



NextGen Works for Business Aviation

For business aircraft operators, the Next Generation Air Transportation System (NextGen) means a shift to smarter, satellite-based, digital technologies and new procedures that combine to make air travel more convenient, efficient and environmentally friendly.

Whether it's a large-cabin business jet, very light jet, turboprop or piston-powered aircraft, business aviation enables individuals to conduct their work efficiently throughout the United States and around the world.

Many communities across the country are not served by major air carriers. Airlines use approximately 500 airports in the United States, while business aviation operators have access to almost 5,000. Business aviation enables flexible, safe, secure and cost-effective access to these airports with the added convenience of being able to conduct work privately while en route.

With such a large range of aircraft with different operational characteristics, business aviation uniquely benefits from NextGen and the modernization of the National Airspace System (NAS).

ADS-B

The FAA in 2014 completed installation of Automatic Dependent Surveillance–Broadcast (ADS-B), a transformational NextGen program that benefits all aircraft operators. ADS-B Out will be required by January 1, 2020 for all aircraft flying in most controlled U.S. airspace. ADS-B Out avionics transmit location data to air traffic controllers and other aircraft equipped to receive it, and enables air traffic controllers to track aircraft with greater accuracy and reliability. ADS-B In, which is not yet mandated, gives pilots of properly equipped aircraft weather data and displays the position of other aircraft to enhance a pilot's situational awareness.

The FAA installed ADS-B ground stations on offshore oil platforms in the Gulf of Mexico as part of a nationwide deployment. Coupled with ground stations along the Gulf coast, the platform stations extend ADS-B coverage well into the Gulf, which does not have radar coverage. This improves air traffic control services over the Gulf with the added benefit of reduced aircraft separation.



This is especially beneficial to helicopter operators in the region. ADS-B will also provide new flexibility for aircraft climbing and descending near other aircraft over the Atlantic and Pacific oceans. With ADS-B, the FAA will allow maneuvering aircraft to climb or descend as close as 15 nautical miles to other aircraft. This will be possible with business jets using either ADS-B In-Trail procedures or ADS-Contract Climb/Descent procedures. Both capabilities will become operational in 2016.

PBN

Performance Based Navigation (PBN) procedures provide a wide range of new capabilities for business aviation. In addition to providing shorter and more direct routes, PBN procedures enable aircraft to conduct Optimized Profile Descents (OPD) from jet cruising altitudes to final approach. The FAA is targeting complex metropolitan areas — metroplexes — with PBN procedures. These metroplexes include multiple airports of different sizes used by the airlines and business aviation.

In Denver, Standard Terminal Arrival (STAR) procedures were designed specifically for business jets to operate high above Denver International Airport's airline traffic.

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These NextGen procedures allow business jets to descend on an OPD into Centennial Airport and Rocky Mountain Metropolitan Airport while staying clear of air carriers. In the past, business jets often flew below airline traffic and could be caught in convective or mountain wave turbulence, which made the ride uncomfortable for passengers.

RNAV (GPS)

Business aircraft equipped with the Wide Area Augmentation System (WAAS) and display capability can fly an Area Navigation (RNAV) GPS precision approach using satellite positioning. This equipment enables equipped aircraft to fly approach procedures to Localizer Performance with Vertical Guidance (LPV) minima with decision altitudes as low as 200 feet. LPV is displayed to a pilot in a way similar to an Instrument Landing System (ILS) and is equivalent to the minimums of a Category 1 ILS approach. Most new business jets are manufactured with WAAS already installed, and supplemental type certificates are available for nearly every model of older aircraft. More than 7,000 business aircraft are now equipped with WAAS receivers.

There are 1,279 ILS approaches in the United States. As of September 2015, there are 3,568 approach procedures with LPV minimums serving over 1,600 airports. There are 592 approach procedures with Localizer Performance (LP) minimums serving almost 400 airports. An approach with LP minima is similar to a non-precision approach capability such as an ILS with localizer only. Many of these are at airports that have no ILS. More than 900 LPV approaches have minimums as low as 200 feet before the pilot has to be able to see the runway to land, the same as a Category 1 ILS approach. The FAA will continue developing LPV and LP procedures until every qualified runway in the NAS has one.

The FAA has now published over 544 RNAV Standard Instrument Departure routes and more than 362 RNAV STAR procedures.

ELVO

The FAA supports several capabilities for business aircraft operators who need access to an airport during low visibility — when the cloud ceiling is below 200 feet above the runway or visibility is less than a half-mile. Enhanced Low Visibility Operations (ELVO) is one of the programs funded by NextGen. Under ELVO, departures can be as low as 500 feet compared to the current 1,600 feet requirement at many airports, clearly providing an operational advantage. With ELVO, ILS approaches can be flown safely in lower visibility than previously possible and with much less expensive runway lighting systems. Inexpensive lighting means more business aviation operators can take advantage of this capability.

The FAA also permits an Enhanced Flight Vision System (EFVS) to be used in lieu of natural vision to descend below decision altitude/decision height (DA/DH) or minimum DA on straight-in instrument approaches down to 100 feet above the touchdown zone. At 100 feet, the flight crew must acquire the required visual references with natural vision. EFVS affords a higher level of access, providing a visual advantage for the flight crew to see required visual references. With EFVS, access is allowed that otherwise would be denied because of low visibility.

At many airports, the FAA has approved the use of a head up display (HUD) on a precision approach to lower minimums. A HUD provides critical flight and navigation data on a transparent screen in front of the pilot. The HUD allows the pilot to view primary flight display information and navigation information, together with a forward view out the window. Many business jets are equipped with a HUD, which means they can take advantage of hundreds of ILS procedures with new capabilities. Aircraft equipped with a HUD, a flight director or an autopilot can also fly several hundred Category 1 ILS approaches with just 1,800 feet runway visual range instead of 2,400 feet with reduced lighting requirements.

