

NextGen Works for Business Aviation

Whether it's a large cabin jet, very light jet, turboprop, or piston powered aircraft, business aviation enables professional travelers to conduct business throughout the United States. Long-range jets even span the oceans. Because business aviation has such a large range of aircraft and operational characteristics, the modernization of the National Airspace System (NAS) uniquely benefits this group of stakeholders.

The Next Generation Air Transportation System (NextGen) increases situational awareness and flight options. It reduces flying time and fuel burn, increases predictability and airport access.

ADS-B

The FAA recently completed the installation of a transformational NextGen program that benefits all types of aircraft. In fact, all aircraft operating in controlled airspace will be required to use Automatic



Dependent Surveillance–Broadcast (ADS-B) Out by Jan. 1, 2020.

ADS-B Out enables air traffic controllers to track aircraft with greater accuracy and reliability. ADS-B In gives pilots of properly equipped aircraft more information in the cockpit to enhance situational awareness. There is also the potential for additional



benefits in the years ahead depending on what applications are developed from this new capability. As part of its nationwide rollout of more than 600 ADS-B ground stations, the FAA has deployed 12 ground stations on offshore oil platforms in the Gulf of Mexico. Coupled with nine ground stations along the Gulf coast, the platform stations extend ADS-B coverage well into the Gulf, which does not have radar coverage. This is improving air traffic control services over the Gulf with reduced separation.

ADS-B will also provide new flexibility for climbs and descents near other aircraft over the Atlantic and Pacific oceans. The FAA is planning to allow maneuvering aircraft to climb or descend while being as close as 15 nm to other aircraft. This will be possible with business jets using either an ADS-B In Trail procedure or ADS-C (Contract) Climb/Descent procedure. Both capabilities are expected to 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. For maximum effect, the FAA is targeting complex metropolitan areas with PBN procedures. These Metroplexes include multiple airports of dramatically different sizes used by a variety of aircraft.

In Denver, Standard Terminal Arrival (STAR) procedures were designed specifically for business jets to operate high above Denver International Airport's airline traffic. These NextGen procedures allow business jets to descend on an OPD into Centennial Airport and Rocky Mountain Metropolitan Airport while staying well clear of airliners. 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.

As of April 2014, the FAA has published 438 Area Navigation (RNAV) Standard Instrument Departures (SIDs) and 251 RNAV STARs in the NAS. In addition, the agency has published 114 high altitude Q Routes and 99 lower altitude T Routes.

RNAV (GPS)

Business jets and turboprops equipped with the Wide Area Augmentation System (WAAS) and display capability can fly a new type of precision approach using satellite positioning. This equipment enables equipped aircraft to fly RNAV (GPS) approach procedures to Localizer Performance with Vertical Guidance (LPV) minima with decision altitudes as low as 200 feet. This is equivalent to the minimums of a Category 1 Instrument Landing System (ILS) approach. Most new business jets are rolling off the production line with WAAS already installed, and supplemental type certificates are available for nearly every model of aircraft.

As of April 2014, there were 3,402 WAAS LPV approach procedures serving 1,675 U.S. airports. Many of these are at airports that have no ILS approach. Currently, there are also 538 Localizer Performance (LP) approach procedures in the United States serving 392 airports. An approach with LP minima is similar to non-precision approach capability such as an ILS with localizer only.

ELVO

The FAA is making it possible for business jets and turboprops to land in lower visibility at little or no added cost using avionics already installed. Many business jets are equipped with Head Up Displays (HUD), which means they can take advantage of hundreds of Instrument Landing System procedures with new capabilities.

ILS approaches can be flown safely in lower visibility than previously thought or with much less expensive runway lighting systems. Inexpensive lighting means more airports can take advantage of this new capability.

NextGen now funds the Enhanced Low Visibility Operations (ELVO) program. Under ELVO, departures can be to as low as 500 feet versus the current 1,600 feet capability at many airports, clearly providing an operational advantage. Aircraft equipped with a HUD or a flight director or an autopilot can also fly several hundred Category 1 ILS approaches with just 1,800 RVR instead of 2,400 with reduced lighting requirements.

