Federal Aviation Administration

NextGEN

OVERVIEW
2013 IMPLEMENTATION PLAN

FROM THE ADMINISTRATOR

Excerpted from the 2013 update to the NextGen Implementation Plan

June 2013

Dear Members of the Aviation Community:

Many years from now when we reflect back on our move to NextGen, we will take pride in being a part of the largest aviation infrastructure project in history. We will look at 2012 as a pivotal year during which we delivered actual benefits to the flying public.

We are excited by preliminary numbers from our new procedures into metropolitan Washington, D.C. Aircraft are flying new routes named to honor our troops and commemorate September 11. We have created more direct routes, cut flight miles and reduced costly level-offs with these procedures. We anticipate fuel savings of $2.3 million per year — and even more savings across the country as more users take advantage of NextGen. In Seattle, as part of our Greener Skies initiative, airlines are using precision routes to shave four to eight minutes off flight times, providing projected annual savings of more than $13 million.

With NextGen, we are creating a foundation that enhances safety, saves passengers' time and better protects the environment by reducing aircraft exhaust emissions. Measures of NextGen performance and progress can be tracked at the NextGen Performance Snapshots website.

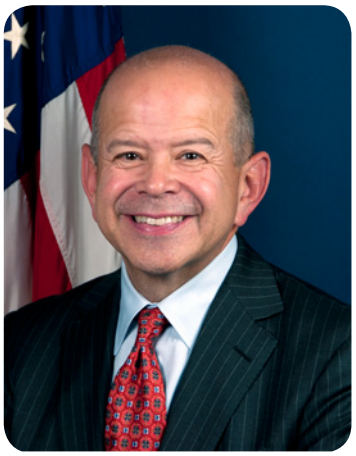
This year, we are operating in a very challenging fiscal environment, the impact of which could continue into the future. The Budget Control Act of 2011, also known as sequestration, cut $637 million from the FAA budget this fiscal year and contains a provision for 10 years of across-the-board cuts in federal spending.

Despite the potential uncertainty associated with these cuts, our number one priority at the FAA will always be safety. We are striving to be even smarter about how we enhance safety in all of our programs. We continue to gather and share operational data to identify and address potential hazards and mitigate issues before they occur.

Our goal as an agency is to manage our national airspace in the most efficient and cost effective way possible, and NextGen plays a central role in this effort. We also want to empower our employees to work smarter and to enhance productivity.

As the entire world moves to satellite-based navigation, it is vital that we work to advance global collaboration. We need to improve the harmonization and interoperability of new technology with international aviation standards and procedures to improve safety and efficiency on a global basis.

So many of the benefits we are seeing from NextGen are due to the hard work and collaboration of the entire aviation community. I want to thank all our stakeholders for their support and partnership. As we move forward with NextGen, the FAA is committed to continue working with our stakeholders to reach the common goal of ensuring that America's aviation system, the largest in the world, remains the safest.



Michael P. Huerta
FAA Administrator

$38 Billion in Benefits

16 MILLION Metric Tons Cumulative
Reduce CO_2 Emissions

41 PERCENT
Reduce Delays

1.6 BILLION Gallons Cumulative
Reduce Fuel Use

These estimates, through 2020, are highly sensitive to traffic and fuel price forecasts, which have been variable in recent years. In particular, we anticipate that the delay reduction estimate will continue to fluctuate within a range of 25 percent to 40 percent. The estimate aggregates nationwide benefits; local or facility delay reductions may differ. This year's increase in our overall benefits estimate is mostly due to the Department of Transportation's increase in the dollar value of passengers' time, the first adjustment in a decade.

EXECUTIVE SUMMARY

Excerpted from the 2013 update to the NextGen Implementation Plan

The NextGen Implementation Plan provides a roadmap of the FAA's ongoing transition to NextGen, which is improving the way we fly.

NextGen integrates new and existing technologies, policies and procedures to reduce delays, save fuel and lower aircraft exhaust emissions to deliver a better travel experience. The NextGen Implementation Plan provides an overview of the benefits aircraft operators and passengers are receiving from recent NextGen improvements; it also highlights future benefits that will result from NextGen.

While the thrust of our work focuses on U.S. airports, airspace and aircraft, the FAA actively engages with global aviation partners to ensure operators receive benefits anywhere in the world.

NEXTGEN TODAY

NextGen is demonstrating continuing momentum in 2013 in its drive to make U.S. aviation operations safer and more efficient. Metroplex, for example, is our fast-track effort to implement satellite-based procedures and airspace improvements to reduce fuel consumption and emissions in the airspace around metropolitan areas with several airports. As of January, we had eight active metroplex areas in various phases of development. By this summer, we anticipate that north Texas and Houston will enter the implementation phase, joining Washington, D.C., where new procedures are already in place.

We are also advancing Automatic Dependent Surveillance–Broadcast (ADS-B), the NextGen successor to radar for tracking aircraft. By February 2013 we had deployed more than 500 of about 700 ADS-B ground stations. This year, the FAA is continuing to work with industry to develop the best approach for aircraft operators to equip for NextGen. Our ADS-B work is driven by the fact that aircraft flying in designated airspace must be equipped to broadcast their position to the ADS-B network by January 1, 2020.

As promised, we continued to publish a significant volume of satellite-based precision arrival and departure procedures in addition to high- and low-altitude routes. These procedures are designed to save fuel, reduce emissions, increase flexibility in the National Airspace System and facilitate more dynamic management of air traffic.

We continue to collaborate with the aviation industry to find ways to implement NextGen and create new benefits. The FAA Modernization and Reform Act of 2012 authorizes the FAA to establish an avionics equipage financial incentives program. We are actively engaging with industry to assess options that could attract additional investment in NextGen technologies and training. Additionally, the FAA accepted the newly established Surface Operations Office's concept of operations for collaborative decision making among air traffic controllers, flight crews, air carrier managers and airports.

NEXTGEN BENEFITS

NextGen provides numerous benefits for the American people, the aviation community, our environment and the economy.

To illustrate the impact of NextGen improvements we're making today, the NextGen Performance Snapshots website tracks NextGen performance metrics and highlights success stories.

As we measure today's performance, we also look forward to tomorrow's benefits. Our latest estimates indicate that by the end of the NextGen mid-term in 2020, NextGen improvements will reduce delays by 41 percent compared with what would happen if no further NextGen improvements were made beyond what we have done already. These delay estimates are in addition to the benefits we expect from new and expanded runways.

We also estimate 16 million metric tons in cumulative reductions of carbon dioxide emissions through 2020. For the same period, we estimate 1.6 billion gallons in cumulative reductions of fuel use.

Delay reduction, fuel savings and other efficiency improvements will provide an estimated $38 billion in cumulative benefits to aircraft operators, the traveling public and the FAA. This notable increase from last year's estimated $24 billion in cumulative benefits is primarily the result of the Department of Transportation's decision to increase the dollar value of passenger time savings — the first time it has done so in a decade.[1]

MAKING A DIFFERENCE FOR GENERAL AVIATION

NextGen is providing major benefits to the general aviation community. The Wide Area Augmentation System (WAAS) has improved general aviation access to more than 1,500 airports in all kinds of weather with no costly investment in ground infrastructure.

Tens of thousands of general aviation aircraft are already equipped with WAAS receivers, which improve the availability, accuracy and integrity of GPS signals. Pilots are taking advantage of WAAS technology to fly approach procedures using Localizer Performance with Vertical Guidance (LPV) to altitudes as low as 200 feet before having to see the runway to land. The FAA has published 3,123 WAAS LPV approaches as of May 2013 and expects to publish 5,218 by 2016.

ADS-B enhances the safety of general aviation. Aircraft owners who equip with an ADS-B transceiver and a cockpit display will be able to see the location of nearby aircraft, thus improving their situational awareness.

In addition, pilots can receive weather and other aeronautical information from FAA broadcasts through their ADS-B transceivers, enhancing their situational

[1] In order to assess the full cost of delay, the Department of Transportation (DOT) considers the value of air travelers' time. From 2003 to 2011, this was estimated by DOT at $28.60 per hour. In the Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis, DOT increased that value for 2012 to $43.50 per hour.

awareness of in-flight hazards and helping to prevent accidents.

OPERATIONAL VISION

The FAA's vision for operational capabilities in the next decade includes fundamental improvements at every phase of flight. Common weather and system status information will dramatically improve flight planning. Technologies such as ADS-B and Data Communications, combined with Performance Based Navigation (PBN), will increase safety and capacity and save time and fuel, decrease aircraft emissions and improve our ability to address noise.

With NextGen, we continue to advance safety as we look to increase air traffic and introduce new types of aircraft, such as unmanned aircraft systems and commercial space vehicles. The aviation community continues to rely on Safety Management Systems (SMS) to continue to minimize risk as we bring together a wave of new NextGen capabilities. SMS are integrated safety cases and other proactive forms of management that allow us to assess the safety risk of all proposed changes. Policies, procedures and systems on the ground and on the flight deck enable NextGen improvements. We make the most of technologies and procedures in use today as we introduce innovations that will fundamentally change air traffic automation, surveillance, communications, navigation and the way we manage information.

In addition to the advances we develop through NextGen transformational programs and implementation portfolios, operations in the next decade will depend on coordination with and support from FAA specialists on safety, airports, the environment, policy development and the other building blocks of modern air traffic management. FAA information and management systems must keep these activities synchronized as we move forward through the next decade and beyond. We use a strategic Environmental Management System approach to integrate environmental and energy objectives into the planning, decision making and operation of NextGen. In addition to this effort, we are working with industry through the Continuous Lower Emissions, Energy and Noise program to advance noise and emissions reductions while improving energy efficiency.

NextGen provides a better travel experience with less time sitting and holding on the ground or in the air.

NEXTGEN AHEAD

We have reached major NextGen milestones. PBN is providing greater operational flexibility. Surface data sharing is improving situational awareness and efficiency at airports. ADS-B is being used to control live traffic in areas such as the Gulf of Mexico, where radar coverage is not possible. In the years ahead, we will build on these and other NextGen technologies and procedures to offer additional capabilities. In the pipeline are airport safety and efficiency gains, airspace efficiency improvements and better use of Special Activity Airspace typically reserved for the military.

Future improvements are not limited to domestic airspace. Air traffic control automation enhancements and new ADS-B-enabled procedures will permit more aircraft to take advantage of optimal fuel-saving altitudes when flying over the ocean. Being able to spend more flight time at desired altitudes will potentially enable aircraft to carry less fuel, increase payload capacity, improve in-flight planning and improve the passenger experience through reduced exposure to turbulence.

Soon NextGen will provide better weather information, which will help reroute aircraft and reduce delays. Future NextGen weather detection and forecast capabilities will improve air traffic planning and collaboration by making vital weather information available earlier and with more accuracy. By making the same information available to everyone at the same time, NextGen will also create a common weather picture throughout our national airspace. Toward this end, we are collaborating with the National Oceanic and Atmospheric Administration on leading-edge scientific research to improve airspace safety and efficiency.

WHY NEXTGEN MATTERS

NextGen provides benefits to everyone — passengers, operators, recreational pilots and airports. NextGen offers a better travel experience, with fewer delays, more predictable trips and enhanced safety. People who live near airports may experience less aircraft noise and fewer emissions. NextGen will increase the predictability and reliability of airport operations, enhancing the role of airports as economic engines for the communities they serve. NextGen is vital to preserving aviation's significant contributions to our national economy.

NextGen Today: Delivering Operational Improvements

Automatic Dependent Surveillance–Broadcast (ADS-B)

- Satellite-based successor to radar enables more accurate aircraft tracking
- More than 500 radio stations provide coverage along the East, West, and Gulf coasts; the U.S. border with Canada
- The FAA collaborates with air carriers and airports to obtain operational ADS-B data to validate benefits and encourage equipage

Performance Based Navigation (PBN)

- Enables aircraft to fly more direct routes, increases airspace efficiency
- Improves airport access for general aviation
- More than 800 PBN routes and procedures published in 2012

Metroplex Airports

- Streamlines arrival and departure traffic in congested metropolitan airspace with multiple airports known as metroplexes
- Targets PBN and airspace improvements to reduce fuel consumption and aircraft exhaust emissions
- Seven active metroplex sites are in or entering the design and evaluation phases. By summer 2013, the first three sites (Washington, D.C., north Texas and Houston) will have entered the implementation phase

NextGen Ahead: Working Toward Tomorrow

Improving Surface Safety and Efficiency

- Advances in real-time information sharing about aircraft and vehicle movement on the airport surface will increase situational awareness and make traffic management more predictable for controllers, traffic managers and aircraft operators
- Surface surveillance technologies will involve new traffic flow management and planning and new terminal air traffic control (ATC) capabilities
- ATC automation tools will maximize runway use to enhance arrival and departure efficiencies

Improving Weather Reports

- NextGen weather detection and forecast capabilities will improve air traffic planning and collaboration by making vital, more accurate weather information available earlier
- Use of the same weather information creates a common weather picture throughout the National Airspace System and helps flight planners make consistent and coordinated optimized decisions

"Collaboration is the key to NextGen's success. The aviation industry has always been characterized by two things: innovation and change. And we know that we do our best when working in a partnership with all our stakeholders."

Michael Huerta, *FAA Administrator*

Download the 2013 NextGen Implementation Plan
www.faa.gov/nextgen/implementation