

## Policy Statement

### Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150m Above Ground Level

#### Scope and Definition

1. In the UK, the need for aviation warning lights on 'tall' structures depends in the first instance upon any particular structure's location in relationship to an aerodrome. If a structure penetrates the obstacle limitation surfaces of an aerodrome, it is for the aerodrome operator to assess the need for warning lights<sup>1</sup>.
2. The UK statutory requirements for the lighting of en-route obstacles (i.e. those away from the vicinity of a licensed aerodrome) are set out in Article 222 of the UK Air Navigation Order (ANO) 2016.<sup>2</sup> This article requires medium intensity (2000 candela) steady red aviation warning lights to be mounted as close as possible to the top of all structures at or above 150 meters above ground level (AGL). In terms of requirement for lighting wind turbine generators in accordance with the ANO, the CAA considers the top of a wind turbine generator to be the maximum blade tip height. In terms of positioning of aviation obstruction lighting on wind turbine generators with a maximum height of 150m AGL or above onshore<sup>3</sup>, the CAA interprets<sup>4</sup> 'as close as possible to the top of the obstacle' as the fitting of lights on the top of the supporting structure (the nacelle) rather than the blade tips.
3. Taking into account the Recommendation in ICAO Annex 14 Vol 1 (Seventh edition 2016), this Policy Statement provides guidance as to the application of Article 222 with relation to onshore wind turbine generators with a maximum blade tip height at or above 150m AGL. It should be noted that:
  - a. Other onshore structures, including meteorological masts, at or above 150m AGL are not covered by this policy statement.
  - b. Individual wind turbine generators below 150m AGL are not routinely lit for civil aviation purposes; however, it is possible that aviation stakeholders, including the CAA, may make a case for aviation warning lighting where a structure is considered, by virtue of its location and nature, a significant navigational hazard. Further information is available within CAP 764.

#### Policy

4. Under Article 222 (5), the CAA may direct that an en-route obstacle must be fitted with and must display such additional lights in such positions and at such times as it may specify. In addition, under Article 222 (6) a permission may be granted for the purposes of this article for a particular case or class of cases or generally. Accordingly, the following policy shall apply to all UK land based wind turbine generators which have a maximum blade tip height at or above 150m AGL:

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<sup>1</sup> Commission Regulation EC No 139/2014 (B.080) and associated AMC/GM (Aerodrome Regulation).

<sup>2</sup> [CAP 393 - Air Navigation: The Order and Regulations](#).

<sup>3</sup> Requirements for offshore wind turbine generators differ from those onshore and are covered by ANO 2016 Article 223.

<sup>4</sup> [CAP 764 - CAA Policy and Guidelines on Wind Turbines](#) – Chapter 3, Page 39, Footnote 26.

- a. The person in charge of the wind turbine generator must ensure that it is fitted with a medium intensity (2000 candela) red light positioned as close as practicable to the top of the fixed structure. A second light serving as an alternative should be provided in case of failure of the operating light.
- b. The lights required by paragraph (a) must be so fitted to show when displayed in all directions without interruption<sup>5</sup>.
- c. Additionally, at least three (to provide 360 degree coverage) low-intensity Type B<sup>6</sup> lights (32 candela) lights should be provided at an intermediate level of half the nacelle height.
- d. Subject to sub-paragraphs (e) and (f), the person in charge of a wind turbine generator must ensure that any light required to be fitted by this article is displayed.
- e. Lights should be operated by an acceptable control device (e.g., photocell, timer, etc.) adjusted so the lights will be turned on whenever illuminance reaching a vertical surface falls below 500 LUX. The control device should turn the lights off when the illuminance rises to a level of 500 LUX or more.
- f. In the event of the failure of any light which is required by this policy statement to be displayed, the person in charge of a wind turbine generator must repair or replace the light as soon as practicable. For any outage that is expected to be or is greater than 12 hours, the operator shall request a NOTAM to be issued by informing the NOTAM section (operating 24 hours) of the UK Aeronautical Information Service (AIS) by telephoning +44 (0) 1489 61 2488 / 2489 as soon as possible. This NOTAM is to specifically state (with justification) if the repair/replacement of the light will exceed 72 hours. AIS will copy the details of the NOTAM to the operator and to the CAA.
- g. If the horizontal meteorological visibility in all directions from every wind turbine generator in a group is more than 5 km, the intensity for the light positioned as close as practicable to the top of the fixed structure required to be fitted to any generator in the windfarm and displayed may be reduced to not less than 10% of the minimum peak intensity specified for a light of this type.

## SARG Point of Contact

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<sup>5</sup> The term 'without interruption', does not take into account blade flicker.

<sup>6</sup> As specified in ICAO Annex 14 Aerodromes Vol I - Aerodrome Design and Operations, Chapter 6 Paragraph 6.2