



ECONOMIC IMPACT

SUSTAINABILITY

FLEXIBILITY

SAFETY

NextGEN Implementation Plan

Executive Summary

The NextGen Implementation Plan provides an overview of the FAA’s ongoing transition to the Next Generation Air Transportation System (NextGen), which is improving the way things work in our nation’s skies and at our nation’s airports.

NextGen integrates new and existing technologies, policies and procedures to reduce delays, save fuel and lower aircraft exhaust emissions to deliver a more reliable travel experience. The NextGen Implementation Plan provides a summary overview of the benefits operators and passengers are experiencing from recent NextGen improvements; it also highlights future benefits that will result from additional NextGen implementations, and provides insight into how we are working together with the aviation community to achieve NextGen success.

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

The year 2011 was a busy one for NextGen, particularly for our continued deployment of the Automatic Dependent Surveillance–Broadcast (ADS-B) ground-based infrastructure. More than 300 ground stations were operational by the end of 2011, providing satellite-based surveillance coverage of the East, West and Gulf coasts and most of the area near the U.S. border with Canada. We expect the total complement of about 700 radio stations to be in place and operating by early 2014.

As promised, we also published a significant volume of arrival and departure procedures in addition to high- and low-altitude routes. These new Performance Based Navigation (PBN) procedures are designed to provide greater flexibility in the National Airspace System (NAS) and to facilitate more dynamic management of air traffic. Additionally, we developed a process that reduces the time it takes to introduce PBN procedures.

We significantly improved access to general aviation airports through PBN approach procedures known as Area Navigation Wide Area Augmentation System (WAAS) Localizer Performance with Vertical Guidance (LPV) procedures. We published 354

WAAS LPVs in Fiscal Year 2011. As of February 2012, there were more than 2,800 LPVs at nearly 1,400 airports throughout the United States.

Additionally, we advanced to the design phase of our metroplex initiative in two locations. Under this initiative, study groups identify near-term PBN improvements and minor airspace adjustments that can be completed in major metropolitan areas within three years. Following studies at Washington, D.C., and north Texas in 2010, we began design activities in these areas in 2011. We also completed studies in 2011 for northern California, southern California, Houston, Atlanta and Charlotte, N.C., and we are now preparing for design work in those locations.

Our ongoing advocacy of sustainable jet fuels through the Commercial Aviation Alternative Fuels Initiative reached a significant milestone on July 1, 2011. Standards-setting organization ASTM International approved the use of a renewable, bio-derived jet fuel.

NEXTGEN BENEFITS

NextGen will provide a number of benefits for NAS users, our environment and our economy.

We estimate that NextGen improvements will reduce delays 38 percent by 2020, compared with what would happen if we did not implement planned NextGen improvements. These delay reductions will provide an estimated \$24 billion in cumulative benefits through 2020. NextGen delay reductions are in addition to any reduction from future runway construction or expansion.

We estimate 14 million metric tons in cumulative reductions of carbon dioxide emissions through 2020. For the same period, we estimate 1.4 billion gallons in cumulative reductions of fuel use.

To achieve timely NextGen benefits, the FAA needs to synchronize its investments with those of aviation stakeholders. To encourage operator equiptage and validate concepts, the FAA conducts simulations, demonstrations, trials and flight evaluations as part of developing NextGen systems and procedures.

OPERATIONAL VISION

The FAA's mid-term operational vision remains unchanged and includes fundamental improvements at every phase of flight. Common weather and system status information will dramatically improve flight planning. Advances, such as ADS-B and Data Communications (Data Comm), combined with PBN, will increase safety and capacity, save time and fuel, decrease aircraft exhaust emissions and improve our ability to address noise.

With NextGen, we continue to advance safety as we look to increase air traffic and accommodate unmanned aircraft systems and commercial space flights. To minimize risk as we bring together a wave of new NextGen capabilities during the next decade, the aviation community relies on integrated safety cases and other proactive forms of management that allow us to assess the risk of proposed changes. Policies, procedures and systems on the ground and on the flight deck enable the mid-term system. We enhance technologies and procedures that are 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, the mid-term system depends on coordination across FAA lines of business, including specialists on safety, airports, the environment, policy development and air traffic management. FAA information and management systems must keep these activities synchronized as we approach the mid-term, reach it and move forward. We use a strategic Environmental Management System approach to integrate environmental and energy objectives into the planning, decision making and operation of NextGen.

RESPONSE TO NEXTGEN ADVISORY COMMITTEE RECOMMENDATIONS

At the FAA's request, the RTCA launched the NextGen Advisory Committee (NAC) in summer 2010 to solicit recommendations on issues critical to NextGen's successful implementation. Early in 2011, top-level aviation executives began analyzing equipment and related incentives, trajectory operations, airspace and procedures, metrics and integrated capabilities. On Sept. 29, 2011, the NAC approved the recommendations its work groups devised and then submitted the suggestions to the FAA. Cross-agency teams formulated responses and action plans, which FAA executive management approved. We summarize the NAC recommendations and the FAA responses in the Plan.

NEXTGEN AHEAD

Over the next several years, we will build on existing NextGen technologies and procedures to offer additional capabilities in the NAS.

Forthcoming improvements include expanded surface data-sharing capabilities (and corresponding policies) to enhance surface safety and foster collaborative air traffic management. We are also developing procedures to enable more efficient use of closely spaced parallel runways to improve airport throughput, particularly during poor visibility conditions.

During the 2013-2015 timeframe, we plan to develop and implement mechanisms to provide NAS users with information about the current and future status of Special Activity Airspace (airspace set aside for military training and other specialized use), enabling more efficient flight planning.

We are also capitalizing on the precise surveillance of ADS-B to introduce a new capability that will enable controllers to better sequence arrival traffic from greater distances, improving the predictability and efficiency of traffic flow into busy airports. We will also leverage ADS-B to track the location of properly equipped ground vehicles on the airport surface.

Data Comm will enable a supplemental means for two-way exchange of information between controllers and flight crews. We are on track for a final investment decision this year for the VHF radio network that will carry Data Comm messages. An initial tower capability for revised departure clearances is expected in 2015.

CHALLENGES

Even in the face of new challenges, the FAA remains confident about NextGen success. Given our history of overcoming difficulties, we are prepared to respond to any new obstacles.

Uncertainties and constraints increase the importance of managing NextGen with the skill and determination that such a complex system engineering project requires. We are making considerable progress on challenges that are malleable to management solutions. In 2011, the FAA reorganized the office responsible for carrying out NextGen implementation under an initiative called Foundation for Success, providing a more effective organizational and management structure for ensuring the timely, cost-effective delivery of NextGen. The head of NextGen now reports to the deputy administrator of the FAA, increasing NextGen's visibility within and outside the agency.

WHY NEXTGEN MATTERS

NextGen benefits everyone from frequent flyers to those who rarely travel by air. NextGen will provide a better travel experience, with fewer delays, more predictable trips and the highest level of safety. Many people who live in neighborhoods near airports will experience less aircraft noise and fewer emissions. Communities will make better use of their airports, strengthening their local economy. Our nation's economic health depends on a vital aviation industry.