



U.S. Department  
of Transportation

**Federal Aviation  
Administration**

Office of the Administrator

800 Independence Ave., S.W.  
Washington, D.C. 20591

March 7, 2013

The Honorable John D. Rockefeller, IV  
Chairman, Committee on Commerce, Science,  
and Transportation  
United States Senate  
Washington, DC 20510

Dear Mr. Chairman:

As required by Section 225 of the FAA Modernization and Reform Act of 2012, enclosed is a report to Congress outlining the strategy of the Federal Aviation Administration for implementing, on an accelerated basis, the NextGen operational capabilities produced by the Greener Skies project, as recommended in the final report of the Radio Technical Commission for Aeronautics (RTCA) NextGen Mid-Term Implementation Task Force 5 that was issued on September 9, 2009.

Identical letters have been sent to Chairman Shuster, Senator Thune, and Congressman Rahall.

Sincerely,



Michael P. Huerta  
Administrator

Enclosure



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March 7, 2013

The Honorable John Thune  
Committee on Commerce, Science  
and Transportation  
United States Senate  
Washington, DC 20510

Dear Senator Thune:

As required by Section 225 of the FAA Modernization and Reform Act of 2012, enclosed is a report to Congress outlining the strategy of the Federal Aviation Administration for implementing, on an accelerated basis, the NextGen operational capabilities produced by the Greener Skies project, as recommended in the final report of the Radio Technical Commission for Aeronautics (RTCA) NextGen Mid-Term Implementation Task Force 5 that was issued on September 9, 2009.

Identical letters have been sent to Chairmen Rockefeller and Shuster and Congressman Rahall.

Sincerely,



Michael P. Huerta  
Administrator

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March 7, 2013

The Honorable Bill Shuster  
Chairman, Committee on Transportation  
and Infrastructure  
House of Representatives  
Washington, DC 20515

Dear Mr. Chairman:

As required by Section 225 of the FAA Modernization and Reform Act of 2012, enclosed is a report to Congress outlining the strategy of the Federal Aviation Administration for implementing, on an accelerated basis, the NextGen operational capabilities produced by the Greener Skies project, as recommended in the final report of the Radio Technical Commission for Aeronautics (RTCA) NextGen Mid-Term Implementation Task Force 5 that was issued on September 9, 2009.

Identical letters have been sent to Chairman Rockefeller, Senator Thune, and Congressman Rahall.

Sincerely,

  
Michael P. Huerta  
Administrator

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Washington, D.C. 20591

March 7, 2013

The Honorable Nick J. Rahall, II  
Committee on Transportation  
and Infrastructure  
House of Representatives  
Washington, DC 20515

Dear Congressman Rahall:

As required by Section 225 of the FAA Modernization and Reform Act of 2012, enclosed is a report to Congress outlining the strategy of the Federal Aviation Administration for implementing, on an accelerated basis, the NextGen operational capabilities produced by the Greener Skies project, as recommended in the final report of the Radio Technical Commission for Aeronautics (RTCA) NextGen Mid-Term Implementation Task Force 5 that was issued on September 9, 2009.

Identical letters have been sent to Chairmen Rockefeller and Shuster and Senator Thune.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael P. Huerta", with a circled number "1" to the right of the signature.

Michael P. Huerta  
Administrator

Enclosure

# REPORT ON STATUS OF GREENER SKIES PROJECT

*Report to Committee on Commerce, Science, and Transportation of the Senate and to the Committee on Transportation and Infrastructure of the House of Representatives*

This report covers the strategy of the Federal Aviation Administration (FAA) for implementing, on an accelerated basis, the Next Generation Air Transportation System (NextGen) operational capabilities produced by the “Greener Skies over Seattle” project, as recommended in the final report of the Radio Technical Commission for Aeronautics (RTCA) NextGen Mid-Term Implementation Task Force 5 that was issued on September 9, 2009.

The Greener Skies project is a collaborative project between the FAA, airlines, the Port of Seattle, and Boeing Corporation to introduce Performance Based Navigation (PBN) technology that takes advantage of user investments in aircraft avionics. It includes adding 27 new procedures, expanding use of Optimized Profile Descents (OPD) Area Navigation (RNAV) arrivals and RNAV Required Navigation Performance (RNAV (RNP))<sup>1</sup> approaches.

The FAA’s NextGen Management Board approved Greener Skies as a two-initiative project in July 2010. Initiative One (i1), started in September 2010, provides for the design and initial implementation of PBN instrument flight procedures into the complex airspace around Seattle, Washington. Initiative Two (i2) was started in April 2011, and provides the research and safety studies needed to explore changes to air traffic control separation standards to maximize the benefits of PBN utilization. I2 will be completed in September 2013. If the research concludes that the proposed i2 air traffic control criteria are safe and provide value-added efficiency then the new criteria would be available to Seattle and other applicable locations. The two Greener Skies efforts are being conducted simultaneously so that i2 procedures can build upon the i1 designs and results.

In December 2011, the FAA completed the final draft design of the i1 PBN instrument flight procedures that will allow air traffic controllers to issue, and airlines to fly, environmentally-friendly, fuel-efficient shorter routes to runways at Seattle-Tacoma International Airport. This was accomplished through designs of OPD RNAV Standard Terminal Arrival Routes that connect to RNAV, RNP, RNAV Visual Flight Procedure and Instrument Landing System (ILS) approaches. This connectivity allows aircraft Flight Management Systems to fly the most efficient descent path to the runway end with minimal required interaction between controllers and pilots. Over the last year, these designs have been thoroughly tested by the lead operator (Alaska Airlines) during nine flight simulation activities in a B-737 simulator.

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<sup>1</sup> **RNAV/RNP – Area Navigation Required Navigation Performance** is a type of performance-based navigation (PBN) that allows an aircraft to fly a specific path between two 3D-defined points in space. RNAV and RNP systems are fundamentally similar. The key difference between them is the requirement for on-board performance monitoring and alerting. A navigation specification that includes a requirement for on-board navigation performance monitoring and alerting is referred to as an RNP specification. One not having such a requirement is referred to as an RNAV specification.

The environmental review of the Greener Skies project was completed in November 2012 in accordance with the National Environmental Policy Act (NEPA) and applicable implementing regulations and orders. The FAA held public scoping meetings in January 2012 and issued the draft Environmental Assessment (EA) for public review and comment on August 8, 2012. Two public meetings were held during the comment period, which closed September 14, 2012. The FAA carefully reviewed and addressed public comments. Further details are available at [www.greenerskiesea.com](http://www.greenerskiesea.com).

In accordance with the multi-step collaborative process for the development and implementation of PBN procedures, known as the 18-step process, the FAA decided to conduct i1 flight trials. The FAA determined that these flights trials qualified for categorical exclusion (FAA Order 1050.1E section 311n) as short term test of air traffic control procedures that do not extend beyond 180 days. Alaska Airlines, Horizon, US Airways, and Sky West conducted these flight trials between June 11, 2012 and August 2, 2012.

In terms of the projected timeline for full implementation, daily operational use of these approaches is expected to begin in early 2013 after completion of final design and the environmental review process. However, full use of these instrument flight procedures will be limited by current air traffic control separation rules and weather minima, until such time that i2 is successfully completed.

Once the FAA implements the new PBN procedures, the next challenge is to develop the operational basis to increase their utilization in all weather and high traffic operations. In April 2011, the i2 team began the process of researching air traffic control concepts to accomplish this goal. In September 2011, the FAA contracted with the Boeing Company to provide the analytical support services for the safety analysis of RNP-Established<sup>2</sup> and Concurrent Approaches<sup>3</sup>. This supports the RTCA Task Force 5 recommendation to conduct activities that maximize the benefits from investments in equipage made by operators in support of NextGen.

The ultimate goal of this research is to implement new ATC separation standards. A close integration of i2 efforts with the implementation group will ensure a successful transition from research to implementation. I2 is on schedule to deliver the modeling and simulation results for the Seattle analysis and the NAS wide analysis delivery is planned for August 2013. The choice to move forward with the Greener Skies i2 research was predicated on its expected value in Seattle as well as the anticipated value these new criteria will bring to similar locations across the

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<sup>2</sup> **RNP Established** allows ATC to clear aircraft on an RNP approach with a Radius-to-Fix (RF) turn to final, adjacent to ILS or RNAV finals on the parallel runways. This procedure will decrease flying miles and allow aircraft to remain over less noise sensitive areas for longer times than procedures used for conventional approaches.

<sup>3</sup> **Concurrent Approaches** will authorize two approaches to descend over the top of one another while maintaining separation in any combination of ILS or RNAV approaches. This allows adjacent airport approaches to be conducted simultaneously while reducing the work required by controllers to keep the aircraft separated, while at the same time maintaining or increasing today's current level of safety.

NAS. To that end, the i2 team purposely included on the team key Seattle stakeholders from local FAA ATC facilities, Western Terminal and Enroute Directorates, FAA's Western Service Center, Northwest Mountain Regional Administrator's office, Aviation Safety Organization, labor representatives from the National Air Traffic Controllers Association, the NextGen Program Office, Port of Seattle, Boeing Field, The Boeing Company, King County, Alaska Airlines and Horizon Airlines.

Working with the i2 team members, the Boeing team has delivered a project plan and a detailed Concept of Operations (ConOps) for both RNP-Established and Concurrent Approaches. These documents are being used for the initial step of conducting the FAA's Safety Risk Management (SRM) process. SRM is becoming a standard throughout the aviation industry worldwide. SRM is a structured process within the FAA that analyzes all proposed changes to the NAS to insure they can be implemented without compromise to safety. The ConOps clearly defines the changes expected in the system resulting from new procedures compared to today's operations. The identified changes were used to highlight the potential hazards associated with these changes and have provided direction for the specific safety analysis that is currently underway. The process of identifying hazards was initiated in April 2012.

The main challenge the FAA is encountering in carrying out the strategy is integrating today's instrument flight procedures and air traffic control standards with the current aircraft fleet equipage levels, while at the same time producing procedures that allow for the future, full implementation of PBN in an environmentally-complex airspace. The FAA is confident in the successful completion of the Greener Skies Project through i1 and i2 with the continued cooperation of air traffic control, local authorities, and our aviation stakeholders.

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