

Lighting and Marking of Wind Farm Turbines

1. Purpose and Scope	2
2. Authority	2
3. References.....	2
4. Conditions and Limitations	2

1. Purpose and Scope

To ensure consistent conditions and limitations are imposed in determinations made under Part 77 in relation to wind farm turbines subsequent to the effective date of this policy.

2. Document Change History

Version		
A	Initial Release	8 May 2002
B	Updated according to guidance in Annex 14 Vol 1 Sixth Edition July 2013, Section 6.2.4.3	2 March 2020

3. Authority

The Manager Aeronautical Services is the owner of this document and is responsible for the regular review and maintenance of this document. The Manager Aeronautical Services is responsible for ensuring that this document follows and meets the Responsibility, Application, Accountability, Monitoring, Approval/Amendments and Availability criteria described in the [Development and Control of CAA Policies and Procedures](#).

4. References

Rule 77.19(a) requires the Director to determine any structure 120 m or higher is a hazard in navigable airspace.

Rule 77.19(h) allows the Director to determine, based on the circumstances of each proposal, if a structure between 60 m and 120 m high is a hazard in navigable airspace.

Rule 77.21 (d) allows the Director to impose conditions or limitations for the marking and lighting of structures.

5. Conditions and Limitations

Unless the aeronautical study finds that there are specific circumstances that:

- (a) require a higher level of lighting or marking; or
- (b) in the case of wind farms with turbines between 60 m and 120 m, allow a lower level of marking or lighting;

the following minimum conditions and limitations are to be included in all determinations (Heights referenced below are from ground elevation to the nacelle, plus vertical blade height):

1. Selected individual turbines at wind farms with turbines over 60 m high will be required to have lighting.
2. Turbines 150m and 315m will require a secondary backup light and an array of 3 intermediate low intensity lights at a distance of half the nacelle height.
3. The above does not address wind turbines of more than 315 m of overall height. For such wind turbines, additional marking and lighting may be required as determined by an aeronautical study.

4. The highest turbines, those at the extremities of the site, and other turbines around the perimeter of the site will be lit to enable pilots to identify the extent of the windfarm¹. The spacing between lit turbines will not exceed 900m along the perimeter, and the flashing should be coordinated between all the lights in the wind farm so that they flash simultaneously .
5. Lighting will be medium intensity red as defined in Rule Part 77, Appendix B10, i.e. an effective intensity of not less than 1600 candela of red light, and will flash between 20 and 60 times per minute.
6. The obstruction lights shall be located on or above the top of the nacelle, shall be visible from all directions, and may be shielded below the horizontal plane.
7. Obstruction lights at intermediate levels will not be required for turbines less than 150m.
8. The painting of turbines with obstruction marking will not be required. The rotor blades, nacelle and upper 2/3 of the supporting mast of wind turbines should be painted white, unless otherwise indicated by an aeronautical study
1. All wind farms will be depicted on aeronautical charts.

¹ The objective in marking or lighting obstacles is to ensure pilots will see them with sufficient time to be able to avoid them. Assuming the time to react and avoid the obstacle is 1 minute, and that the aircraft is travelling at 180 knots, the obstacle (or lighting) must be visible from 3 NM. This is consistent with the minimum visibility requirement of 5 km (2.7 NM) for VFR operations in uncontrolled airspace.