

April 2013

NEXTGEN AIR TRANSPORTATION SYSTEM

FAA Has Made Some
Progress in Midterm
Implementation, but
Ongoing Challenges
Limit Expected
Benefits



G A O

Accountability * Integrity * Reliability

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- *Excluded new procedures that would require new design criteria.* FAA officials explained that having to wait for new design criteria for procedures could jeopardize the OAPM time frames. Outside of the OAPM initiative, FAA acknowledged that its staff had at times initiated work on a requested PBN procedure only to discover that the design criteria—which ensure the safety of procedures—do not yet exist for the desired procedure. FAA officials stated that new design criteria would be needed to more widely deploy PBN procedures, but that effort is being undertaken independently of the OAPM initiative.
 - *Excluded sites with ongoing airspace redesign projects.* Concerns about potential implementation delays also factored into FAA's decision about which metroplexes to address in the midterm. Some industry stakeholders have voiced concerns that FAA did not include in its current OAPM plans the New York/Philadelphia metroplex, which is the nation's most congested airspace and contributes to over half of domestic flight delays.³⁷ However, FAA decided to exclude that metroplex in light of the Record of Decision for the existing environmental reviews for FAA's ongoing airspace redesign work for that area, because the agency did not want to initiate a new environmental review process.³⁸

In addition to the OAPM initiative, FAA has other PBN initiatives that aim to deliver midterm benefits in less congested areas. For example, FAA's Greener Skies project, which was initiated by Alaska Airlines, aims to deliver benefits to the Seattle metroplex beginning in 2013, and was shaped by local considerations.³⁹ The initiative's first phase focuses on a new set of PBN procedures planned for implementation in March 2013.⁴⁰

³⁷FAA officials we spoke with acknowledged that no matter which prioritization factor (delays, daily operations, extent of connectivity) is weighed most heavily, this metroplex is identified as the first priority site for the NAS. It was also identified as the highest priority metroplex by the NAC.

³⁸FAA and the Port Authority of New York and New Jersey officials pointed out that it would not be possible to begin a new project before the ongoing work is done under the existing environmental impact statement without triggering the need for a new environmental review. The Record of Decision completed the FAA's NEPA review and describes the final action that FAA has decided to take.

³⁹Greener Skies was initiated by Alaska Airlines in collaboration with Boeing, other airlines, and the Port of Seattle, which operates Seattle-Tacoma International Airport. Greener Skies became an FAA-sponsored NextGen initiative in 2010.

⁴⁰The second phase is a longer-term research effort to revise separation standards for the NAS, which will be discussed in the following section.

The procedures are designed to shorten flight tracks and route aircraft over water. FAA estimates that the new Greener Skies procedures would reduce annual fuel consumption by 112,420 barrels annually, resulting in potential annual savings of \$13.5 million. To facilitate implementation of the project, a number of potentially beneficial procedures were scoped out of the Greener Skies effort based on local concerns. For example, FAA officials and other Greener Skies participants stated that new procedures to the east of the airport were not included because of known community concerns about new aviation noise in those areas and to avoid any changes that could violate noise commitments made in a recent Record of Decision. In addition to Greener Skies, FAA also has non-OAPM PBN efforts in place in Denver and Minneapolis.⁴¹

Although FAA's current PBN efforts have the potential to deliver midterm efficiency and environmental benefits, the benefits obtained will greatly depend on the extent to which the new procedures are used. In the past, industry stakeholders, especially airlines, have expressed concerns that some published PBN procedures, including those developed at priority metroplexes, have not provided sufficient benefits. According to FAA, the OAPM and Greener Skies efforts were structured in part to address such stakeholder concerns. In each OAPM project, airlines that serve the airports are invited to participate fully in the studies and design work that produce the PBN procedures to be implemented, for example. For those routes that were not developed through such efforts, however, usage remains a challenge. For example, an Alaska Airlines analysis of the airline's use of RNP routes in Alaska and in the continental U.S. showed that while 5 of its 10 RNP routes in Alaska—which are routes designed by or for Alaska Airlines to allow poor-weather airport access—were flown more than 40 percent of the time, all 16 of the RNP routes outside of Alaska were flown by its pilots fewer than 5 percent of the time, with most not used at all.⁴² An airline representative suggested that pilots were not requesting to use RNP procedures after having been denied them a

⁴¹In another new initiative, Delta Airlines has requested that FAA assess the potential for the development of full RNP simultaneous operations—allowing for the use of parallel runways independently—at Hartsfield-Jackson Atlanta International Airport. This effort would resemble the Greener Skies work in the Seattle metroplex.

⁴²According to analysis done by Alaska Airlines, of the 27 RNP charts that are carried by the airline's flight crews, 5 of the routes in Alaska were flown more than 40 percent of the time, while at least 11 of the routes in the lower 48 states were flown less than 1 percent of the time.

procedures to parallel runways.⁸⁰ Potential solutions are then forwarded to FAA for consideration, such as a 2011 proposal that would better leverage the safety benefits of PBN to change certain separation standards for the use of parallel runways based on safety assessments conducted by the Greener Skies team.⁸¹

FAA's primary effort to address issues with the air traffic controller handbook is also part of the Greener Skies initiative. The Greener Skies team has identified 95 needed changes in FAA orders and regulations to date to address obstacles that have contributed to limiting the usage of PBN procedures. FAA's obstacles study noted that the lack of standard language for controllers and pilots for certain types of PBN procedures could create uncertainty in communications, which would require such a change to the handbook. Officials we interviewed at a Seattle-area air-traffic control facility acknowledged that they had known for years before the Greener Skies project began that the handbook was outdated. According to these officials, although FAA has published many PBN routes throughout the NAS, from a controllers' perspective, there were few rules in place for using those procedures. For example, under the current handbook there is little guidance on how to safely give less than the standard separation for merging planes—as is often done for traditional procedures in clear weather conditions—even if the aircraft are on precise paths. The separation standards heavily influence the guidance in the controller handbook, because much of a controllers' responsibility is to keep safe distances between aircraft. According to FAA's obstacles study, these concerns have led controllers to not approve the use of PBN procedures, in some cases.

FAA and others have also pointed to the need for additional training of air traffic controllers as a potential obstacle to the use of PBN procedures, and FAA's obstacles study suggested developing a national training plan for PBN operations. While we did not look at the extent of training provided when PBN procedures are implemented at individual airports,

⁸⁰The Greener Skies team was uniquely equipped to identify problems with standards and the handbook, because the team included members of the Performance Based Operations Aviation Rulemaking Committee, as well as FAA PBN developers. According to officials, this level of expertise allows the Greener Skies team to address issues that extend beyond the Seattle metroplex or airspace.

⁸¹See Performance Based Operations Aviation Rulemaking Committee, *RNP Established-Parallel Approach* (Jan. 10, 2011).

procedures and submitted concerns to FAA. In addition, although the Port of Seattle was initially involved in designing procedures for Greener Skies, airport officials told us that they were concerned that FAA had not included them during the environmental assessment process or in conducting local outreach. The project has raised some community concerns about aircraft noise from new flight paths, and some neighborhoods have expressed concerns that FAA had not clearly explained the potential noise impact on their neighborhoods.⁸⁵ New aviation noise is one of the largest obstacles to NextGen implementation, according to FAA officials and others. It can be difficult to address community concerns about aviation noise, but FAA may be able to mitigate such concerns by involving airport officials more closely in procedure design and community outreach efforts.⁸⁶ FAA officials involved in another OAPM team, for example, noted that local airport officials, who were not included in initial route planning for the metroplex, later provided information about potential community impacts that FAA had not anticipated. Information provided by FAA on establishing OAPM study teams, however, does not include guidance on the timely involvement of airport representatives on these teams, if such involvement is appropriate; rather the information indicates that OAPM teams should brief airport authorities as the process continues. This is in contrast to the best practices established by ACRP, which state that educating—in this case briefing—interested stakeholders after the fact is not sufficient for effective involvement; rather, proactive involvement is required.⁸⁷ A collaborative approach for NextGen that involves key stakeholders, such as airport officials, would better position FAA to fully leverage those stakeholders' expertise, help identify possible solutions, and facilitate implementation of NextGen improvements.

⁸⁵According to FAA officials, the final environmental assessment for Greener Skies included a finding of no significant impact and the Record of Decision was signed on November 1, 2012. Subsequently, no petition for review was filed by the appropriate filing deadline.

⁸⁶For more information about FAA's noise-abatement efforts, see

⁸⁷ACRP, *Aircraft Noise Toolbox* (2009).

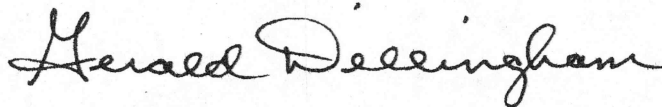
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- develop processes to proactively identify new PBN procedures for the NAS, based on NextGen goals and targets, and evaluate external requests so that FAA can select appropriate solutions;
 - require consideration of other key operational improvements in planning for NextGen improvements, including PBN projects at metroplexes such as OAPM, as well as the identification of unused flight routes for decommissioning;
 - develop and implement guidelines for ensuring timely inclusion of appropriate stakeholders, including airport representatives, in the planning and implementation of NextGen improvement efforts; and
 - assure that NextGen planning documents provide stakeholders information on how and when operational improvements are expected to achieve NextGen goals and targets.

Agency Comments

We provided the Department of Transportation (DOT) with a draft of this report for review and comment. DOT responded by email and did not agree or disagree with our recommendations, but provided technical clarifications, which we incorporated into the report as appropriate.

We are sending copies to the appropriate congressional committees, the Secretary of Transportation, and interested parties. In addition, this report will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff members have any questions about this report, please contact me on (202) 512-2834 or at dillinghamg@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix III.



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