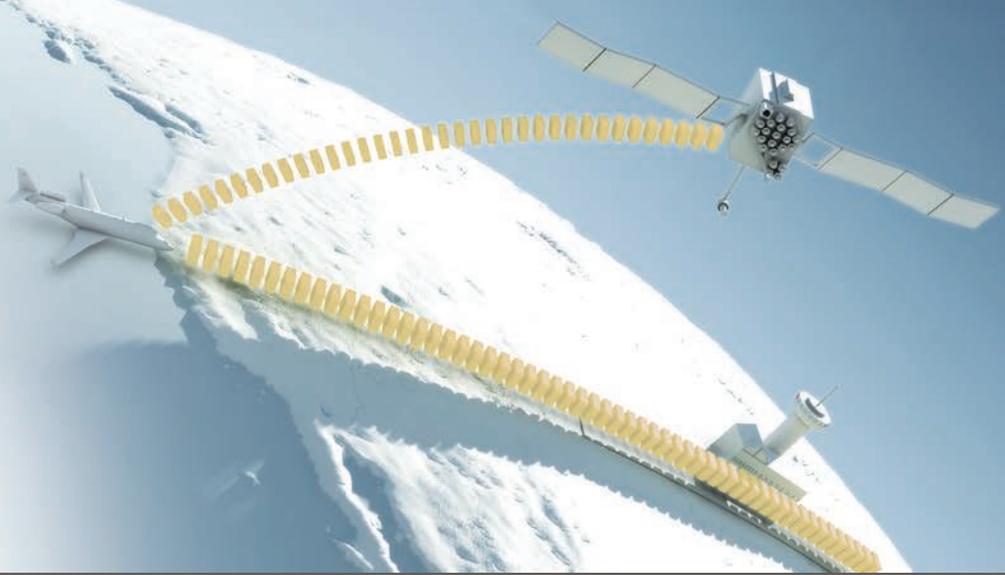


# WAAS-LPV



## WIDE AREA AUGMENTATION SYSTEM – LOCALIZER PERFORMANCE WITH VERTICAL GUIDANCE

### BENEFITS

Benefits include enhanced safety, increased flight-planning options, cost savings and improved airport access. WAAS-LPV improves the efficiency of aviation operations through:

- Greater runway capability
- Reduced separation standards, which allow increased capacity in a given airspace without increased risk
- More direct en route flight paths
- New precision approach services
- Reduced and simplified equipment on board aircraft



WAAS-LPV is available for the G150 and G200

## WAAS-LPV BASICS

WAAS-LPV (Wide Area Augmentation System – Localizer Performance with Vertical Guidance) is an extremely accurate navigation system developed for civil aviation. It is composed of satellites and ground stations that improve the accuracy of the Global Positioning System (GPS). WAAS-LPV, part of the Federal Aviation Administration's (FAA) Next Generation Air Transportation System, is intended to enable aircraft to rely on GPS for all phases of flight — en route navigation, departures and arrivals at any airport within the GPS's coverage area.

## WAAS-LPV OPERATION

WAAS-LPV consists of ground reference stations/receivers throughout the U.S., Canada and Mexico that monitor GPS satellite data. Master stations, located on both U.S. coasts, collect data from the reference stations and create a GPS correction message. Those stations transmit improvements to geostationary satellites—those with a fixed position over the equator. The satellites then broadcast correction signals to WAAS-capable satellite receivers.

WAAS-LPV also provides localizer performance with vertical guidance, which allows pilots to fly into approved airports using a pseudo-glidescope, just as they would with an instrument landing system (ILS) approach.

## DIFFERENCES BETWEEN LPV AND WAAS

LPV is the certification that enables an aircraft to fly GPS approaches to a lower minimum. Landing minima are similar to those in an ILS approach — a decision altitude of 200 feet and visibility of a half-mile.

A system that is WAAS-capable is also LPV-capable, but without the proper certification, the LPV portion of the system can't be activated.

Gulfstream

PRODUCT SUPPORT



### **WAAS-LPV AVAILABILITY ON GULFSTREAM AIRCRAFT**

An optional WAAS-capable receiver can be installed on new G150s during final-phase manufacturing or as a retrofit on all in-service G150 and G200 aircraft. WAAS-LPV functionality is provided on Gulfstream aircraft (G650, G550, G500, G450, G350, G280) as part of the enhanced navigation package, an upgrade to the PlaneView™ flight deck.

### **AIRPORTS WITH WAAS-LPV APPROACHES**

The FAA plans to develop approximately 8,900 WAAS-LPV approaches across the U.S. As of March 2014, there were 3,379 such approaches at more than 1,666 airports.

### **WAAS-LPV AVAILABILITY OUTSIDE OF NORTH AMERICA**

Like the United States with WAAS, other governments have developed satellite-based differential or augmentation systems.

The European Commission approved the European Geostationary Navigation Overlay Service (EGNOS) “safety-of-life” signal in March 2011. Aircraft flying EGNOS approaches must be equipped with a WAAS/EGNOS-enabled receiver and airports must have EGNOS-specific approach procedures for their runways. As of April 2014, 83 airports in France were using EGNOS.

Japan has a similar navigation system in place called MSAS (Multi-Functional Satellite Augmentation System), while India has developed a system called GAGAN (GPS-Aided, Augmented Navigation).

To learn more, please visit [gulfstream.com/waas](http://gulfstream.com/waas).

