

# SOLAR AGL IS #1 CHOICE FOR NON-PRECISION INSTRUMENT RUNWAYS

<https://solutions4ga.com/solar-agl-is-1-choice-for-non-precision-instrument-runways/>

As a manufacturer of Solar Airfield Ground Lighting, we are often asked by airport managers and airport planners whether Solar AGL can be used as primary lighting system for commercial airports. At the same time and due to limited regulatory framework on solar runway lighting – local Civil Aviation Authorities are often forced to find a way to interpret “solar AGL”.

In order to support a transition from hard-wired conventional to solar AGL – we have existing aviation regulations to identify types of applications where solar-powered AGL is the best fit.

## THE SAME RIGOROUS STANDARDS...

Solar AGL has to be compliant with the same rigorous standards as conventional airfield ground lighting:

- lighting fixture has to provide specific light output within certain angles
- light emitted has to comply with chromaticity (color) requirements.

## EVOLVING REGULATORY FRAMEWORK

We analyzed requirements towards airfield ground lighting issued by the most significant aviation governing bodies of the World such as:

**ICAO** – *The International Civil Aviation Organization*

**EASA** – *European Aviation Safety Agency*

**FAA** – *The Federal Aviation Administration (FAA) of the United States*

**CASA** – *The Civil Aviation Safety Authority (CASA) of Australia*

**ANAC** – *The National Civil Aviation Agency of Brazil*

### The goals of the analysis were:

To identify current state of regulations governing usage of solar-powered airfield lighting in the airports. To collect all requirements that are used to interpret whether solar-powered airfield ground lighting can be used in the airports.

## SOLAR AGL IS ALREADY APPROVED BY FEW MAJOR AVIATION AUTHORITIES

Current regulatory framework governing the usage of solar-powered airfield lighting is relatively limited and requires to be more developed. However, we see that major aviation authorities have already shown their trust for the technology.

1. Australian CASA currently allows for use of solar-powered runway lighting system as primary lighting at aerodromes intended for use by aircraft with less than 10 passengers. A recent review of CASA Manual of Standards 139 by the Australia Airports Association recommended considering the usage of solar lighting systems to be used for registered aerodrome regardless of number of passengers, providing there is adequate redundancy in place.
2. Brazilian ANAC officially allowed using autonomous solar-powered LED lights as the primary lighting system at airfields with visual operations. For airports with instrument landing systems, it is allowed to use as a back-up lighting.
3. US FAA issued Engineering Brief No. 76 that provides information on using solar-powered airport obstruction lighting
4. US Department of the Air Force issued Engineering Technical Letter approving solar-powered lighting fixtures for use in expeditionary locations, ranges and areas used only for training as well as temporary lighting to accomplish airfield repairs

ICAO (as well as EASA) does not issue any specific requirements for solar airfield lighting. Therefore airport planners usually treat solar AGL in accordance with requirements applicable for conventional wired lighting.

## **SUITABILITY OF SOLAR AGL FOR SPECIFIC RUNWAY DEPENDS ON TYPE OF APPROACH (INSTRUMENT / NON-INSTRUMENT)**

ICAO, EASA, FAA and CASA define runway lighting requirements based on the type of approach that runway is designed for. Runways are divided into 2 major groups:

1. Non-instrument runways – runways intended for the operation of aircraft using visual approach procedures.
2. Instrument runways
  - Non-precision approach runways – instrument runways served by visual aids and a non-visual aid providing at least directional guidance adequate for a straight-in approach. Typical non-precision aids are: VOR, NDB, localizer (LOC), RNAV, GPS, etc.
  - Precision approach runways (including category I, II and III) – instrument runways served by ILS (Instrument Landing System) and visual aids intended for operations with a decision height from 60 to 0 meters above the point of touchdown.

Today solar AGL is used as a **primary system** to illuminate non-instrument and **non-precision instrument runways**. Airports with precision approach instrument runways usually use solar AGL as back-up or emergency runway lighting.