and Congress has made this clear by creating the Joint Planning and Development Office (JPDO) within the Federal Aviation Administration (FAA) to plan for, and coordinate with, Federal and non-Federal stakeholders, to transform the current ATC system to the NextGen system. Because the JPDO is a multi-agency effort, coordination between the JPDO and the Departments of Transportation, Defense, Commerce, and Homeland Security, as well as the National Aeronautics and Space Administration and the White House Office of Science and Technology, is essential.

The success of NextGen is dependent in large part on how the JPDO leverage its partner agencies' resources. The JPDO must identify existing research and technologies within each partner agency that bring value to the NextGen effort. Each partner is part of the JPDO because it brings a unique perspective, expertise and knowledge. The JPDO's work should utilize the competencies and expertise of its partners to add tremendous value to the NextGen system. I would like to hear our

witnesses' opinions on whether the current level of coordination between the JPDO and its agency partners is adequate.

History has taught us that "big bang" approaches to ATC modernization do not work. As both the Department of Transportation Inspector General and the Government Accountability Office (GAO) have noted, the FAA's major acquisitions in the past have run into billions of dollars of cost growth and years of schedule delays, all of which are directly traceable to overly ambitious plans, complex software development, changing requirements, and poor contract management. I appreciate that representatives of both the Inspector General and the GAO are here today, and I look forward to hearing their testimony.

I am also interested in understanding the new JPDO organizational structure and any mission changes the new JPDO Director, Dr. Karlin Toner, and our other witnesses anticipate as the FAA begins to implement NextGen.

For NextGen to succeed, its progress must continue to be evolutionary, built on sound contract management by the FAA with a long-term vision validated by the JPDO and its agency partners. For its part, Congress must continue to provide strong oversight in these foundational years.

Thank you again, Mr. Chairman, for holding this hearing. I look forward to hearing from our witnesses.

LAURA RICHARDSON
37TH DISTRICT, CALIFORNIA

1725 LONGWORTH BUILDING
WASHINGTON, DC 20515-0537
(202) 225-7924 – PHONE
(202) 225-7926 – FAX

100 WEST BROADWAY
WEST TOWER, SUITE 600
LONG BEACH, CA 90802
(562) 436-3828 – PHONE
(562) 437-6434 – FAX

http://www.house.gov/richardson

Congress of the United States
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HEARING:
"NEXTGEN: Long Term Planning and Interagency Cooperation"

WEDNESDAY, APRIL 21, 2010
2:00 P.M.
2167 RAYBURN

Mr. Chairman, thank you for convening the hearing today to review how the near- and mid-term target goals of the Next Generation Air Transportation System (NextGen) are being reconciled with long-term goals and how the Joint Planning and Development Office (JPDO) is leveraging, or plans to leverage, its agency partners' resources to achieve these goals. Thank you to our witnesses for taking the time to appear before Congress today.

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The U.S. air transportation system transports about 700 million passengers a year, which results in about 80,000 flights over a 24 hour period. As a representative of the 37th Congressional District of California, the Los Angeles Airport (LAX) is in my region, along with the two airports in my district. The Los Angeles airport handles the sixth most passengers of any airport in the world annually, 1,000 cargo flights each day, and has an annual economic impact of $60 billion. And LAX, along with other airports around the nation, is getting busier every day.

The FAA predicts that by 2025 air traffic will increase by 15,000 per day to more than 95,000 flights every 24 hours. To address this increase, in 2003, Congress passed H.R. 2115, or Vision 100, which tasks the JPDO to plan for and coordinate a transformation from the current air traffic control system to the NextGen system.

The Aviation Subcommittee has previously examined the challenges in implementing all of the elements that comprise NextGen. JPDO is a key part of this effort, as they must leverage the expertise and resources of the Department of Transportation, Department of Defense, Department of Commerce, Department of Homeland Security, NASA, and the White House in achieving this goal. While this requires a lot of coordination, I am pleased that they have developed memorandums of understanding (MOUs) with DOT, NASA, DHS, DOD, and DOC.

However, continued coordination with the FAA is critical. I have raised the concern before that more can and must be done to address inefficiencies and delay in the system by taking advantage of existing technologies, procedures, and capabilities rather than waiting for deployment of new systems or technologies. With airline industry in its current state of economic distress, and the

number of flights rising every day, clearly implementation is needed sooner rather than later, especially in light of the delays thus far.

I look forward to hearing from our distinguished panel of witnesses regarding the work ahead for the JPDO. Improving the efficiency, effectiveness, and safety of our air transportation system is critical, and we cannot accept any further shortcomings and delays.

Thank you again, Mr. Chairman, for convening this hearing. I yield back the balance of my time.

Statement of
LORRAINE BOLSINGER
President & CEO GE Aviation Systems

Before the

AVIATION SUBCOMMITTEE
Committee on Transportation and Infrastructure
U.S. House of Representatives

Hearing on

NextGen: Long-Term Planning and Interagency Cooperation

Wednesday, April 21, 2010

Lorraine Bolsinger
President and CEO, GE Aviation Systems
Testimony before the Aviation Subcommittee,
Committee on Transportation and Infrastructure,
U.S. House of Representatives

Wednesday, April 21, 2010

The Impact of Environmental Review Processes on NextGen Implementation

Mr. Chairman, Members of the Committee, I am Lorraine Bolsinger, President and CEO of GE Aviation Systems. Thank you for providing us this opportunity to present our views and observations to the Subcommittee today. In 2005, I was privileged to lead the development of GE's ecomagination initiative, which has as a core concept the notion that we can continue to grow our economy and be profitable, while solving the world's most challenging environmental problems. I mention this because elements of these principles are evident in the FAA's NextGen airspace modernization effort.

Transforming our air transportation system has proven potential to reduce carbon emissions that threaten our planet. Airspace modernization efforts, like NextGen, lessen our dependence on foreign oil that threatens our nation's security and help control rising energy costs that threaten our wallets and impact the U.S. job market. For those reasons, today's hearing, on the long term planning for NextGen is important and timely.

We've come to a critical juncture with NextGen. We are on the brink of implementing new technologies and airspace procedures that will capture the benefits I just described. However, we need Congress to recognize that all the planning for this critical program and the decades of work that have brought us to this point, will be pointless if we can't find a way to solve the problem I will outline today.

GE fully supports NextGen. This program is critical to achieving necessary improvements in reliability, efficiency and sustainability in our National Airspace. In the near term, Performance-based Navigation lays a foundation for the FAA's vision of minimizing delays, maximizing runway utilization, increasing airport and airspace capacity and reducing the environmental impact of aviation. But when it comes to the environment, we now face a situation where environmental process trumps environmental progress, placing the entire NextGen program at risk.

On this day, on the eve of Earth Day, it's appropriate that we candidly address our mutual interest in preserving aviation leadership in the United States while protecting and improving our shared and precious environment. Forty years ago, Congress passed, and President Richard Nixon signed, the National Environmental Policy Act, a landmark piece of legislation with a core premise that we must think, before we act. The law requires us to study the consequences of our human activities and to

weigh our actions against the impact they have on the air we breathe, the water we drink and the quality of life we all enjoy and wish to preserve.

Eloquently, the law states that it is the continuing policy of the Federal government, in conjunction with state and local governments: and I quote, *"....to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."*

The law makes us stewards of our environment and admonishes us to, *"attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences."* It is this latter issue -- the issue of undesirable and unintended consequences – upon which I wish to focus my remarks today. In a twist of irony, 40 years after the passage of NEPA, it is the FAA's well-intentioned process for adhering to the law itself that has become the greatest obstacle to implementing new aviation technologies that promise the greatest improvements to our environment. And it is to address this unfortunate, and unforeseen circumstance, that we seek your leadership and your help.

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We have arrived at a critical moment in aviation history. Within our grasp are new technologies -- many of them developed by supremely talented and committed Americans -- that can significantly reduce the impact of aviation on our environment. Let's be crystal clear. I'm talking about technologies and procedures that will significantly reduce aviation CO_2 and other emissions, that will significantly reduce fossil fuel consumption, that will significantly reduce the impact of aircraft noise on our communities as a whole. I'm talking about precisely the kinds of technologies that Congress and the President hoped to encourage when they passed and signed NEPA into law.

One of these technologies is Required Navigation Performance. RNP makes it possible to harness GPS and the advanced flight management systems on today's aircraft, to create extremely precise, predictable aircraft paths. These paths can be carefully designed and deployed to achieve a myriad of environmentally desirable objectives.

- RNP can be used to enable optimized descents that require minimum engine thrust and fuel burn as airplanes descends from cruise altitude to landing -- reducing engine noise along the way.

- RNP can reduce the track miles an aircraft has to fly between a specific city pair, reducing fuel burn, emissions and time enroute.

- RNP can ease congestion and improve safety by providing controllers with the precision and predictability they need to more efficiently manage air traffic.

- And RNP can ease the impact of aircraft noise by providing the flexibility to tailor aircraft paths in ways that makes sense for the community and that aren't restricted to fixed, land-based navigation aids.

According to the FAA, the full implementation of NextGen could reduce greenhouse gas emissions from aircraft by up to 12 percent by 2025. This reduction in CO_2 production is roughly equivalent to taking 2.2 million cars off the road for one year. ICAO, the International Civil Aviation Organization, has predicted that efficiencies made possible by just RNP can cut global CO_2 emissions by 13 million metric tons per year. [1] And studies show that here in the U.S., at our 10 busiest airports alone, RNP could cut aviation CO_2 emission by 2 million metric tons a year. [2] These benefits are well understood, well documented, and, as I speak, are being acted upon by airlines and countries around the world.

Based in part on the environmental benefits that will come from NextGen, U.S. airlines have committed to improving fuel efficiency an additional 1.5 percent annually through 2020, and to neutralizing the growth of aviation emissions from 2020.

At GE Aviation Systems, we manufacture RNP capable flight management computers and cockpit displays that are used in thousands of aircraft worldwide. Naverus, a part of GE Aviation, is a global leader in the design and deployment of PBN procedures, and has helped airlines both here and abroad, to transition their fleets, training programs and operating procedures to take advantage of RNP.

Today, in Australia, we are helping Airservices Australia, develop and deploy a nationwide RNP network that will reduce CO_2, improve airspace efficiency and help control community noise. And in Canada, we designed, and currently maintain, a network of RNP arrival procedures for WestJet that is saving fuel, cutting emissions, reducing track miles and time enroute. Here in the United States, we are helping Southwest Airlines equip its fleet, train its pilots and make other operational changes that will enable them to fly RNP paths -- all of this enabled by RNP capable GE Aviation Flight Management Systems.

At GE, we can develop and deploy RNP paths that make a difference: reducing emissions – reducing fuel burn – reducing time in the air – reducing noise. Those things are good for airlines, and good for the communities where they fly. With fuel being the largest cost driver for airlines, reducing fuel burn does not only benefit the environment, it reduces costs; which helps airlines retain more jobs and be more competitive.

So, you might ask, what's the problem?

Well, the problem clearly is not the technology. It's proven. It works. And, as I've described, it's creating benefits around the world.

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[1] Meeting Aviation Challenges Through Performance-based Navigation, ICAN/IATA

[2] Energy and Environmental Benefits, New Procedures Significcntly Reduce Noise and Emissions, Honeywell

But, in the U.S., bureaucracy and red tape stand in the way of achieving environmental benefit. And, strangely enough, it's the bureaucracy and red tape surrounding the administration of NEPA that is causing the problem. While it's clear that FAA understands the environmental benefits that RNP can provide, current application of the environmental review process at FAA makes it practically impossible to implement meaningful change - - even if that change improves the quality of the environment. While this may sound absurd, it's easy to see how this situation came to be.

FAA, like any government agency, must comply with NEPA requirements to review all "major federal actions significantly affecting the quality of the human environment."[3] More often than not, the FAA interprets this general and sensible statutory NEPA requirement as requiring the FAA to subject navigational procedure changes to some level of NEPA review, even in those cases where the navigational change will clearly result in environmental improvement.

By its very definition, improving a navigation path requires a change in that navigation path, and the change itself triggers an untenable set of regulatory circumstances that can derail environmental improvement. Currently, the environmental review process can last many years, and cost hundreds of thousands, or even millions of dollars -- even if the change clearly results in environmental improvement.

To further complicate matters, the environmental review process doesn't begin until the new navigation path is already designed and in some cases, approved. In short, the manner in which FAA orders and administers environmental reviews, is so cumbersome, so unclear, and so unwieldy, that it makes any significant navigational change impractical, even when that change positively impacts the environment. This is a problem of significant magnitude that threatens NextGen itself.

In order to derive maximum environmental and operational benefits' at the top 100 U.S. airports, we estimate that at least 1,200, new navigational procedures would need to be designed and deployed. If each of those new paths were required to undergo the environmental review process I've described above, even if you started the review process tomorrow, it could take a decade or more to complete. In some instances, the cost of the review could outweigh the economic benefit. And, It's possible in some instances, the navigation procedure itself would be obsolete by the time the review was completed.

I want to make one thing clear. The problem I'm describing today does not just effect GE or other qualified third party navigation designers. FAA's internal efforts to design and deploy new, environmentally beneficial navigation procedures also are impinged. That's one explanation why FAA's efforts to deploy RNP have, so far, consisted mainly of designing overlays, or replicas, of previously existing instrument procedures.

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[3] 42 U.S.C. § 4332(2)(C).

Overlays, don't change the aircraft path, and thus, don't trigger the environmental review process. However, obviously, if we limit ourselves to replicating the system we currently have, we'll never make any progress at all. Airlines, the travelling public and the communities around major U.S. airports could be benefitting right away from new RNP navigation procedures. And FAA's NextGen initiatives are, at many of these airports, dependent on these procedures. RTCA and the airlines themselves have said that, in order to succeed, and to get airlines to invest, NextGen must begin to generate benefits in the short term.

For all of these reasons, it's absolutely imperative that we find a way to help FAA streamline its environmental review process for navigation procedures that can help the environment. It's a perverse twist that these navigation procedures, their associated environmental dividends, and the success of the NextGen program itself, are threatened by the very regulations intended to protect the environment. We must find a way to expedite environmental approval for navigation procedures that provide clearly defined environmental benefits based on clearly defined metrics.

Without this needed reform, one of NextGen's most promising near-term technologies will be brought to a standstill -- and the entire NextGen program, and all that has been invested in it, placed at risk.

There is some good news!

It is not difficult to identify in advance those RNP flight paths that provide environmental benefits. The environmental characteristics of a proposed navigation procedure can be easily calculated and quantified. It's a simple matter to compare those results to the characteristics of the procedure being replaced.

A simple, three-part test would unlock the regulatory shackles that are binding NextGen and would provide access to environmental benefits that are in keeping with Congress's intent when it passed NEPA 40 years ago.

A new, expedited approval process should apply to any navigation procedure that:

1. Reduces an aircraft's CO_2 emissions and,
2. Reduces its fuel burn and
3. Results in a reduction or no net increase in the noise-affected area on the ground.

Procedures meeting these criteria should be subject to streamlined approval under revised NEPA implementing regulations, and/or revised FAA policies and procedures. These revised agency procedures and policies would make such beneficial changes clearly subject to the FAA's categorical exclusion policy, and conclusively establish that such improvements do not fall within any procedural exceptions to a categorical exclusion.

Congress has the opportunity to take action now, to require FAA to develop this expedited environmental review and approval process, as it conferences the FAA Reauthorization bill. Section

314 of the Senate bill calls for expedited environmental review of RNP procedures. We support the concept but believe that further language is required.

I appear before you today as the representative of a major U.S. company that is making a concerted effort to solve some of the world's most difficult environmental problems. Our Ecomagination initiative is focused on building a prosperous, cleaner economy where job creation and energy security are highlighted. GE is committed to finding environmental solutions for aviation that make sense for airlines and for the communities they serve. But we can't do this alone. To succeed.... For NextGen to succeed.... For our country to make meaningful environmental progress in the field of aviation, we need this committee's leadership, and this Congress's commitment to solve the problem I've just described.

We look forward to working with members of this committee, with other members of Congress, with the FAA and with the White House Council on Environmental Quality and other interested stakeholders to accelerate the delivery of environmental benefits in our National Airspace and to preserve the investment we've made in NextGen.

Thank you for this opportunity to address our concerns. I would be happy to take your questions.

U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

April 26, 2010

Ms. Lorraine A. Bolsinger
President and CEO
GE Aviation Systems LLC
One Neumann Way
Cincinnati, Ohio 45215

Dear Ms. Bolsinger:

On April 21, 2010, the Subcommittee on Aviation held a hearing on **"NextGen: Long-Term Planning and Interagency Cooperation."**

Attached are questions to answer for the record submitted by Rep. Laura Richardson. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:pk
Attachment

APRIL 21, 2010
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: LONG-TERM PLANNING AND
INTERAGENCY COOPERATION"

QUESTIONS FOR THE RECORD
TO:

MS. LORRAINE A. BOLSINGER
PRESIDENT AND CEO
GE AVIATION SYSTEMS LLC

1. How would NextGen respond to the current volcano situation in Iceland with regard to U.S. flight paths?

2. Ms. Bolsinger, you mention the difficulty of navigating the NEPA process. I agree the process can be cumbersome; I am actually working on legislation that addresses some of these problems. What kind of timeline are you anticipating for the completion of a majority of needed Required Navigation Performance (RNP) procedures?

Lorraine Bolsinger Response to Questions for the Record

1) How would NextGen respond the current volcano situation in Iceland with regard to U.S. flight paths?

A: Volcanic ash damages engines and can lead to engine failure. Industry wide practice has been to avoid volcanic ash clouds to mitigate airborne hazards. This is possible due to worldwide weather services, Air Traffic Control, and proper flight planning. Volcanic ash advisories occur across the globe on a weekly basis. Operators respond to these advisories by avoiding the troublesome area.

Adequate navigational technology currently exists to route aircraft around such clouds, assuming the precise location, dimension and movement of the cloud is known. To minimize disruption to aviation, it's critical to observe and report the real-time position, size and movement of the volcanic cloud. In this way, efficient paths can be designed to route aircraft safely away from harmful volcanic ash.

2) What kind of timeline are you anticipating for the completion of a majority of needed Required Navigation Performance (RNP) procedures?

A) We believe we could develop RNP paths to serve the 300 largest airports in the U.S. within a period of 3-5 years. But the real issue is not how many paths could be developed in that period of time. The more important issue pertains to the "quality" of those paths and what benefit they could provide. In order to obtain the maximum reduction in fuel burn and CO_2 emissions, it will be necessary, in most cases, to reroute aircraft on more efficient paths.

The very act of moving a path, even if it clearly creates environmental benefits, can trigger the requirement to conduct a time-consuming, expensive Environmental Impact Statement. Thus, the FAA and third-party procedure designers are incented to avoid making path changes, including changes that would result in environmental benefits. Until an expedited approval process is applied to paths that create clear environmental benefits, it will be very difficult to extract the environmental advantage of the RNP technology within our grasp. That's why Congressional action is needed.

United States Government Accountability Office

GAO

Testimony

Before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

For Release on Delivery
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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

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

GAO
Accountability * Integrity * Reliability

GAO-10-649T

April 21, 2010

GAO
Accountability-Integrity-Reliability

Highlights

Highlights of GAO-10-649T, a testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives

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

Why GAO Did This Study

To prepare for future air traffic growth, the Federal Aviation Administration (FAA), including its Joint Planning and Development Office (JPDO) and Air Traffic Organization, is planning and implementing the Next Generation Air Transportation System (NextGen) in partnership with other federal agencies, such as the Departments of Commerce, Defense, and Homeland Security, and the aviation industry. NextGen will transform the current radar-based air traffic control system into a satellite-based system. As FAA begins implementing near-and midterm NextGen capabilities, a key challenge will be the extent to which FAA is able to integrate near and midterm improvements (those between 2012 and 2018) with long-term plans (beyond 2018). Furthermore, coordination among federal partner agencies and among various lines of business within FAA is important to ensure that NextGen implementation efforts are aligned.

GAO's testimony focuses on (1) current mechanisms for and challenges to coordination among FAA and its partner agencies in implementing NextGen, (2) challenges and ongoing efforts to improve coordination across offices within FAA, and (3) issues related to integrating near- and midterm implementation plans with long-term NextGen plans. This statement is based on past and ongoing GAO work, and interviews GAO conducted with senior agency officials at FAA, JPDO and its partner agencies, and selected industry stakeholders.

View GAO-10-649T or key components. For more information, contact Gerald Dillingham at (202) 512-2834 or dillinghamg@gao.gov.

What GAO Found

Several mechanisms to facilitate coordination on NextGen activities among partner agencies and across FAA exist, but challenges to this coordination remain. One interagency coordination mechanism is the Senior Policy Committee, which is the high-level coordinating body across all of the partner agencies. In addition, JPDO is tasked with facilitating day-to-day interagency coordination, and has several mechanisms, including working groups and research transition teams, to accomplish this. GAO has previously reported that a lack of stable leadership and ambiguity surrounding JPDO's organizational position and ongoing role have contributed to the uneven performance of its coordination mechanisms. Recent changes in both the leadership and organizational position of JPDO could improve coordination across partner agencies. Stakeholders and partner agencies identified several other challenges to improving interagency coordination and collaboration, including (1) limited funding and staffing to dedicate to NextGen activities, (2) competing mission priorities, and (3) undefined near-term roles and responsibilities of some partner agencies.

FAA also faces challenges coordinating the implementation of NextGen across multiple FAA offices. GAO has previously reported that shifting from an organization focused on system acquisition to one focused on integration and coordination will be an ongoing challenge for FAA. Recent organizational changes that solidify the FAA Deputy Administrator as the key executive in charge of NextGen may help address these challenges. Moreover, FAA has made progress in improving coordination of efforts within FAA, by coordinating some office functions and moving toward a portfolio approach for implementation. However, as all these changes have recently occurred, it is too early to measure their success.

Integration of midterm implementation plans with the long-term plans and vision for NextGen is currently an ongoing effort within FAA. FAA officials and several stakeholders described FAA's near- and midterm efforts—such as implementing satellite-based surveillance of aircraft—as necessary stepping-stones to the long-term plans and vision of NextGen—such as aircraft operators receiving satellite surveillance information in the cockpit and using it to self-separate from surrounding aircraft. Early success in implementing NextGen capabilities will help build confidence among aircraft operators that FAA can and will provide the operational improvements necessary for operators to realize benefits from their equipment investments. However, some stakeholders expressed concern that near- and midterm implementation efforts are not integrated well enough with the long-term vision. Stakeholders identified key policy decisions that will affect the vision of the NextGen system over the long term and in turn determine whether programs, technologies, and capabilities implemented today will be the stepping-stones to future, more advanced capabilities. Key decisions include such issues as the installation of aircraft equipment, expediting environmental reviews, and the extent to which additional airport capacity will be needed.

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to testify before you today on interagency coordination and the integration of current implementation activities and long-term planning efforts to transform the current air traffic control system to the Next Generation Air Transportation System (NextGen).[1] NextGen is an enormously complex undertaking that requires new integrated systems, procedures, aircraft performance capabilities, and supporting infrastructure to create an air transportation system that uses satellite-based surveillance and navigation and network-centric operations. NextGen is intended to improve the efficiency and capacity of the air transportation system so that it can accommodate anticipated future growth. By 2025, air traffic is projected to increase up to three times the current level. Today's U.S. air transportation system will not be able to meet these air traffic demands, and improvements to the national airspace system are needed to mitigate the potential increase in flight delays that are likely to occur as air traffic grows and the potential decrease in economic productivity resulting from more delay and congestion in the system.

The Federal Aviation Administration (FAA) is the lead implementer for NextGen. Recently, FAA has emphasized improvements that can be implemented in the near and midterm, which FAA defines as between 2010 and 2018. Recognizing the importance of near- and midterm solutions, FAA requested that RTCA Inc.[2] create a NextGen Midterm Implementation Task Force (the Task Force), composed of industry stakeholders, to reach consensus within the aviation community on the operational improvements that can be implemented between 2009 and 2018. The Task Force provided recommendations to FAA in September 2009, and FAA provided responses to all of the Task Force recommendations in its 2010 NextGen Implementation Plan, and is continuing to work with industry through RTCA on addressing the recommendations as implementation

[1] This work is part of a review and monitoring effort that we are undertaking for the House Transportation and Infrastructure Committee; House Science and Technology Committee; and Senate Commerce, Science, and Transportation Committee. The work includes a number of planned reviews related to the ongoing implementation of NextGen.

[2] RTCA Inc. is a private, not-for-profit corporation that develops consensus-based recommendations on communications, navigation, surveillance, and air traffic management system issues.

continues.[3] The FAA's Air Traffic Organization (ATO) is responsible for implementing near- and midterm NextGen improvements identified in the 2010 NextGen Implementation Plan in conjunction with other FAA lines of business. The Joint Planning and Development Office (JPDO) within FAA is responsible for long-term planning and coordination with federal partner agencies.[4] According to the Task Force and other stakeholders, as FAA begins implementing near- and midterm capabilities, a key challenge will be integrating those improvements with long-term plans and ensuring that work is under way now to realize capabilities envisioned in the future. Furthermore, coordination among federal partner agencies, as well as coordination among the various offices within FAA with responsibility for NextGen and among industry stakeholders, is important to ensure that implementation efforts within FAA are aligned and that the research and development and other NextGen activities carried out by partners and stakeholders are aligned with FAA's near-, mid-, and long-term plans.

My testimony this afternoon addresses (1) current mechanisms for and challenges to coordination among FAA and its partner agencies in implementing NextGen over the near, mid-, and long terms; (2) challenges and ongoing efforts to improve coordination among offices within FAA; and (3) issues related to integrating near- and midterm implementation plans with long-term NextGen plans. My statement is based on our prior NextGen-related reports and testimonies, which are listed at the end of this statement. My statement is also based on ongoing work that includes our analysis of documents provided by FAA, JPDO, and its partner agencies, including key implementation documents such as the NextGen Implementation Plan and JPDO's Integrated Work Plan; interviews we conducted with senior agency officials at FAA, JPDO, and partner agencies; and interviews with industry stakeholders, including officials of the National Air Traffic Controller Association, RTCA, MITRE

[3] Our previous work has highlighted several challenges that FAA faces in responding to Task Force recommendations. See GAO, *Next Generation Air Transportation System: FAA Faces Challenges in Responding to Task Force Recommendations*, GAO-10-188T (Washington, D.C.: Oct. 28, 2009).

[4] NextGen was designed as an interagency effort in order 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 [NOAA]), Defense (DOD), Homeland Security (DHS), and Transportation (DOT); the National Aeronautics and Space Administration (NASA); and the White House Office of Science and Technology Policy (OSTP).

Corporation,[5] the Aerospace Industries Association, and Boeing. We provided a draft of this statement to FAA and RTCA for comment and received technical comments from both organizations, which we incorporated as appropriate. We conducted our work in accordance with generally accepted government auditing standards. Additional information on the scope and methodology of our previous NextGen-related reports and testimonies is available in each product.

FAA Has Established Several Mechanisms to Facilitate Coordination on NextGen Activities among Partner Agencies, but Several Challenges Exist

Several Mechanisms Are in Place to Facilitate Coordination

Several mechanisms to facilitate coordination among FAA and partner agencies – including interagency committees, advisory boards, and working groups – are in place. First, the Senior Policy Committee, as the interagency governing body for NextGen, is meant to facilitate coordination and planning on NextGen across federal agencies. Chaired by the Secretary of Transportation, the Senior Policy Committee includes senior representatives from the NextGen partner agencies. Among its key activities, this committee works to provide policy guidance, resolve major policy issues, and identify and align resource needs. FAA and other partner agency officials indicated that the Senior Policy Committee has met infrequently. The Senior Policy Committee held their first full committee meeting under the new Administration in September 2009. According to the JPDO Director, JPDO is working closely with the Senior

[5] MITRE is a not-for-profit organization chartered to work in the public interest. MITRE manages four Federally Funded Research and Development Centers, including one for FAA. MITRE has its own independent research and development program that explores new technologies and new uses of technologies to solve problems in the near term and in the future.

Policy Committee to establish a process for the committee to operate more effectively by providing it with the ability to review interagency dependencies such as FAA's reliance on NASA research, develop a NextGen road map, and establish a set of high-level milestones—which it currently does not have—as well as conduct oversight of NextGen progress.

In addition to the Senior Policy Committee, several other interagency coordination mechanisms are in place to facilitate coordination among FAA and partner agencies, many of which are within JPDO. These include the JPDO Board and the JPDO Division Directors Group, each of which is composed of representatives from other federal agencies and FAA. The JPDO Board functions as an adjunct to the Senior Policy Committee and includes representatives from each of the partner agencies. Representatives on the JPDO Board work on actionable outcomes related to NextGen. The Division Directors are responsible for the planning and managing of NextGen. JPDO also has organized nine working groups composed of representatives from federal agencies and industry stakeholders to specialize in developing NextGen's key capabilities, along with recommendations and action plans to be integrated into NextGen planning. Continued industry participation in JPDO Working Groups – which is provided pro-bono – is a challenge given the current business climate and companies' participation in numerous aviation forums.

FAA and NASA also participate on four JPDO research transition teams that have been established to ensure that research and development needed for NextGen implementation is identified, conducted, and effectively transitioned to the implementing agency. In previous work, we discussed the formation of these teams, but as they had just been established, noted that their potential effectiveness was unclear.[6] In that work we also identified key challenges in coordinating research, including gaps in funding for needed research and prioritization of research needs. According to the former Director of JPDO and NASA officials, the teams have been useful vehicles for identifying research needs and potential gaps; however, some teams are further along in terms of their involvement among the agencies and their deliverables than others. Although other agencies do not currently participate on these research transition teams,

[6] GAO, *Next Generation Air Transportation System: Status of Systems Acquisition and the Transition to the Next Generation Air Transportation System*, GAO-08-1078 (Washington, D.C. Sept. 11, 2008).

NASA agency officials reported that the structure could provide a model for future coordination across agencies.

Other arenas where interagency coordination can take place also exist. For example, the NextGen Management Board, which will be chaired by FAA's newly appointed Deputy Administrator and has representatives from all key FAA lines of business, addresses interagency collaboration on key issues such as maintaining the integrity of information shared through NextGen systems. A liaison from DOD sits on the NextGen Management Board.

Several Challenges Impede Cross-Agency Coordination

Our past work identified several leadership and organizational challenges in ensuring coordination across partner agencies.[7] First, we have reported that while JPDO has been in place for several years, the office has experienced a high leadership turnover rate.[8] In 2010, a new JPDO Director was appointed, the office's fourth Director in its 7 years of existence. The lack of stable leadership has made it a challenge for JPDO to move forward on many goals and objectives. Second, in March of 2009, we reported that changes to JPDO's organizational position placing it within ATO could be an impediment to partner agency coordination, as it created ambiguity about JPDO's role and it lowered JPDO's status in the eyes of stakeholders.[9] Moreover, the creation of a staff to support the Senior Policy Committee resulting from a November 2008 Executive Order caused further confusion regarding roles and responsibilities relative to federal partner agencies.[10] Third, with the ATO focused on implementing capabilities through the midterm, JPDO's role was shifted to a focus on the long term beyond 2018. According to stakeholders and partner agency officials we interviewed for this work, given JPDO's long-term focus, it has largely not been involved in ATO's current near- and midterm activities,

[7] See GAO-08-1078; *Next Generation Air Transportation System: Status of Key Issues Associated with the Transition to NextGen*, GAO-08-1154T (Washington, D.C.: Sept. 11, 2008); and *Next Generation Air Transportation System: Status of Transformation and Issues Associated with Midterm Implementation of Capabilities*, GAO-09-479T (Washington D.C.: Mar. 18, 2009).

[8] GAO, *Joint Planning and Development Office: Progress and Key Issues in Planning the Transition to the Next Generation Air Transportation System*, GAO-07-693T (Washington, D.C.: Mar. 29, 2007).

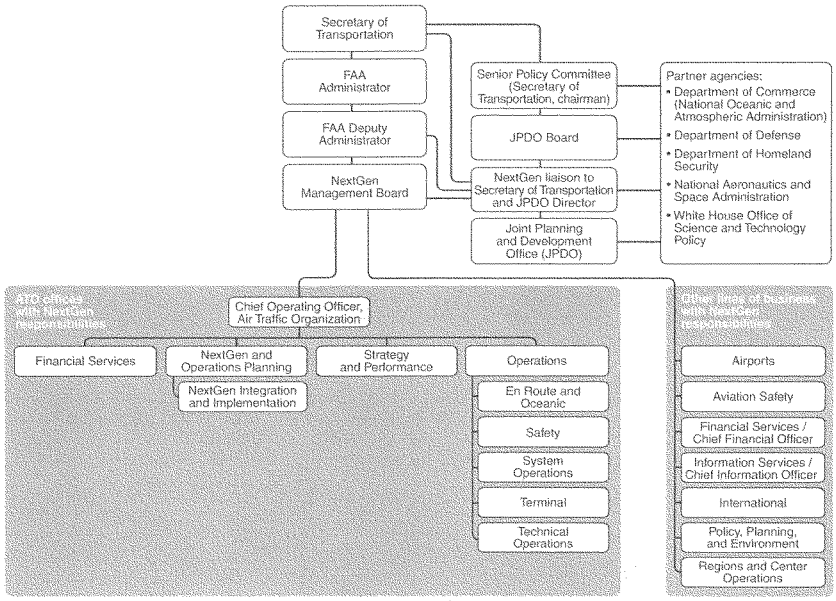
[9] GAO-09-479T.

[10] Transformation of the National Air Transportation System, Exec. Order No. 13479 (2008).

despite being placed organizationally within ATO. As a result, participation by the partner agencies in those activities is also limited. Agency officials stated that it is important for JPDO to be involved in near- and midterm activities as well as long-term planning to ensure that effective interagency coordination on NextGen is in place.

Recent changes in the leadership and organizational position of JPDO are likely to change the nature of the relationship among JPDO, FAA, and its partner agencies and hold promise for increased coordination. JPDO has been elevated from its previous position within ATO and is now situated within FAA and outside of ATO, as illustrated in figure 1.

Figure 1: NextGen Management and Governance Structure



Sources: FAA and JPDO.

The JPDO Director now reports directly to the Deputy FAA Administrator—who serves as the head of the NextGen Management Board—as well as serving as the Senior Advisor to the Secretary of Transportation. JPDO is also more closely aligned and is in a position to have a more active role with the Senior Policy Committee. This new structure removes the reporting relationship between JPDO and the Chief Operating Officer of ATO, and gives JPDO more visibility within the organization and with federal partners and other stakeholders. With these organizational moves, JPDO is expected to become a better conduit for monitoring cross-agency budgets and facilitating cross-agency

collaborations and long-term research planning. Moreover, many of the key mechanisms for agency coordination, such as research transition teams, are within JPDO, and are likely to be affected by the move. According to the new Director of JPDO, a key step in improving the coordination with partner agencies will be to determine what value they see in the work produced by JPDO. As these changes have just recently occurred, it remains to be seen if the changes will result in better coordination across the partner agencies.

In addition to these leadership and structural issues, stakeholders and representatives of the partner agencies identified other broad challenges that affect the extent to which some partner agencies have coordinated with others. These challenges include (1) limited funding and staffing to dedicate to NextGen activities, (2) competing mission priorities, and (3) undefined near-term roles and responsibilities of some partner agencies.

- **Limited funding and staffing to dedicate to NextGen activities.** Industry stakeholders and agency officials we spoke to stated that some partner agencies' ability to coordinate with other agencies was affected by the levels of funding and staff that could be dedicated to NextGen activities. Officials at some partner agencies we spoke with stated that partner agencies allocated little or no budgetary funding specifically for NextGen activities and because of competing priorities for funds, they were limited in the resources they could dedicate to NextGen planning and coordination efforts. With respect to future investments, according to JPDO and DOT data, in fiscal year 2011, among NextGen partner agencies, three—FAA, NASA, and the Department of Commerce's NOAA—requested some funding for NextGen activities. DOD and DHS did not request funding in their budgets specifically for NextGen activities. OSTP is working with the Office of Management and Budget to improve agency alignment and identification of NextGen-related budgets.

- **Differences in agency mission.** Differences among agencies' mission priorities, particularly DHS's and DOD's, also pose a challenge to coordination efforts. DHS's diverse set of mission priorities, ranging from aviation security to border protection, affects its level of involvement in NextGen activities. For example, events such as the 2009 Christmas Day terrorism attempt can shift DHS priorities quickly and move the agency away from focusing on issues such as NextGen, which are not as critical at that particular time. Agency officials also stated that although different departments within DHS are involved in related NextGen activities, such as security issues, the fact that NextGen implementation is not a formalized mission in DHS can affect DHS's level of participation in NextGen activities. Industry stakeholders told us that there are potential

consequences if DHS is not involved in long-term NextGen planning, including potentially marginalizing DHS's NextGen areas, such as aviation security. Industry stakeholders reported that FAA could more effectively engage partner agencies in long-term planning by aligning implementation activities to agency mission priorities and by obtaining agency buy-in for actions required to transform the national airspace system.

- **Undefined near-term roles and responsibilities of partner agencies.** Some stakeholders and agency officials told us that FAA could do more to clearly define each partner agency's role in key planning documents that guide NextGen implementation efforts, particularly in the near term. Our work has shown that coordinating agencies should work together to define and agree on their respective roles and responsibilities, including how the coordination effort will be led.[11] We reported in 2008 that a key intended purpose of these planning documents, according to JPDO officials, is to provide the means for coordinating among the partner agencies and to identify each agency's role in implementing NextGen capabilities, but that stakeholders said that the planning documents did not provide guidance for their organizational decision making.[12] Some stakeholders and agency officials we spoke to more recently told us that the NextGen Implementation Plan, which identifies near- and midterm implementation efforts, still does not specify how partner agencies will be involved or what outcomes are required from them. Another industry stakeholder explained that if partner agencies do not see their roles reflected in key planning documents, projects which depend on inter-agency coordination will not be fully integrated across all partner agencies. One area in particular where coordination is important is related to how FAA, DOD, and DHS information networks will share information in the future to allow for a shared awareness of the national airspace. Information sharing across agencies is necessary for such things as advanced capabilities related to optimizing the use of certain airspace by the diverse set of users under the auspices of these agencies (e.g. military aircraft, commercial aircraft, general aviation, unmanned aerial vehicles, etc.). Protocols and requirements for inter-agency information sharing have yet to be determined. Limited agency participation in near-term coordination efforts, including establishing protocols on information sharing across agencies, could hamper coordination over the long term.

[11] GAO, *Results Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005)

[12] GAO-08-1078.

Both the House and Senate FAA reauthorization bills include provisions for improving coordination among partner agencies that could address, in part, some of the challenges identified by industry stakeholders and agency officials.[13] Some of the related provisions in the bills call for, among other things, revised memorandums of understanding with partner agencies that describe the respective responsibilities of each agency, including budgetary commitments.

It Is Too Early to Determine Whether FAA Steps to Improve Coordination for NextGen among FAA Offices Will Be Effective

Stakeholders we spoke to cited challenges with coordinating the implementation of NextGen capabilities across FAA lines of business. With multiple FAA lines of business responsible for various NextGen activities, including offices within ATO and outside ATO, coordination and integration is vital since delays in actions required from several offices could prevent or delay full realization of NextGen benefits. Shifting from an organization and culture focused on system acquisition to one focused on integration and coordination will be an ongoing challenge for FAA.[14]

Recent organizational changes may help address these issues, but it is too early to measure the success of these efforts. As previously discussed and as shown in figure 1, changes that move JPDO out of the ATO and create a direct reporting relationship to the FAA Deputy Administrator solidify the FAA Deputy Administrator as the key executive in charge of NextGen. The FAA Deputy Administrator has authority over the different lines of business that must work together to implement NextGen and, as chairman of the NextGen Management Board, has the authority to force timely resolution of emerging NextGen implementation issues. Both the House and Senate reauthorization bills include provisions to designate a single official in charge of NextGen. The House bill proposes designating the Director of JPDO as the Associate Administrator for the Next Generation Air Transportation System,[15] while the Senate bill proposes creating a Chief NextGen Officer who would oversee all NextGen programs and JPDO.[16] Because the Deputy Administrator position has not yet been confirmed, it is too early to tell how effective these organizational

[13] H.R. 915, 111th Cong. § 202 (a)(3) and S. 1451, 111th Cong. § 309.

[14] See GAO-10-188T for more discussion of challenges related to culture change within FAA.

[15] H.R. 915, 111th Cong. § 202.

[16] S. 1451, 111th Cong. § 302.

relationships will be in addressing concerns from industry and the Congress regarding who is in charge of NextGen and whether that official has sufficient authority and accountability to ensure effective implementation.[17]

Other efforts in FAA to coordinate offices and manage NextGen through a portfolio approach are also under way, and it is also too early to tell how effective these efforts will be. According to FAA, the Office of Aviation Safety has already made several changes to improve coordination of NextGen-related projects in response to a Task Force recommendation to identify and solve the operational approval and certification issues that may impede adoption and acceleration of NextGen capabilities. For example, one of the most recent changes included creating new Flight Standards Service offices in each region focused on NextGen.[18] In addition, the Aircraft Certification Service[19] created a new team of experts from different offices to coordinate NextGen approvals.[20] FAA has also organized NextGen into various portfolios of capabilities called solution sets—each focusing on a series of related operational improvements that together will bring about the midterm system. One example of a solution set is "Flexible Terminal and Airports", which includes within it operational improvements such as mitigating wake turbulence for departures and improving runway safety situational awareness for controllers. Within each of these solutions sets exist numerous capital acquisitions and programs, projects, and processes to be implemented by offices across FAA. For example, in the Flexible Terminal and Airports solution set described above, the operational improvements require acquisition and deployment of ground infrastructure, the development of new flight procedures and new protocols for controllers, and numerous other activities. FAA has designated a position of solution set coordinator for each solution set to coordinate and manage the implementation across the agency. However, some solution set coordinator positions have yet to be filled, and it is not yet clear whether coordinators will have sufficient

[17] See GAO-08-1078 and GAO-08-1154T for a discussion of industry concerns.

[18] The Flight Standards Service office establishes standards for certification and oversight of airmen, air operators, air agencies, and designees.

[19] The Aircraft Certification Service office is responsible for, among other things, administering safety standards governing the design and production of civil aeronautical products.

[20] Because these changes have just occurred, it is not yet clear whether they will be sufficient to address the problems cited by the Task Force.

authority over activities across FAA, or that suitable oversight mechanisms exist in order to ensure timely implementation of all activities necessary for an operational improvement. As a result, these issues could slow the implementation of NextGen.

Integration of Near- and Midterm Implementation Plans with Long-term Plans Is Ongoing

FAA officials and several stakeholders we interviewed described FAA's near- and midterm efforts as necessary stepping-stones to the long-term plans and vision for NextGen. Early success in implementing key NextGen capabilities desired by aircraft operators will help build confidence among operators that FAA can and will provide the operational improvements necessary for operators to realize benefits from their equipment investments.

From a planning perspective, integration of near- and midterm implementation plans with the long-term plans and vision for NextGen is currently an ongoing effort within the FAA. As previously mentioned, near- and midterm implementation is guided by the 2010 NextGen Implementation Plan, which feeds into FAA's Enterprise Architecture for the national airspace system.[21] Supporting the NextGen Implementation plan are two more detailed plans - Segment A, which defines detailed activities through 2015, to be completed later this quarter, which will then be followed by Segment B, which defines NextGen through 2018. These plans will identify in great detail the specific actions that must take place in order to implement the identified capabilities. The long-term vision and initial planning for NextGen took place within JPDO and resulted in the overall Concept of Operations, the NextGen Enterprise Architecture, and an accompanying Integrated Work Plan (IWP).[22] The IWP sought to identify all of the envisioned NextGen capabilities through the long term and also lays out the enabling activities believed necessary to achieve those capabilities (e.g., necessary research and development, policy

[21] Enterprise architecture provides the structure to relate organizational mission, vision, and goals to business processes and the technical infrastructure required to execute them.

[22] The Concept of Operations describes how the NextGen system is envisioned to operate over the long term (defined as 2025 and beyond) and identifies key research and policy issues. The Enterprise Architecture is a technical description of the NexGen system, akin to blueprints for a building: It is meant to provide a common tool for planning and understanding the complex, interrelated systems that will make up NextGen. JPDO's Integrated Work Plan is akin to a project plan and is meant to describe the capabilities needed to transition to NextGen from the current system and provide the research, policy, regulation, and acquisition timelines for all partner agencies necessary to achieve NextGen over the long term.

development, and so forth). Currently, according to a senior FAA official, the operational improvements identified in the 2010 NextGen Implementation Plan and FAA's Enterprise Architecture have been aligned with the operational improvements identified in the NextGen Enterprise Architecture and the IWP. However, the enabling activities necessary to achieve those capabilities have yet to be fully aligned. Various ATO offices and JPDO are currently developing agreements that will set forth how the offices will work together to fully align all of the enabling activities across the various planning documents. The effort to align the rest of the enabling activities is expected to be completed in late fiscal year 2010, according to a senior FAA official.

Some stakeholders expressed concern that near- and midterm programs and capabilities are not connected well enough to the long-term vision and identified several key policy decisions that will affect the vision of the NextGen system and thus will determine whether programs, technologies, and capabilities implemented today will be the stepping-stones to future, more advanced capabilities. Three of these decisions that will have a major impact on the direction of near- and midterm implementation efforts as well as the long-term vision involve issues such as the scope and timing of installing necessary equipment on aircraft, expediting environmental reviews, and the extent to which additional airport capacity will be needed.[23]

- **Equipping aircraft**. FAA has yet to develop a strategy for the timing, cost, and scope of equipping the nation's aircraft fleet. In particular, FAA must focus on delivering near-term operational benefits by completing activities, such as procedure development, airspace redesign, performance standard development, and separation standard reduction, that lay the foundation for NextGen. Doing so will help provide incentives for users, especially commercial airlines, to invest in equipment for their aircraft. Two key decisions that must be considered are whether all aircraft need to be equipped at all locations and when equipping with various technologies should occur. FAA must align aircraft equipping rules and incentives in a way that minimizes the costs and maximizes the overall benefits of NextGen. We have previously reported that, in some cases, the federal government may deem financial or other incentives desirable to speed the

[23] Other major policy decisions were also identified by stakeholders and include issues such as future facility realignment plans, the level of automation that will be required and the degree of self-separation necessary in the future, and developing an information-sharing architecture across partner agencies.

deployment of new equipment and that appropriate incentives will depend on the technology and the potential for an adequate and timely return on public and private investment.[24]

- **Environmental approach**. FAA has yet to make decisions regarding how environmental reviews can be expedited and what strategies might be needed to meet national environmental targets. We previously reported that differing levels of review must be completed depending on the extent FAA deems its actions to have significant environmental impact, and that the more extensive the analysis required, the longer the process can take, which can thus affect implementation of NextGen capabilities.[25] A key question in this regard is how to appropriately and expeditiously review actions that may increase noise in some areas but also reduce emissions and reduce noise levels overall. Further, a balance will need to be struck between needs for increased capacity, which means more aircraft will be flying and releasing emissions, and potential environmental targets in the future. A key issue here is that although NextGen will increase the efficiency per flight (fuel burn, distance traveled, and emissions), because there are expected to be more total flights, greenhouse gas emissions in total may rise.

- **Airport capacity**. A national policy regarding airport capacity in key metropolitan areas will need to be determined. Even with current planned airport expansion, FAA expects capacity shortfalls in many of the nation's busiest airports.[26] NextGen alone is not likely to sufficiently expand the safety and capacity of the national airspace system. Decisions regarding using existing capacity more efficiently include certifying and approving standards for the use of closely spaced parallel runways—which will be a major driver of the amount of land needed to expand airport capacity and will determine capacity in some metropolitan areas—and developing policies that address situations when demand exceeds capacity at airports or in specific airspace (e.g., pricing, administrative rules, service priorities, and so forth). Furthermore, planning infrastructure projects to increase capacity, such as building additional runways, can take as long as a decade

[24] See GAO-10-188T for more discussion on providing financial and other incentives.

[25] See GAO-10-188T for more discussion of FAA efforts to expedite environmental reviews.

[26] GAO-08-1154T.

or more,[27] and will require substantial planning and safety and cost analyses.[28]

JPDO and MITRE are currently conducting modeling work to examine benefits, costs, and risks associated with alternative assumptions regarding various future scenarios. This work will provide important information to stakeholders and decision makers regarding the validation of the benefits of NextGen capabilities, as well as the extent to which further capacity in the system may be required, and is still in the preliminary stages.

Mr. Chairman, this concludes my statement. I would be pleased to answer any questions that you or members of the subcommittee may have at this time.

GAO Contacts and Staff Acknowledgments

For further information on this testimony, please contact Gerald L. Dillingham, Ph.D., at (202) 512-2834 or dillinghamg@gao.gov. Individuals making key contributions to this testimony include Andrew Von Ah (Assistant Director), Kieran McCarthy, Richard Scott, Maria Mercado, Kevin Egan, Dominic Nadarski, Delwen Jones, Amy Abramowitz, and Bert Japikse.

[27] For example, planning and construction of a Boston Logan runway took over 30 years.

[28] GAO-09-479T.

Related GAO Products

Next Generation Air Transportation System: FAA Faces Challenges in Responding to Task Force Recommendations. GAO-10-188T. Washington, D.C.: October 28, 2009.

Responses to Questions for the Record: March 18, 2009, Hearing on ATC Modernization: Near-Term Achievable Goals. GAO-09-718R. Washington, D.C.: May 20, 2009.

Next Generation Air Transportation System: Status of Transformation and Issues Associated with Midterm Implementation of Capabilities. GAO-09-479T. Washington D.C.: March 18, 2009.

Responses to Questions for the Record: February 11, 2009, Hearing on the FAA Reauthorization Act of 2009. GAO-09-467R. Washington, D.C.: March 10, 2009.

Next Generation Air Transportation System: Status of Systems Acquisition and the Transition to the Next Generation Air Transportation System. GAO-08-1078. Washington, D.C.: September 11, 2008.

Next Generation Air Transportation System: Status of Key Issues Associated with the Transition to NextGen. GAO-08-1154T. Washington, D.C.: September 11, 2008.

Joint Planning and Development Office: Progress and Key Issues in Planning the Transition to the Next Generation Air Transportation System. GAO-07-693T. Washington, D.C.: March 2007.

Next Generation Air Transportation System: Progress and Challenges Associated with the Transformation of the National Airspace System. GAO-07-25. Washington, D.C.: November 13, 2006.

Results Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies. GAO-06-15. Washington, D.C.: October 21, 2005.

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U.S. House of Representatives
Committee on Transportation and Infrastructure

James L. Oberstar
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David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

Washington, DC 20515

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

April 26, 2010

Dr. Gerald Dillingham
Director, Physical Infrastructure Issues
U.S. Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Dr. Dillingham:

On April 21, 2010, the Subcommittee on Aviation held a hearing on **"NextGen: Long-Term Planning and Interagency Cooperation."**

Attached are questions to answer for the record submitted by Rep. Laura Richardson. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:pk
Attachment

APRIL 21, 2010
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: LONG-TERM PLANNING AND
INTERAGENCY COOPERATION"

QUESTIONS FOR THE RECORD
TO:

DR. GERALD DILLINGHAM
DIRECTOR, PHYSICAL INFRASTRUCTURE ISSUES
U.S. GOVERNMENT ACCOUNTABILITY OFFICE

1. How would NextGen respond to the current volcano situation in Iceland with regard to U.S. flight paths?

2. Dr. Dillingham, in 2007 the GAO reported that the JPDO's placement within the FAA and its dual reporting to both the FAA administrator and the FAA's Air Traffic Organization's Chief Operation Officer hindered its ability to interact on equal footing with ATO and other Federal agencies. However, the role of the JPDO Director has been constantly redefined over the past few years. Do you anticipate any problems with the current JPDO responsibility of serving as NextGen senior staff advisor for the Senior Policy Committee Chair?

United States Government Accountability Office
Washington, DC 20548

May 5, 2010

The Honorable Jerry F. Costello
Chairman
Subcommittee on Aviation
Committee on Transportation and Infrastructure
House of Representatives

Subject: *Responses to Questions for the Record: April 21, 2010, Hearing on NextGen: Long-term Planning and Interagency Cooperation*

Dear Chairman Costello:

This letter responds to your April 26, 2010, request that I address questions submitted for the record by a Member of the Subcommittee related to the April 21, 2010, hearing entitled *NextGen: Long-term Planning and Interagency Cooperation.* The answers to those questions are enclosed. The responses are based on our previous and ongoing work and my knowledge of the areas addressed by the questions. Since my responses are not technical in nature and are based in part on previously issued products for which we sought and incorporated agency comments, I did not seek agency comments on my responses to these questions.

If you have any questions or would like to discuss the responses, please contact me at (202) 512-4803 or dillinghamg@gao.gov

Sincerely yours,

Gerald L. Dillingham

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

Enclosure – 1

Enclosure

Responses to Post-Hearing Questions for the Record
"NextGen: Long-term Planning and Interagency Cooperation"
Subcommittee on Aviation
Committee on Transportation and Infrastructure
U.S. House of Representatives
Hearing held on April 21, 2010

Questions for Dr. Gerald L. Dillingham, Director
Physical Infrastructure Issues
U.S. Government Accountability Office

Questions for the Record Submitted by Representative Laura Richardson

How would NextGen respond to the current volcano situation in Iceland with regard to U.S. flight paths?

NextGen technologies would not allow aircraft to fly through or near volcanic ash clouds as flying through them would still cause catastrophic mechanical failure. However, based on the technologies and capabilities that are envisioned to be a part of NextGen, I think the proposed NextGen system could have a positive impact on U.S. flight paths during similar volcanic incidents. For example, with the implementation of the NextGen system, which will use Global Positioning Satellites (GPS) for navigation and surveillance, and includes improved weather and communication technologies, there would be greater flexibilities in available flight paths as compared to the current radio and radar based system. Currently, because of the lack of adequate radar coverage over the oceans, aircraft generally fly in what are referred to as "highways in the skies" or designated and fixed flight paths. The satellite-based NextGen system, with the capability to see, track, and communicate with any aircraft any place on the planet, could enable more flights to avoid the problem area. Flying the longer, more circuitous routes to avoid airspace affected by a volcanic eruption would still cause scheduling delays and lead to greater fuel expenditures. However, a full flight ground-stop, such as the one that occurred during the Icelandic eruption, might be avoided. Further, when the decision was made to return to normal operations, NextGen capabilities, which are designed to allow more efficient use of airport runways and taxiways and to increase the capacity of runways for takeoffs and landing, could expedite the system returning to full capacity. And, there are

many other examples of how the proposed system and its capabilities could make the national airspace safer and more efficient both in normal and abnormal circumstances.

In 2007 GAO reported that the JPDO's placement within FAA and its dual reporting to both the FAA administrator and the FAA's Air Traffic Organization's Chief Operating Officer hindered its ability to interact on equal footing with ATO and other federal agencies. However, the role of the JPDO Director has been constantly redefined over the past few years. Do you anticipate any problems with the current JPDO responsibility of serving as NextGen senior staff advisor for the Senior Policy Committee Chair?

I do not think that the JPDO Director's responsibility as the NextGen senior staff advisor to the Senior Policy Committee (SPC) will adversely affect JPDO's NextGen mission. In the past GAO has noted that JPDO's position within ATO may have led to the perception that it was not able to act as an "honest broker" for all the partner agencies. However, JPDO's current organizational structure, with JPDO moving out of ATO and the JPDO Director now reporting directly to the Deputy FAA Administrator, will raise its authority and visibility in internal relations with other FAA lines of businesses and in external deliberations with partner agencies. In addition, I believe that the JPDO Director's role as the adviser to the SPC could help provide JPDO with additional independence from ATO and increase its effectiveness. The current organizational structure is consistent with GAO's 2007 suggestion that the JPDO Director should be elevated within FAA to give greater visibility, credibility, and authority to the Director.

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U.S. HOUSE OF REPRESENTATIVES**

D E P A R T M E N T O F T H E A I R F O R C E

PRESENTATION TO THE TRANSPORTATION AND INFRASTRUCTURE COMMITTEE

AVIATION SUBCOMMITTEE

UNITED STATES HOUSE OF REPRESENTATIVES

SUBJECT: NextGen: Long-Term Planning and Interagency Cooperation

STATEMENT OF: Mr. Steven Pennington
Director of Bases, Ranges and Airspace
DCS/Operations, Plans and Requirements
AF/A3O-B
1480 Air Force Pentagon
Washington, DC 20330-1480
(703) 697-8489

21 APRIL 2010

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SUBCOMMITTEE ON AVIATION
U.S. HOUSE OF REPRESENTATIVES**

TESTIMONY
STATEMENT PREPARED FOR
HOUSE TRANSPORTATION AND INFRASTRUCTURE COMMITTEE
AVIATION SUBCOMMITTEE

Mr. Steven Pennington
Director of Bases, Ranges and Airspace
DCS/Operations, Plans and Requirements

Mr. Chairman, thank you very much for your invitation to testify today. As you know, the national air transportation system is a critical asset to our national security. The Department of Defense places a high priority on being a valuable contributor and responsive partner in operating that system today, and on planning for its transformation to meet the challenges of tomorrow.

The DoD has a strong partnership with the JPDO at both the executive and action officer levels. This partnership extends across the many domains of NextGen and is aggressively working towards a future air transportation system that integrates--to the maximum extent possible while protecting the safety of the public--manned and unmanned aircraft, point to point and special activity users, and the management of both cooperative system participants and potential hostile actors that threaten our Nation. This interagency team is actively engaged on initiatives such as sense and avoid, adaptive airspace and integrated surveillance in support of these goals.

Mr. Chairman, you wanted to know if the agencies participating in NextGen are properly resourced. Let me preface my answer to your question by saying the DoD is unique in that it plays several different roles related to our national airspace. Not only are we the largest single user of our national airspace system, with over 14,000 manned and unmanned aircraft in our fleet,

but we are also an airspace manager; an air navigation and airport service provider to military and civilian users in the US and abroad; and a regulator of our aircraft, aviators and service providers. So with the diverse mission set we have related to the national airspace system, I can tell you that you won't find in the DoD portfolio any one specific budget item labeled "NextGen". What you will find are several capability areas that support the NextGen transformation. In the FY11 President's Budget, we requested approximately $200M to fund these NextGen capability areas over the Future Years Defense Program, and we are building on that funding request in our input to the FY12 President's Budget for the out years.

As a user, the DoD shares the civil aviation community's challenge with the setting aside the resources to equip our aircraft with new technologies. With over 200 types of airframes in the DoD inventory and a 6-year budget planning cycle, this is never a small task. We are currently investigating ways to synchronize ADS-B avionics equipage with aircraft upgrades that are already planned, but even with careful planning, proposed ADS-B upgrades represent a significant new investment for the DoD in the near, mid and long term. We greatly appreciate the efforts the FAA has made to coordinate with airspace users (including DoD and other Federal agencies) in developing proposed ADS-B requirements, and we share the commercial aviation community's view that aircraft equipage requirements should be closely aligned with procedural changes that will yield the maximum operational benefits and cost savings to the most users.

I'd like to add one point to Dr. Toner's comments by addressing the importance of GPS to the entire NextGen transformation. To date, the DoD has invested over $15 billion in GPS, and the precise position, navigation and timing information that it provides is a critical component of meeting the performance-based construct of the NextGen transformation. Maintaining that capability is essential to the effective functioning of NextGen and its international counterparts, as well as the ability of our civil and military aircraft to operate around the globe.

The interagency partnerships we have on the NextGen team are essential. Together, we can meet our challenges head-on and build an air transportation system that is secure, adaptive, and responsive to the users of tomorrow.

Thank you again, Mr. Chairman for the opportunity to provide comments to the Committee. That concludes my prepared remarks and I'll be happy to address any questions you may have.

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

For Release on Delivery
Expected at
2:00 p.m. EDT
Wednesday
April 21, 2010
CC-2010-048

Challenges in Meeting FAA's Long-Term Goals for the Next Generation Air Transportation System

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

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

We appreciate the opportunity to testify today on the Federal Aviation Administration's (FAA) Next Generation Air Transportation System (NextGen). FAA is developing NextGen to replace the current air transportation system, which will not be sufficient to meet the anticipated future demand for air travel. FAA's goal for NextGen is to create a system by 2025 that will handle three times more air traffic while reducing FAA's operating costs. The NextGen effort involves a significant overhaul of the National Airspace System to shift from ground-based air traffic control to a satellite-based air traffic management system. Accomplishing this will require multibillion-dollar investments from both the Government and airline industry.

Since the effort began in 2004, we have reported on the cost and schedule risks and testified before this Subcommittee on the operational and management challenges that must be addressed to successfully implement NextGen in the near and midterm. Today, I will discuss three areas that have significant impact on advancing NextGen's long-term goals: (1) challenges and risks with ongoing FAA modernization projects that form the foundation of NextGen's success, (2) fundamental research and development issues that will impact NextGen performance, and (3) actions needed now to maximize a multi-agency approach to NextGen and leverage partner agencies' resources.

IN SUMMARY

FAA continues to face significant challenges in achieving its NextGen long-term goals. Central to this effort is the successful implementation of ongoing modernization projects that will provide platforms for new NextGen capabilities for enhancing capacity. However, key multibillion-dollar programs have experienced problems, and FAA has yet to fully determine their NextGen-specific requirements. These platforms include the $2.1 billion En Route Automation Modernization (ERAM) program. Delays with this and other projects will have a cascading effect on NextGen plans now and well into the future. One critical step to avoid risks with NextGen's cost, schedule, and capabilities is addressing gaps in partner agencies' research and development efforts and long-term budgets and plans. We identified actions that can be taken now to strengthen the multi-agency approach, better leverage Federal research projects, and prevent duplicative efforts.

BACKGROUND

In 2003, Congress mandated that FAA establish the Joint Planning and Development Office (JPDO) and that it create and carry out a plan for implementing NextGen by 2025. Congress also required the JPDO to coordinate diverse research efforts of other Federal agencies, including the Departments of Defense (DOD), Commerce,

Homeland Security (DHS), and the National Aeronautics and Space Administration (NASA). While the initial planning for NextGen focused on implementing improvements through 2025, FAA has recently refocused and emphasized improvements that can be implemented in the near and midterm, defined as between 2012 and 2018.

FAA FACES CHALLENGES IN KEEPING NEXTGEN-CRITICAL MODERNIZATION PROJECTS ON TRACK

FAA faces challenges in keeping a number of modernization programs on track. These programs are critical as they represent enabling platforms for NextGen initiatives. Delays or performance shortfalls in any of these systems will impact NextGen's development and implementation. For example, FAA has not yet established firm requirements that can be used to develop cost and schedule estimates for modifications to existing terminal automation systems, which will allow controllers to display and use satellite surveillance to better manage traffic. According to FAA, it may take an additional 1 to 2 years to develop requirements for these systems and other mid-term NextGen efforts.

Technical Problems With ERAM Pose Cost and Schedule Risks for NextGen

The $2.1 billion ERAM program will replace the existing hardware and software at facilities that manage high-altitude traffic. ERAM, however, is experiencing software-related problems at FAA's key initial operating site in Salt Lake City. These problems include radar processor failures, problems in handing off traffic between controllers, and critical flight information being paired to the wrong aircraft. FAA is spending about $14 million per month to resolve these problems and deploy ERAM at other sites. However, these costs do not include enhancements for NextGen, which have not been established but are expected to cost several billion dollars.

While FAA does not believe the system to be fundamentally flawed, it has postponed the in-service and operational readiness decisions for ERAM at Salt Lake City by 6 months, both originally planned for December 2009.[1] We have not assessed the severity of the problems with ERAM, but FAA officials are concerned about the ERAM transition at larger, more complex sites like Chicago and New York. These locations have unique airspace and operational issues that will require adaptation of the system's software to accommodate their needs.

[1] An in-service decision (ISD) authorizes deployment of a system into the operational environment. It occurs after demonstration of initial operational capability at the key test site. The decision establishes the foundation for operational readiness to be declared at key site and subsequent sites following completion of joint acceptance and inspection by the operating service organization and certification of compliance with information security requirements. The in-service decision is based on testing to verify performance and operational readiness. For ERAM, the Operational Readiness Decision (ORD) is the final operational readiness certification that is required for the system to become operational and no longer require retention of the HOST Computer system as a back-up.

FAA officials acknowledge that it is unlikely that all 20 systems will be fielded nationwide and controlling traffic on a regular basis by December 2010 as planned. FAA must take steps to ensure that problems with ERAM are resolved and make realistic adjustments to the program's schedule. FAA must also assess what trade-offs in capabilities and adjustments to deployment plans and budgets are needed. Prolonged problems with ERAM will directly impact the implementation of NextGen efforts now and in the future, including key NextGen systems such as Automatic Dependent Surveillance-Broadcast (ADS-B)[2] and Data Communications.[3]

Failures with FAA's Telecommunications Services Raise Questions as to System Reliability and FAA Oversight

Recent problems with FAA's Telecommunications Infrastructure (FTI) program raise questions about whether the system can be relied on for NextGen initiatives and whether FAA is adequately overseeing the contractor. FTI is a $3.5 billion major effort to modernize communications among FAA facilities. An FTI failure last November delayed over 800 flights nationwide, and it took FAA and the contractor over 5 hours to diagnose, correct, and restore service. The cause of the failure was traceable to a series of problems and mistakes that occurred when the contractor was transitioning to a new fiber optic network. The incident also impacted DOD and DHS surveillance capability and raised questions about the integrity of the network. In response to the outage, FAA established review teams to examine the soundness of FTI's management as well as the overall architecture and system design.

Our work shows that FAA's oversight of the contractor was not as effective as it should have been. For example, FAA had no indication that a contractor engineer had configured the network in error, which contributed to the outage. FAA was also unaware that an automated tool the contractor uses to generate alerts of a network failure was turned off, which is why it took 5 hours to locate the problem within the network. Our work—and FAA assessments—show that periodic independent reviews of the existing and planned FTI architecture are also needed since FAA has already approved the same contractor to continue modernizing the FTI network.

It remains unclear if the planned FTI network is appropriately designed or managed to support future NextGen initiatives, such as data communications between air and FAA ground systems. Therefore, it will be important for FAA to follow through on its plans to examine the broader implications of the November outage with respect to NextGen and the Agency's management of FTI.

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[2] ADS-B offers surveillance, like radar, but with more precision. ADS-B provides air traffic controllers and pilots with more accurate information to help keep aircraft safely separated in the sky and on runways.

[3] Data Communications (Data Comm) will provide comprehensive data connectivity, including ground automation message generation and receipt, message routing and transmission, and aircraft avionics requirements. Data Comm is expected to automate repetitive tasks, supplement voice communications, and enable ground systems to use real-time aircraft data to improve traffic management efficiency.

Delayed Decisions on Modernizing Current Terminal Automation Systems Will Impact Advanced NextGen Capabilities

FAA has not made critical decisions for modernizing air traffic control systems that controllers rely on to manage traffic in the vicinity of airports. FAA currently operates two different terminal systems and faces challenges with sustaining them and introducing new capabilities. For example, the Standard Terminal Automation Replacement System (STARS) is in use at over 50 medium sites, such as Philadelphia. However, much of the system's hardware is out of date and may soon be unsustainable. STARS also lacks processing power and needs upgrades to fully accommodate near-term NextGen surveillance capabilities. Likewise, the Common Automated Radar Terminal System (CARTS) at 7 large, complex sites and 99 small ones needs modernization and enhancements to utilize new capabilities, such as ADS-B for controllers. FAA is concerned that it will not meet its goal of displaying ADS-B information at selected terminal sites by 2013. FAA is examining alternatives for upgrading its terminal modernization needs and expects to make a decision sometime this summer. The cost estimates exceed $2 billion for each alternative.

FUNDAMENTAL RESEARCH, DESIGN, AND DEVELOPMENT ISSUES THAT WILL DIRECTLY IMPACT NEXTGEN'S LONG-TERM COST, SCHEDULE, AND PERFORMANCE REMAIN UNRESOLVED

FAA is coordinating with JPDO partner agencies on long-term NextGen plans, but has yet to make critical system design decisions. Moreover, we found significant research and development gaps that will affect progress as well as the cost, schedule, and performance of NextGen. The future NextGen system called for in JPDO planning documents is a complex, software-intensive system that relies on advanced automation to track and manage aircraft in all phases of flight. NASA is taking a large role in developing the complex software algorithms envisioned for NextGen capabilities. Overall, NASA's work is fairly well aligned with JPDO plans. However, there are unresolved issues with the Department of Commerce, DOD, and DHS with respect to integrating weather information into advanced automated systems, determining joint surveillance requirements to track aircraft, incorporating Unmanned Aircraft Systems (UAS), and assessing NextGen's human factors impact.

FAA Has Not Made Key Decisions About the Design of the NextGen System

According to FAA, pending decisions on several key design issues will determine NextGen capabilities, timing, and costs. These include:

- **Air/Ground Division of Responsibility:** FAA needs to decide how much responsibility will be delegated to pilots in the cockpit and what duties will remain with controllers and FAA ground systems for tracking aircraft.

- **Level of Automation:** The decision on the degree of human involvement in traffic management and separating aircraft is linked to the outcome of the division of responsibility between aircrew and controllers (and related ground systems). Possible options range from today's largely manual flight management to a primarily automated system centered on machine-to-machine exchanges with little controller involvement.

- **Facilities Consolidation:** A major factor in both capital and operating costs for NextGen is the degree to which the Agency eliminates or consolidates FAA facilities. FAA must make critical decisions on facility requirements, which in turn will significantly impact the type and number of systems needed to support NextGen.

Continued delays in developing requirements and in making key program decisions will slow NextGen's progress. A recent NextGen portfolio analysis, commissioned by the JPDO, already shows that some NextGen automated air and ground capabilities originally planned for 2025 may not be implemented until 2035 or later and could cost the Government and airspace users significantly more than the projected cost estimate of $40 billion.[4]

Disagreements Between FAA and the Department of Commerce Impact NextGen Weather Systems

The Department of Commerce has the lead role in developing the 4D Weather Cube, the weather data system planned for NextGen.[5] However, technical disagreements with FAA over how to synchronize national applications of observed, forecast, and disseminated data may delay the system beyond its 2013 scheduled completion date. The 4D Weather Cube is expected to provide a common picture of weather for the entire country that airspace users may view and apply directly in flight planning and responding to inclement weather.

The JPDO conducted an assessment of weather efforts, which identified policy, funding, and technical issues. Key issues focus on defining requirements and who pays for what capabilities. For example, in our discussions with officials from Commerce's National Oceanic and Atmospheric Administration (NOAA), we found that work on the 4D Weather Cube focuses exclusively on Commerce's requirements. Additionally, NOAA expects FAA to provide funding or reimbursement for costs to support development of NextGen-related requirements.

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[4] The analysis is referred to as the NextGen portfolio or "trade space" analysis. FAA is continuing to update and revise the analysis. The study sought to examine the costs, risks, and benefits of the JPDO Integrated Work Plan targeted for 2025.

[5] The 4D Weather Cube is to be a distributed, national database of gridded and interpolated weather observations and automated analyses, scaled consistently over time for any location above the continental United States. It is expected to provide observations with respect to latitude, longitude, altitude, and time.

To address these difficult issues, FAA, the Department of Commerce, and DOD have developed a NextGen Weather Plan. In addition, the JPDO created the NextGen Executive Weather Panel, co-chaired by the FAA Senior Vice President for NextGen and Operations Planning and the NOAA Assistant Administrator for Weather Services to improve coordination and cooperation between the three agencies. However, the agencies still have not established a formal NextGen weather agreement to better define their roles and expectations. While these efforts have resulted in improved cooperation, more work is needed to determine if system requirements for the 4D Weather Cube are achievable.

Partner Agencies Have Not Established Joint Surveillance Requirements

Joint surveillance requirements are needed to track aircraft and achieve the integrated surveillance and security capabilities envisioned for NextGen. While DOD and DHS do not have any budget or programs specifically identified for NextGen, one of their main concerns is maintaining security coverage for the United States. This includes tracking aircraft designated as potentially non-cooperative targets, a capability currently provided by FAA.[6] Moreover, when FAA implements ADS-B, it plans to decommission an undetermined number of unneeded radar.[7] If DOD or DHS determine that some of these radar must remain in service, these agencies would likely have to assume the responsibility for maintenance and replacement costs. Without closer coordination and agreement about surveillance requirements, there is potential for duplicative efforts and gaps in airspace coverage that could impede the integrated surveillance and security capabilities envisioned for NextGen.

Cross-Agency Attention Is Needed To Safely Incorporate Unmanned Aircraft Systems Into the National Airspace System

Government and private-sector interest in UAS operations is growing dramatically, as the absence of a pilot on board the aircraft allows it to perform missions that generally would not be possible with manned aircraft. Therefore, the evolving use of UAS technology has become an important issue for FAA, DOD, DHS, and other agencies. However, there are no established cross-agency requirements for UAS or a clear understanding of how they will be used in a NextGen environment.

In addition, a number of safety issues must be addressed, such as risks of UAS operations near populated areas and potential collisions with manned aircraft. FAA currently authorizes Government UAS operations on a limited basis but is now developing a regulatory framework to address the unique characteristics of UAS. This will require new standards and procedures to assess the impact of UAS on air traffic operations and safety, which will also impact development of NextGen procedures.

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[6] The term "non-cooperative targets" refers to aircraft that are not transmitting flight information to FAA ground systems.

[7] We are referring to secondary radar. Secondary radar operates on the coded reply sent from the airborne radio beacon transponder in an aircraft in response to an interrogation signal sent from the ground station.

Addressing UAS operations has been a recurring issue in the JPDO's annual cross-agency gap analysis. The analysis reiterates the need to continue work between agencies to develop cross-agency requirements, standards, procedures, and avionics requirements. Thus far, only NASA has taken actions concerning UAS operations by including an additional $30 million in its fiscal year 2011 budget request to develop technologies that will allow unmanned aircraft routine access to the National Airspace System. This effort will focus initially on Government-owned and -operated UAS aircraft, followed by private-sector UAS aircraft.

FAA Has Not Yet Developed a Cross-Agency Plan To Identify and Address NextGen Human Factors Issues

NextGen technologies will introduce new systems and responsibilities for controllers and pilots and change the way they use existing systems. As we reported in 2007, a focused research effort on how NextGen changes will impact the roles of controllers and pilots is needed to ensure new concepts and technologies can be safely implemented.[8] However, FAA has not developed a cross-agency plan to identify and address these issues. FAA will need to develop a plan that (1) establishes an agreed-upon set of initial focus areas for research, (2) inventories existing facilities for research, and (3) capitalizes on past and current research. This is important because both NASA and FAA conduct human factors work specifically for air traffic management. In the past, FAA's failure to provide adequate attention to human factors research when implementing STARS resulted in significant cost increases and schedule slips.

ACTIONS NEEDED TO STRENGTHEN FAA'S COORDINATION WITH PARTNER AGENCIES AND MANAGEMENT OF LONG-TERM NEXTGEN INITIATIVES

A multi-agency approach to NextGen that allows FAA and partner agencies to coordinate and align diverse research and other resources is not only required by law but also key for successful implementation since FAA conducts little long-term air traffic management research. We have identified a number of actions that can strengthen the multi-agency approach, better leverage resources, and prevent duplicative efforts.

Clarify the Role and Mission of the JPDO

There is confusion within FAA and industry about the role the JPDO will play in advancing NextGen other than supporting the multi-agency approach. FAA reorganized its NextGen efforts in 2008 and placed the JPDO under the FAA Senior

[8] OIG Report Number AV-2005-031, "Joint Planning and Development Office: Actions Needed To Reduce Risks With the Next Generation Air Transportation System," February 12, 2007. OIG reports are available on our website: www.oig.dot.gov.

Vice President for NextGen and Operations Planning within the Air Traffic Organization. FAA then established a separate NextGen Integration and Implementation Office. Last month, FAA announced another organizational change in which the JPDO will now report to the Deputy FAA Administrator. It is uncertain what role, if any, the JPDO will play in critical NextGen development issues, such as simulation and modeling, technology transfer, prototype development, or NextGen policy issues. Department of Transportation and FAA officials have recognized the need to better define the mission of the JPDO.

Establish Research Priorities and Develop an Integrated NextGen Budget Document That Aligns Partner Agency Resources

FAA and the JPDO have been working on a NextGen integrated budget document (similar to the Office of Management and Budget Exhibit 300) for over 4 years.[9] This tool is important to track the involvement of partner agencies in NextGen and to align resources. While generally supportive of NextGen, some partner agencies have not adjusted their research and development budgets and programs or changed requirements to accommodate NextGen efforts. The budget identifies NextGen-specific funding from FAA and NASA and a token amount from Commerce but does not yet quantify investments from DOD or DHS.

The lack of progress with the integrated budget document is traceable to a number of factors. These include complexity, the lack of a common method to identify NextGen-related budget items, and FAA's focus on running and maintaining the existing system. However, until the integrated budget document is completed, it will be difficult for FAA and Congress to determine (1) if the JPDO is leveraging the right research, (2) if funding is adequate for specific efforts, or (3) how projects will improve the air transportation system and at what cost.

Fully Leverage DOD Research and Development for NextGen

Currently, DOD contributes to NextGen as a member on various committees, boards, and working groups. DOD has also taken the lead in network-centric operations efforts and is working with FAA and the JPDO on surveillance issues.[10] However, neither FAA nor the JPDO have done a complete assessment of DOD's vast research and development portfolio (and already derived capabilities). FAA officials stated this is due in part to an agency culture that is reluctant to embrace technologies not developed by FAA.

DOD's experience with enterprise architecture development, large-scale systems integration, and overall management of high-risk efforts could prove useful. Moreover, DOD's work on a satellite-based Joint Precision Approach and Landing

[9] The Office of Management and Budget Exhibit 300 is designed to ensure that the business case for investments is made and tied to agency mission statements and long-term goals.

[10] DOD's Network-Centric Operations is a robust networking of information for geographically dispersed forces.

System is a particularly important area where FAA could leverage and use DOD technology to help reduce risk with precision landing systems envisioned for NextGen.[11] DOD research and development may also have NextGen value-added capabilities for areas such as surveillance and security of aircraft, communications, and navigation services.

Secure the Skill Set Necessary To Execute NextGen and Ensure Sufficient Contract Oversight

In response to a recommendation we made in 2007, FAA commissioned the National Academy of Public Administration (NAPA) to assess the skill sets needed for NextGen implementation. In its September 2008 report, NAPA identified 26 competencies in which FAA lacks both the skills and capabilities to execute NextGen.[12] These include program management, software development, contract administration, and systems engineering with an emphasis on human factors considerations.

FAA recently completed an initial acquisition workforce plan to address recommendations in the NAPA study—an important first step. However, the plan requires more development and clarification to be useful. For example, while FAA estimates it will require approximately 350 new hires, the plan does not specify how or when FAA will actually secure the necessary skill sets and expertise. We have work underway to examine FAA's plans for determining its acquisition workforce needs and progress in addressing them.

NextGen implementation will also require significant contract oversight. This is important because FAA plans to award a series of support service contracts worth $7 billion, referred to as System Engineering 2020 (SE-2020). We have begun a review to assess FAA's plans, policies, and procedures to administer and oversee these contracts with a focus on whether the contractual arrangements are being structured and implemented to meet NextGen program objectives.

[11] The Joint Precision Approach and Landing System (JPALS) is a satellite-based system that will allow aircraft to land on any suitable land or sea-based surface worldwide, while minimizing the impact to airfield operations because of a low ceiling or poor visibility.

[12] Report by a panel of the National Academy of Public Administration, "Identifying the Workforce To Respond to a National Imperative - The Next Generation Air Transportation System (NextGen)," September 2008.

CONCLUSION

The successful implementation of NextGen is important to the Nation as it has potential to significantly enhance capacity and reduce delays. While FAA is making progress in addressing NextGen's challenges, a number of critical actions are still needed, many of which focus on aligning agencies' research and resources to reduce development costs and mitigate risks with a multibillion-dollar effort that will span decades. Unless these issues are effectively addressed in the near term, FAA runs the risk that NextGen may not deliver the long-term benefits needed to meet the expected future demand for air travel.

This concludes my statement, Mr. Chairman. I will be happy to address any questions you or the other Members of the Subcommittee may have.

U.S. House of Representatives
Committee on Transportation and Infrastructure

James L. Oberstar
Chairman

David Heymsfeld, Chief of Staff
Ward W. McCarragher, Chief Counsel

Washington, DC 20515

John L. Mica
Ranking Republican Member

James W. Coon II, Republican Chief of Staff

April 26, 2010

The Honorable Calvin L. Scovel, III
Inspector General
U.S. Department of Transportation
1200 New Jersey Avenue, SE
West Building – W70-300
Washington, D.C. 20590

Dear Inspector General Scovel:

On April 21, 2010, the Subcommittee on Aviation held a hearing on **"NextGen: Long-Term Planning and Interagency Cooperation."**

Attached are questions to answer for the record submitted by Rep. Laura Richardson. I would appreciate receiving your written response to these questions within 14 days so that they may be made a part of the hearing record.

Sincerely,

Jerry F. Costello
Chairman
Subcommittee on Aviation

JFC:pk
Attachment

APRIL 21, 2010
SUBCOMMITTEE ON AVIATION
HEARING ON
"NEXTGEN: LONG-TERM PLANNING AND
INTERAGENCY COOPERATION"

QUESTIONS FOR THE RECORD
TO:

THE HONORABLE CALVIN L. SCOVEL, III
INSPECTOR GENERAL
U.S. DEPARTMENT OF TRANSPORTATION

1. How would NextGen respond to the current volcano situation in Iceland with regard to U.S. flight paths?

2. Mr. Scovel, you mentioned that there has been very little progress with a NextGen integrated budget document due to a number of factors, including complexity, lack of a common method to identify NexGen budget items, and the FAA's focus on the current system. What is being done to address these factors, and when can we expect to see the budget document?

Question for the Record
Submitted by Representative Laura Richardson
For April 21, 2010 Testimony

Question 1: Mr. Scovel, how would NextGen respond to the current volcano situation in Iceland with regard to U.S. flight paths?

Answer: The recent disruption of air traffic across Europe shows the need to for improved collaborative decision-making processes and contingency planning for both governments and airspace users. This will allow responses to problems involving volcanic ash clouds to be based upon the best information and disseminating it to all stakeholders in real-time. While our office has not examined this issue specifically, an important element of NextGen is improving the information sharing process and getting up-to-date information quickly to pilots, controllers, and airline dispatchers. According to FAA, volcanic ash information will be treated like a significant weather event. In the NextGen acquisition portfolio, FAA is developing the NextGen Network Enabled Weather (NNEW) program which is expected to provide all airspace users with a single authoritative source for weather information that is consistent, reliable, and up-to-date. FAA's efforts will depend on the successful integration of information provided by the National Oceanographic and Atmospheric Administration into the NextGen system.

Question for the Record
Submitted by Representative Laura Richardson
For April 21, 2010 Testimony

Question 2: Mr. Scovel, you mentioned that there has been very little progress with a NextGen integrated budget document due to a number of factors, including complexity, lack of a common method to identify NextGen budget items, and the FAA's focus on the current system. What is being done to address these factors, and when can we expect to see the budget document?

Answer:
FAA and Joint Planning and Development Office (JPDO) officials recognize the importance of completing the NextGen integrated budget document and actions are underway to address our concerns. The JPDO will be responsible to coordinate the effort through the Office of the Secretary of Transportation which will in turn work with the various partner agencies, including the Department of Defense. The results will be provided to the JPDO for a final review and compilation of the budget data. FAA and JPDO officials are planning to complete the NextGen integrated budget documents in time for the fiscal year 2012 budget submission to Congress.

HOLD FOR RELEASE
UNTIL PRESENTED
BY WITNESS
April 21, 2010

Statement of
Dr. Jaiwon Shin
Associate Administrator for the
Aeronautics Research Mission Directorate
National Aeronautics and Space Administration

before the

Subcommittee on Aviation
House Committee on Transportation & Infrastructure
U.S. House of Representatives

Chairman Costello, Ranking Member Petri, and Members of the Subcommittee, thank you for the opportunity to appear before you today. I am here to discuss NASA's Aeronautics Research program, how we in NASA Aeronautics work with the Joint Planning and Development Office (JPDO), and how our research efforts support the development of technologies that will be necessary for the realization of the Next Generation Air Traffic Management System (NextGen).

Through interagency cooperation, NextGen will provide key tangible benefits. Advancements to aircraft and aircraft operations produce dollars and jobs for the U.S. economy, improve the environment, and support energy independence through efficiency as well as the development of alternative fuels. Aviation is also a major contributor to U.S. exports. Since operating costs and environmental constraints are impediments to the future growth of aviation, NextGen efforts will focus on more efficient aircraft and aircraft operations to facilitate this growth.

Specifically, a significant issue facing our nation and the world is the increase in air traffic congestion and the noise and emissions generated by aircraft as they operate in the National Airspace System (NAS) and around the globe. Current air traffic management processes and procedures do not provide the flexibility needed to allow for the types of innovation through which the system could provide for the growing demand. In order to meet the need for increased capacity and efficiency while improving safety, new technologies and processes must be implemented. Addressing this problem will require research and development in both efficient air traffic operations and in new vehicle concepts.

Interagency Cooperation and Coordination

Although the current economic climate has slowed the growth in air traffic demand, only through a coordinated interagency research and development effort will the nation be able to accommodate predicted air traffic growth in the NAS and the integration of near-term innovations in a timely manner. The intricate, crosscutting nature of the NAS requires cooperation and coordination among federal agencies in order to achieve both the near-term improvements and the NextGen vision. The coordinated efforts of the JPDO partners including the Federal Aviation

Administration (FAA), NASA, the Departments of Defense (DoD), Homeland Security, and Commerce, as well as the aerospace industry have resulted in the NextGen Concept of Operations, Enterprise Architecture, and Integrated Work Plan.

To realize the ideas captured in the NextGen Concept of Operations requires a coordinated and extensive research and development effort. The Federal Government's investments and expenditures in aeronautics research and development are guided by the National Aeronautics Research & Development Policy (Policy) and its related National Aeronautics Research and Development Plan (Plan). Under the direction and leadership of the White House's Office of Science and Technology Policy, this Policy was issued by the President in 2006 and its corresponding Plan was released to the public in 2007 and updated in February 2010. The goals and objectives defined in the Plan fall broadly under the categories of mobility, national security and homeland defense, aviation safety, and energy and the environment. The NASA aeronautics research programs align with these categories, or areas of emphasis. Through the Plan, coordination of the Federal Government's research efforts and programs is starting to take shape. A great number of the goals and objectives defined in the National Aeronautics Research and Development (R&D) Plan directly address the development of the NextGen.

From the earliest days of the JPDO, NASA has made significant contributions to the vision and plans for NextGen and, along with other partner agencies and industry, continues to make vital science and technology (S&T) investments with the goals of realizing near-term improvements and enabling the long-term NextGen vision. The need for increased levels of coordination is ever present if the U.S. is to leverage each federal agency's areas of expertise, ensure coordination of research programs, and recognize mutually beneficial and well informed S&T investments. This will ensure that as new technologies and processes are developed, they can be implemented in the near term and in the longer term future.

To date, the JPDO documents mentioned previously have been valuable for integration and coordination. NASA's research and analysis aided in their development. Specifically, NASA participates in the Trajectory Based Operations (TBO) study. In this way NASA research is linked to both near and far term TBO efforts and will remain consistent with the vision. The TBO holds out the potential to significantly increase the efficiency of routing and spacing aircraft in the NAS. NASA has also worked with the JPDO to incorporate the results from the NASA *Integration of Advanced Concepts and Vehicles in NextGen* study into the Integrated Work Plan (IWP). This broadens the NextGen architecture described in the Work Plan to allow achievement of the full benefit that could be derived from future aircraft.

NASA Aeronautics Research

NASA Aeronautics participates as the lead Agency for 32 research elements within the Integrated Work Plan. These elements span the four research programs within the NASA Aeronautics Research Mission Directorate (ARMD): the Fundamental Aeronautics Program, the Airspace Systems Program, the Aviation Safety Program, and the Integrated Systems Research Program.

The **Airspace Systems Program** closely aligns with the goals of NextGen. NASA's research in this area is multi-faceted, from near-term improvements to innovative concepts and technologies covering gate-to-gate operations on the airport surface, on runways, in the dense terminal area, and in the many en route sectors of the NAS. However, achieving the benefits that can result from NextGen, including increased NAS operational throughput, efficiency, and capacity, and a reduction in environmental impacts, will require contributions from all NASA research programs.

The Environmentally Responsible Aviation (ERA) Project within the **Integrated Systems Research Program** supports the JPDO research element that calls for technologies that reduce noise and emissions in the future generation large transport aircraft. In order to achieve these goals, ERA is coordinating with and building upon the near-term efforts of the FAA's Continuous Lower Energy, Emissions and Noise (CLEEN) program and mid-term efforts of DoD's Adaptive Versatile Engine Technology (ADVENT)/ Highly Efficient Embedded Turbine Engine (HEETE)/AD-HEETE programs.

The **Fundamental Aeronautics Program** includes foundational research in the disciplines of materials and structures, propulsion systems, and airframe systems in order to reduce fuel burn, noise, and emissions for subsonic fixed wing aircraft as well as develop revolutionary vehicle concepts and tools. It also includes fundamental research to increase the performance and lower the environmental impact of rotorcraft (i.e. helicopters and tilt-rotors) along with environmentally compatible and economically viable supersonic cruise aircraft that can fly at supersonic speeds over the land.

NASA is a member of the Commercial Aviation Alternative Fuels Initiative (CAAFI), a consortium of federal, academic, and industrial organizations that is working on the development of alternative aviation fuels. These fuels hold the promise of providing energy independence from foreign sources and also reducing the environmental footprint of aviation. Specifically, the Fundamental Aeronautics Program's Alternative Aviation Fuel Experiment (AAFEX) is teaming with 11 other research groups to measure and document the emissions characteristics of synthetic fuels and biofuels and blends of these alternative fuels. Through these tests, researchers are evaluating the fuels' impact on engine performance and aircraft emissions and building a publicly available database of fuel properties and emissions characteristics.

The **Aviation Safety Program** builds upon the unique safety-related research capabilities of NASA to develop tools, methods, and technologies that will improve the intrinsic safety attributes of current and future aircraft in the air and on the ground, and to overcome aircraft safety technological barriers that would otherwise constrain the full realization of NextGen. The Aviation Safety Program has provided close collaboration and support to the FAA for the development of the Aviation Safety Information Analysis and Sharing (ASIAS) system, which enables FAA and industry to proactively identify, analyze, and correct safety issues in a protected environment.

Research Transition Teams

The ARMD research program is not limited to research activities focused solely on low technology readiness levels, or TRLs. In the recent past, fundamental research at lower TRLs has certainly been the focus of our research efforts. With the advent of the Integrated Systems Research program in FY 2010 and through a new structure of the Airspace Systems Program, NASA is committing to develop advanced technologies and applications that target NextGen needs and support maturity of those applications for transition to implementing organizations. NASA's experience has been that the aeronautics community has been adept at making use of our research results and technologies across the spectrum of technology readiness levels. The new structure of our Airspace Systems Program (ASP) will support and enhance existing efforts to initiate integrated system research in key areas of R&D gaps identified by JPDO. ASP's activities will also include the collaborative engagement with the FAA as planned within the recently created Research Transition Teams (RTTs), accelerating progress for NextGen

advancements, and effectively transitioning advanced capabilities to the FAA for certification and implementation. The explicit intent of these cross-agency RTTs is to help bridge the maturity gap between advanced concept development and the validation of such concepts in relevant operational environments enabling the FAA to make informed investment and deployment decisions.

Integrating NASA's Research and Development activities with FAA's role in the deployment of operational capabilities in the National Airspace System, the efforts being coordinated through the RTTs clearly address technology readiness level activities that demonstrate the use of technologies in relevant environments. The RTTs build upon the FAA's prior successful deployments of NASA-developed technologies, such as the Traffic Management Advisor with enhancements for major metropolitan areas and surface management tools. To date there are four RTTs that cover near-, mid-, and long-term capabilities stretching from the en route airspace to the terminal and surface including traffic flow management. The near term focus is the technology transfer of mature concepts and research. For the mid-term, the FAA and NASA are jointly engaging earlier in the research to develop the products needed for transfer; and for long-term research, FAA is providing NASA with subject matter expertise to support the research.

NASA Aeronautics has contributed significantly to the JPDO driven effort to identify high-value focus areas and R&D gaps revealed upon creation of the NextGen Concept of Operations and the complementary Integrated Work Plan (IWP). As mentioned previously, NASA has taken the lead in addressing research for 32 critical elements of the IWP. This includes new or ongoing support for focus areas such as air/ground functional allocation, integrated surface/arrival/departure management, closely-spaced parallel runways, integration of weather information in Air Traffic Management (ATM) decision support, and verification and validation of flight critical, complex systems. The work of the aforementioned restructured Airspace Systems Program and the RTTs also serve to move promising advanced capabilities faster and farther along the path to maturity. Close and collaborative engagements with the FAA are defining research deliverables, evaluations, and field trials in relevant environments, and enabling subsequent implementation decisions. NASA appreciates that the RTT process is viewed by the stakeholder community as a positive joint activity with the FAA. NASA is encouraged to build on these successes as technologies mature to the point where transition considerations are warranted. It is fully expected that these decisions will be made jointly with NASA and FAA senior leadership and facilitated by the JPDO to enable the most effective investment of government resources.

Demonstrations of Advanced Technology Benefits

Effective collaboration, cross-agency leadership, and strategic partnering have provided for several recent and upcoming demonstrations of advanced technology benefits. For example, NASA has been developing concepts, technologies, and procedures to support Continuous Descent Arrival (CDA) projects for improved efficiency and reduced environmental impact. A complementary project, the Enroute Descent Advisor (EDA) combines scheduling of high-density flows in terminal approach airspace with a concept known as Tailored Arrival (TA) and Airborne Precision Spacing (APS). Tailored arrivals allow aircraft to fly a continuous gliding descent at low engine power from cruise altitude to the runway, thereby minimizing fuel consumption, environmental emissions, and noise pollution.

Airborne Precision Spacing is a technology that allows the aircraft to merge and maintain spacing (and high throughput) behind other aircraft during their arrival phase while on continuous or near-continuous descent. The combinations of these capabilities, in the civil aeronautics arena, have

obvious significant user benefits. Studies from the San Francisco trials indicated that continuous descents enabled by tailored arrivals during busy traffic conditions can reduce fuel consumption by as much as 3,000 pounds (approximately 450 gallons) per flight for large aircraft, with a corresponding reduction of carbon dioxide of up to 10,000 pounds per flight.

United Airlines, Qantas Airlines, Air New Zealand and Japan Airlines are early implementers of the tailored arrivals concept at San Francisco and Los Angeles airports. UPS has determined that Merging and Spacing operations with CDAs will allow for a savings of 1 million gallons of fuel per year. A field evaluation conducted in the fall of 2009 was jointly executed by NASA and the FAA through the Efficient Flow Into Congested Airspace RTT.

The San Francisco Stratus and Flow Scheduling decision tool, scheduled for demonstration in the summer of 2010 uses a probabilistic forecast of dense fog burn-off at San Francisco International Airport to enable traffic managers to make more informed decisions on Ground Delay Programs (GDPs). Benefits include reducing the overall ground delay, unused arrival slots, and the number of aircraft affected by the GDPs. This decision support tool, if approved and implemented, allows traffic managers to more accurately plan the termination of GDPs and release aircraft for flight. Preliminary studies anticipate substantial reductions of ground delay and millions of dollars of estimated savings in fuel cost and time to airlines per year.

Another technology development focused on operational efficiency is the Oceanic In-Trial Climb and Descent Procedures using Automatic Dependent Surveillance-Broadcast (ADS-B) in non-radar airspace. These are procedures which allow participating aircraft to safely conduct climbs and descents outside radar coverage in closer proximity to nearby traffic. The procedures benefit both airlines and the traveling public by providing long-haul oceanic flights with easier access to fuel-efficient, turbulence-free altitudes. The ADS-B-based procedure has been approved by International Civil Aviation Organization, and field trials with the FAA and United Airlines are planned for 2011. Potential fuel savings are projected to be over $100,000 per airplane per year.

By providing advanced data mining tools to the aviation community, NASA collaborates on improving the ability to manage and portray vast amounts of data available from many sources. Enabled by the Aviation Safety Program, NASA has open-sourced key data mining algorithms used to analyze data from flight recorders through DASHlink, a collaborative website with over 300 members. Recently, Southwest Airlines acquired ORCA, one such advanced data mining tool. The airline plans to incorporate this tool into their daily operation quality reviews.

Conclusion

NASA has many examples of the innovative and relevant research results produced by ARMD's fundamental research programs for the past several years. NASA appreciates that the Congress has reacted favorably to the progress and contributions of the Agency's research program and has appropriated funding to support programs and projects that will develop integrated systems capabilities, higher TRL products, and technology transition processes to deliver advanced concepts to NextGen. These funds have and will allow NASA to establish a sustainable balance of robust, innovative R&D and advanced development activities that transition capabilities to industry for implementation and broad systems benefit. NASA and interagency NextGen activities continue to support U.S. economic growth and environmental improvement through advancements to aircraft and aircraft operations.

The continued close coordination of research and development activities among the JPDO member agencies will be a key to addressing the dual concerns of traffic congestion and environmental impact. Through the JPDO, the United States is now situated to perform collaborative efforts necessary to improve the level of safety, security, efficiency, quality, and affordability of the Next Generation Air Transportation System.

STATEMENT OF DR. KARLIN TONER, DIRECTOR, JOINT PLANNING AND DEVELOPMENT OFFICE, FEDERAL AVIATION ADMINISTRATION, AND SENIOR STAFF ADVISOR TO THE SECRETARY OF TRANSPORTATION ON NEXTGEN, ON NEXTGEN: LONG-TERM PLANNING AND INTERAGENCY COOPERATION, BEFORE THE HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON AVIATION, APRIL 21, 2010.

Chairman Costello, Congressman Petri, and Members of the Subcommittee:

Thank you for inviting me here today to discuss the Joint Planning and Development Office's (JPDO) work in long-term planning and interagency cooperation in developing the Next Generation Air Transportation System (NextGen). When I appeared before you last March, I was on detail from the Federal Aviation Administration (FAA) to the Department of Transportation (DOT) as the Senior Staff Advisor for NextGen coordination. In that capacity, I also served as the liaison between the NextGen partner departments and agencies and the Chair of the Senior Policy Committee, Secretary LaHood. I am appearing before you today as the new Director of the JPDO, a position that I have had the privilege of serving in since late February of this year. Secretary LaHood and Administrator Babbitt have committed to advancing and accelerating NextGen, and I am eager to help carry out their vision.

As this Committee is aware, NextGen is changing the way the national airspace system operates – with goals to improve safety, reduce congestion, noise, and emissions, expand capacity to meet future demand, and improve the passenger experience. NextGen is **not** a single piece of equipment or a program or a system that will instantaneously transform the air transportation system. NextGen builds on legacy systems to modernize air traffic control and ultimately will deliver a series of programs that transform the National

Airspace System (NAS). NextGen takes advantage of relatively new technologies that have already been transforming our personal lives and the way we do business, such as GPS, analog-to-digital, and network-to-network data sharing.

Parts of NextGen are already being implemented. The aviation community has done a tremendous amount of work with planning, research and development, testing, and deployment. Research products are maturing and operational capabilities are moving into place to enable aircraft to fly as efficiently on rainy days as they do on sunny days. In fact, the FAA has deployed Automatic Dependant Surveillance - Broadcast (more commonly known as ADS-B) ground infrastructure and is now providing operating capability over the Gulf of Mexico and some operators are already reaping these benefits of more efficient travel. Still, the next few years are critical to the transformation of the national air transportation system – a system that must meet the civil aviation, defense, and homeland security needs of the United States.

As NextGen moves forward, the role of the JPDO has also evolved. Initially, the office was created by Vision-100 as an interagency group to work across government and with the industry to define the NextGen integrated plan. During the earlier planning stages, I was fortunate to be part of that visionary group as a National Aeronautics and Space Administration (NASA) researcher serving on an integrated product team, helping to brainstorm ideas and concepts that might benefit the modernization of our air transportation system. As the planning matured, the JPDO focused more exclusively on the long-term research planning.

On November 18, 2008, Executive Order 13479 was issued. Entitled "Transformation of the National Air Transportation System," it required the Secretary of Transportation to establish within the DOT a staff, including employees from other departments and agencies involved in NextGen, to support the Secretary and the Senior Policy Committee. The partner departments and agencies include the FAA, NASA, DOT, the Departments of Defense, Homeland Security, and Commerce, and the White House Office of Science and Technology Policy. The Senior Policy Committee, which sets the policy direction for NextGen, is chaired by the Secretary of Transportation, and includes the Secretaries, Administrators, and Directors of the above agencies, and the Office of the Director of National Intelligence as an *ex officio* member.

Late last year, Secretary LaHood asked Administrator Babbitt to redefine the duties of the Director of the JPDO to include the NextGen Senior Staff Advisor responsibilities. In restructuring these duties, Administrator Babbitt designated that the Director report directly to the FAA Deputy Administrator. Thus, the JPDO Director's position has been elevated for increased responsibility and visibility within the FAA. Additionally, by wrapping the Senior Staff Advisor duties into the Director's position, this realignment brings greater DOT involvement directly to the JPDO by formalizing the support relationship of the JPDO to the Secretary and the Senior Policy Committee.

The new organization's strength is its connections and its ability to leverage the best of the Executive Order and the enabling legislation. The realignment has raised the

visibility of the office, in keeping with the Administration's commitment to advancing NextGen. With direct access to both the FAA Deputy Administrator and the Secretary of Transportation, the JPDO is able to have regular, high-level input from senior policymakers at both FAA and DOT.

Moreover, the Director's new responsibilities expand the opportunity for collaboration among agencies. It is critical that we effectively and efficiently leverage the work of other agencies to achieve our NextGen goals. When issues arise involving more than a single agency, the JPDO provides a forum for engagement and monitors follow-up of the partner agencies on decisions.

We directly provide interagency support to the cabinet-level officials on the Senior Policy Committee. As the JPDO Director, I continue to serve as Secretary LaHood's advisor for NextGen and liaison to the partner agencies. In my prior role as NextGen advisor, I worked to institutionalize NextGen across the Office of the Secretary of Transportation while reaching out to the JPDO for multi-agency staff support. The realignment of the JPDO streamlines and solidifies that support.

The NextGen vision, expressed in the JPDO's Concept of Operations, contains a wide variety of possible ideas that might be helpful to meet our Nation's air traffic needs. However, neither the vision nor avenues being considered are static. NextGen capabilities are beginning to be implemented today, and as we gain experience, our past work will help us refine how we more effectively implement future NextGen goals.

Today's world is different than the one in which the NextGen Concept of Operations was originally envisioned. The economy, the airlines, the environment, energy issues, and our security needs have changed dramatically. To account for these changes, we must take a more flexible approach to longer-term NextGen planning, blending evolution and transformation to meet the national needs for air transportation. We must test and prioritize our options against these realities.

My job is to refine our longer-term goals, by accounting for the changing realities of our aviation world. For example, more precise navigation (RNAV/RNP) is better understood to be an underpinning not only for capacity and efficiency, but may give us much better environmental performance as well. Conversely, the market of very light jets has diminished and our plans should reflect that. We also need to recognize that NextGen capabilities will be implemented where they are needed and best suited; for example, closely spaced parallel runways won't be a solution for everyone – only for some airports.

With this in mind, we expect that by 2025, our system will still rely on pilots and air traffic controllers, but their roles will be different than they are today, and may be different from what we currently predict them to be in 2025. We want to make sure that they will have the tools and systems they need to perform their functions safely and effectively.

We also intend to continue to consult with industry as we move forward. Given where we are in implementation, we are assessing how industry can best contribute to longer-range plans, and I have asked some of our industry groups to give me ideas on how best to leverage their expertise and input.

The JPDO has some past successes that I plan to build on with regard to interagency cooperation. We can use our experiences working in these contexts as models for future interagency coordination on other projects.

For example, the JPDO is working with the Department of Commerce (through the National Oceanic and Atmospheric Administration (NOAA)), FAA, and DOD on developing a vision for aviation weather management that is focused on the aviation user. We need to know how to best put weather information in a format that can be used by pilots, controllers, and dispatchers. The concept, called NextGen Network Enabled Weather (NNEW) enables the publication of the same weather information to all airspace users. NOAA's role is to provide quality weather data to all its users including weather that meets the FAA's Air Traffic Control (ATC) requirements. The FAA integrates the weather forecast information into tools expressly for air traffic management. The JPDO facilitates an active senior executive panel, known as the NextGen Executive Weather Panel, who oversaw the development of a joint program plan. A technology transition team will work out the specific technical requirements. A prototype demonstration will connect interagency products thus demonstrating information sharing protocols.

As the new Director of the JPDO, I am looking at all of the possibilities for successful interagency cooperation. We are fortunate that with the increased visibility and responsibility of the JPDO, and the Administration's focus on NextGen, we now have even more tools in the toolbox to choose from to ensure productive partnerships throughout the government. Of course, the more productive these cooperative efforts are, the better service the FAA can provide to the traveling public.

Chairman Costello, Ranking Member Petri, Members of the Subcommittee, thank you again for inviting me here today. This concludes my prepared remarks. I would be happy to answer any questions that you may have.

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