

## Requirements on Solar PV Installation in Vicinity of Airports

### I) Overview

The Civil Aviation Authority of Singapore (CAAS) recognizes solar energy as a promising source of renewable energy for Singapore and its growing popularity. While CAAS supports the use of solar energy, it had identified the potential aviation risks associated with solar photovoltaic(PV) systems near civil airports in Singapore. In addressing these concerns, CAAS has come up with policy guidelines governing the installation of solar panels around airports.

### II) Policy Guidelines

#### 1. Height Limits

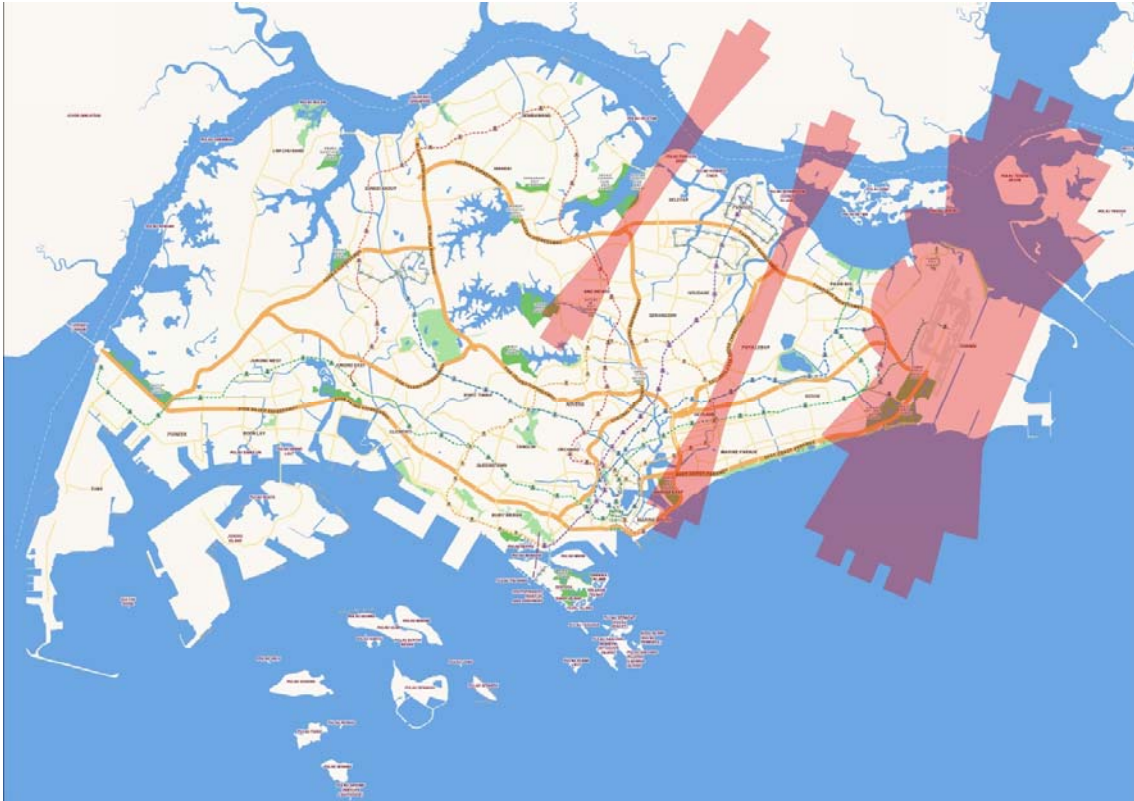
- a) CAAS is one of the technical agencies that oversees development in Singapore. All structures and fixtures including PV installations will have to be erected below the allowable height limit.
- b) For new developments, the height limit information is made available to QP through URA during the Development Control (DC) stage. For existing buildings, QP can either consult CAAS on the height limit or check past building plans for the information.

#### 2. Technical study

- a) PV panels have the potential of causing distraction and temporary loss of vision to pilots and Air Traffic Controllers (ATC). As such, CAAS requires QP whose buildings are located in the zone shown in the map below to conduct a solar glare analysis to assess and mitigate the impact of PV panel on pilots and ATC. QP can check if their development falls within the zone by assessing [www.onemap.sg](http://www.onemap.sg)
- b) CAAS adopts the U.S. Federal Aviation Administration (FAA) standards on solar PV systems to determine the impact of glare. QP can either use FAA's recommended Solar Glare Hazards Analysis Tool (SGHAT) or an equivalent software to make the assessment. Information on SGHAT can be found at the following URL: [share-ng.sandia.gov/glare-tools/](http://share-ng.sandia.gov/glare-tools/)
- c) The assessment considers the location of the panels in relation to the locations of the air traffic control tower and the flight paths of aircraft. Taking into account the sun position, the

observer/receptor location, and the characteristics of the solar PV panels (tilt, orientation, reflectance, location and extent), the software will produce results that identify three categories of glare: green (low potential for an after-image), yellow (potential for an after-image), and red (retinal burn).

### CAAS Zone for PV Consultation



### III) CAAS Acceptance Criteria

3. Upon receipt of the report from the QP, CAAS will require 7 working days to provide a reply. CAAS clearance is dependent on whether the following criteria are met:
  - a. No potential for glare/glint in the existing Air Traffic Control Tower or to the ATC.
  - b. No potential for glare or “low potential for after-image” (green category) along the flight path area.

4. In the event the above criteria can't be met, the QP shall make necessary adjustment (tilt angle, orientation and types of PV panel) to mitigate the hazard. In some cases, section of PV panels that have been identified to be the cause of glare may need to be removed

For further assistance, please send your enquiries to:

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