Federal Aviation Administration

NextGen for
Airports

NextGEN

NextGen and General Aviation Airports

The NextGen modernization of the U.S. air traffic system is already providing benefits for airports large and small and will provide more as the effort progresses. NextGen will provide new capabilities that will improve safety and accessibility at airports used by piston- and turbine-powered general aviation aircraft.

**The WAAS/LPV Option for Low Visibility Approaches**
New approach procedures using the Wide Area Augmentation System (WAAS) increase access to general aviation airports, especially during periods of low visibility. WAAS improves horizontal and vertical accuracy of GPS to about two meters and new Localizer Performance with Vertical Guidance (LPV) approaches can be flown by equipped aircraft down to a decision altitude that is as low as 200 ft. above the runway. Pilots fly the approach much like an Instrument Landing System (ILS) approach, but airports do not have to install and maintain expensive ground-based equipment.

As of July 2011, there were 2,529 FAA-published LPV approaches for use at U.S. airports. In fact, there were nearly 1,000 LPV approaches to airports without ILS. Tens of thousands of general aviation aircraft are already equipped with GPS and many thousands also have WAAS because it is an attractive upgrade. In addition, some commercial operators have also equipped scheduled-service aircraft to fly WAAS guided approaches.

The Benefits of ADS-B
Another NextGen development that is helping general aviation pilots is the nationwide rollout of a network of Automatic Dependent Surveillance-Broadcast (ADS-B) ground transceivers. These transceivers receive GPS position reports from aircraft equipped with ADS-B Out, an upgrade required by 2020 for aircraft flying in most controlled airspace.

Transceivers are already installed and providing service in about two-thirds of the country. The remaining transceivers will be installed by 2013 to provide nationwide coverage. The transceivers will transmit data on air traffic (Traffic Information Service-Broadcast, or TIS-B) and weather information (Flight Information Service-Broadcast, or FIS-B). Pilots of aircraft equipped to receive and display this information are already benefitting from these data when flying over many areas of the U.S. The services are free.

Service Volume Coverage Areas
(as of March 2011)
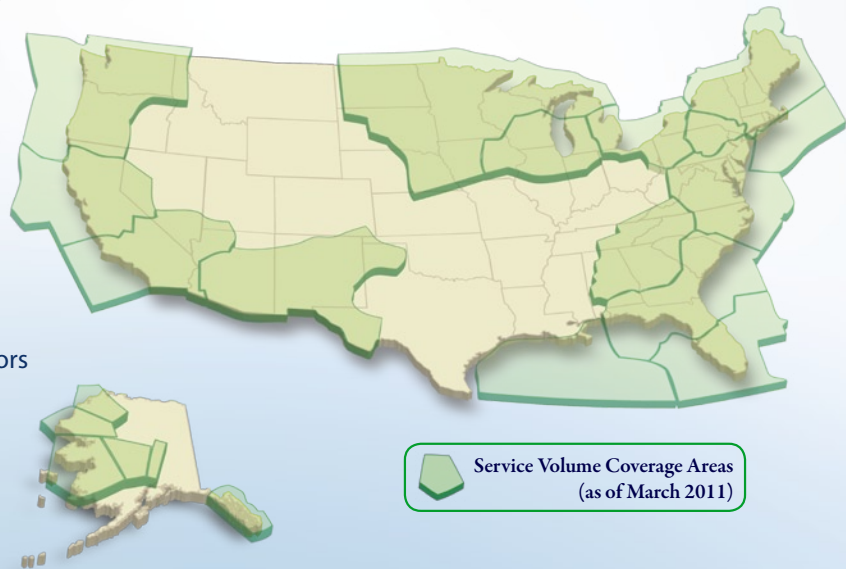
Information Provided Free via TIS-B and FIS-B
TIS-B uses surveillance data from ground-based air traffic control radars and ADS-B position reports from equipped aircraft and sends these reports back through the ADS-B ground stations to the cockpits of properly equipped aircraft. This will help pilots visually acquire other aircraft more easily, and TIS-B will improve pilot situational awareness, including times when the aircraft is near an airport. TIS-B shows the position of other aircraft within a 15-mile radius and plus or minus 3,500 ft. altitude.

FIS-B is a collection of 12 products that bring to the cockpit display both graphical and textual real-time weather, NOTAMs, SIGMETs, pilot reports and the current status of special use airspace. Because weather plays a role in many general aviation accidents, FIS-B will provide enhanced safety for pilots of equipped aircraft.

NextGen and Commercial Airports

In anticipation of future air traffic growth, NextGen capabilities will help commercial airports accommodate the demand for additional capacity in a safe, efficient and environmentally responsible manner. For example, the sharing and use of newly available surface surveillance data to track aircraft and vehicles will enhance safety and enable airports to make better use of existing capacity. And while airport surface improvement is one of the main near-term areas of emphasis, work is also underway on other initiatives, such as improving operations on closely spaced parallel, converging and intersecting runways.

Departure Queue Management
Guiding aircraft in and out of airports more efficiently is essential for smooth operations. A number of NextGen capabilities under development will help improve departure management.

In 2010, the Port Authority of New York and New Jersey, airlines and the FAA demonstrated a virtual departure queue management procedure at John F. Kennedy International Airport. The new scheme assigned a time for pilots to contact air traffic controllers for clearance to taxi, rather than permitting pilots to push back from the gate and wait an unpredictable amount of time with engines running for the taxi clearance. This change significantly reduced the number of aircraft in line waiting for takeoff with engines running, thus reducing the environmental impact of surface operations.

The FAA tested a more automated system, Collaborative Departure Queue Management (CDQM), to optimize departure queues at Memphis International Airport. This prototype CDQM system used real-time data-sharing among FAA, Delta Air Lines and FedEx. A surface decision support system allocated available departure capacity among the various flights that were ready to go, in ten-minute blocks, so that airlines could make decisions on when to push back their aircraft from the gate. CDQM cannot eliminate delays, but it does shift them from the runway to the ramp or gate area where aircraft can wait with engines off.

Another version of CDQM that aims for a simple, low-cost solution is N-Control, a NextGen-funded initiative demonstrated at Boston Logan International Airport in 2010. The N refers to the maximum number of aircraft authorized to push back from the gate during a certain period of time. While the FAA is developing this and other NextGen CDQM options, it will be some years before these options will be operational.

Sharing Surface Surveillance Data
Surface data sharing is key to safe and efficient airport operations. The FAA is putting in place tools that will enable airport operators, airlines and other NAS users better access to surface surveillance data. In 2011, the FAA finished installation of Airport Surface Detection Equipment-Model X (ASDE-X) at 35 of the nation's busiest airports. Nine other airports are set to receive less elaborate enhancements to airport surface detection equipment by 2015.

Data from these 44 airports will be fed into a database and made available to airport and aircraft operators. The FAA plans to streamline the approval processes for access to surface data through the new NAS Enterprise Services Gateway.
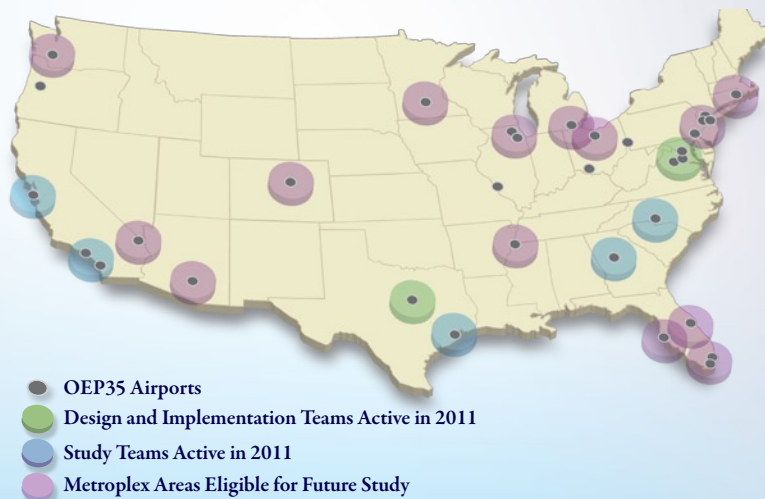
Keeping Track of Ground Vehicles with ADS-B
In another near-term initiative, some airports will install low-cost ADS-B transponders (also known as squitters) on vehicles that drive in the airport movement area. Snow plows, maintenance and construction trucks, and airport rescue and firefighting vehicles will transmit their position so that controllers will see their location on an ASDE-X display of the runway surface. Pilots of aircraft equipped with ADS-B In cockpit displays also will be able to see vehicle locations.

NextGen Upgrades for 21 Metroplex Areas
The FAA is moving ahead to rapidly implement new Performance Based Navigation (PBN) procedures and minor adjustments to airspace sectors. PBN includes area navigation (RNAV) and Required Navigation Performance (RNP) procedures that enable aircraft to fly approaches and departures on new paths, not available previously due to the constraints of ground-based navaids.

This effort, the Optimization of Airspace and Procedures in the Metroplex (OAPM), has identified 21 metroplex areas for study and improvement aiming to deconflict arrivals and departures by 2016. A metroplex is a metropolitan area where multiple airports are located. For example, the Southern California metroplex contains more than a dozen general aviation airports within its boundary, as well as major commercial airports such as Los Angeles International Airport. So far, studies have been completed in two metroplexes – Washington, D.C., and North Texas – and implementation work has begun at these locations. Studies are underway at Houston, Atlanta, Charlotte, N.C., Northern California and Southern California. While large commercial airports are the primary beneficiaries of the airspace efficiency improvements, general aviation airports will also see improved efficiency and access.

- OEP35 Airports
- Design and Implementation Teams Active in 2011
- Study Teams Active in 2011
- Metroplex Areas Eligible for Future Study

Why NextGen Matters

NextGen is a comprehensive overhaul of our National Airspace System to make air travel more convenient and dependable, while ensuring your flight is as safe, secure and hassle-free as possible.

In a continuous rollout of improvements and upgrades, the FAA is building the capability to guide and track air traffic more precisely and efficiently to save fuel and reduce noise and pollution. NextGen is better for our environment and better for our economy.

- NextGen will be a better way of doing business.
- NextGen will reduce aviation's impact on the environment.
- NextGen will help us to be more proactive in preventing accidents with advanced safety management.
- NextGen will get the right information to the right person at the right time.
- NextGen will lay a foundation to continually improve air travel and strengthen the economy.
- NextGen will help communities make better use of their airports.
- NextGen will enable us to meet our increasing national security and safety needs.
- NextGen will bring about one seamless global sky.

Visit us at **www.faa.gov/nextgen**
for information on NextGen, videos, interactive maps and answers to the questions below

- In discussing the approach procedures at my airport with pilots, there seems to be a need for a new PBN procedure. I'm the airport manager. How do I request consideration of a new instrument flight procedure?

- Where can I find information on newly published RNAV and RNP approach procedures? How many LPV approaches has the FAA published?

- What does NextGen do for airport capacity, particularly during inclement weather?

- I'm interested in vehicle transponders for my airport to improve situational awareness. Where can I go for additional information?

- How does NextGen help improve ATC-surveillance at airports that don't have radar coverage today?

- What is FAA doing to help airports prepare for NextGen?

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U.S. Department of Transportation
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