

6 October 2011

Scott Stone  
General Manager  
Aviation Environment  
Aviation and Airports Division  
Department of Infrastructure and Transport

Dear Mr Stone,

**Proposed national guideline to manage risk to aviation safety from wind turbine farms**

The Clean Energy Council (CEC) welcomes the opportunity to comment on the proposed national guidelines for land use planners to manage the risk of wind turbine farms and physical obstacles to air navigation.

The CEC is the peak body representing Australia's clean energy and energy efficiency industries with close to 550 members.

Its priorities are to:

- create the optimal conditions in Australia to stimulate investment in the development and deployment of world's best clean energy technologies;
- develop effective legislation and regulation to improve energy efficiency; and
- work to reduce costs and remove all other barriers to accessing clean energy.

The CEC works with members and the government to identify and address the barriers to efficient industry development in the stationary energy and energy efficiency sector.

The CEC supports a well thought out and clear set of national guidelines that will enable continuing investment in the wind industry as well as protect aviation and community interests. The CEC presents the following comments and recommendations in response to the proposed guidelines.

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**Obstacle lighting**

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The background document and the guidelines appear to erroneously assume that all wind farms create a risk to aviation and should therefore be lit. The statement in Paragraph 14 – “*Proponents of wind farms where a wind turbine penetrates an OLS and/or exceeds 110m above ground level, should expect CASA will recommend appropriate obstacle lighting and marking to reduce hazard to aviation*” presupposes that every wind farm will have lighting recommended by CASA that then is required by the planning authority. It would be extremely onerous to impose lighting on all turbines above 110 metres, where those turbines are not in the vicinity of a registered aerodrome. The International Civil Aviation Organization (ICAO) standard

(Annex 14) defines an obstacle as a turbine which extends to a height of 150m or more above ground elevation unless a special aeronautical study indicates that they do not constitute a hazard to aeroplanes.

It is recognised that aircraft operate at altitudes well above turbines away from aerodromes and therefore represent minimal risk as described in Paragraph 21 of the background document. With the exception of approved low level operations (such as aerial agricultural spraying, search and rescue, fire fighting, etc.) aircraft in Australia flying under visual flight rules (VFR), except during takeoff and landing, are required to operate at a minimum height of 500 ft AGL (152.4 m) outside of built up areas and 1,000 ft AGL (304.8 m) over built up areas. In Australia most wind farms operate outside of built up areas (towns and cities) therefore aircraft should not be flying any lower than 152.4m AGL.

Further to this, the Civil Aviation Regulations require that, unless it is necessary for takeoff and landing, an instrument flight rules (IFR) or a Night VFR aircraft must not be flown at a height less than 1,000 ft above the highest obstacle within a 10 nautical mile radius of the aircraft in flight. Therefore any aircraft flying at night in the vicinity of a wind farm should be at least 1000ft above the tip of turbines.

The requirement for obstacle lighting for wind farms needs to be assessed on a case by case basis. Many wind farm developers commission an independent expert to conduct a risk based assessment of a planned wind farm development. This should be regarded as best practice as this detailed assessment will take into account the specific site. The proposed guidelines make no provision for developer initiated assessments, nor consideration of their conclusions.

There is an inconsistency between the proposed guidelines and CASA's current jurisdiction over obstacles not located within the vicinity of an aerodrome. In the past CASA only had jurisdiction over obstacles located in the vicinity of aerodromes. It is understood that CASA does not hold the statutory position of a 'referral authority' but rather CASA requests that they are notified of the development during the planning process and have the opportunity to provide recommendations. Statements in Paragraphs 13, 14, 25 and 26 are inconsistent with CASA's current position that it has no regulatory authority over obstacles not located within the vicinity of an aerodrome.

The Guidelines should specify the legislative role of CASA and the guidelines. It is not made clear if CASA will be imposing the requirements for the provision of obstacle lights outside the vicinity of an aerodrome, or just recommending lights. In most planning systems, responses from referral authorities are prescribed by the relevant Planning Act. In the absence of legislated timeframe requirements, CASA needs to specify a prescribed 30 day timeframe to respond to correspondence from a responsible authority or developer, and commit to honouring this timeframe.

The CEC does not believe that a one size fits all approach is appropriate. This is due to a number of reasons:

- As CASA is aware there are instances where wind turbine lighting would result in worse safety outcomes for aviation as wind turbine lights could drive pilots toward nearby unlit mountain ranges of equal or greater height.
- Obstacle lights on wind turbines are most often in a rural environment where there are limited other artificial light sources. Paragraph 38's assumption that obstacle lighting is

accepted by the community and that visual amenity criticism of obstacle lighting may stem just from concern about wind turbine itself is incorrect. Obstacle lighting is not well accepted by the community and there have been examples where campaigning by local communities have led to lighting being turned off particularly at night. Another example of the sensitivity to obstacle lighting by local communities was demonstrated in one of Pacific Hydro's South Australian wind farms where out of twenty-eight submissions received by the local council, fifteen specifically mentioned the red flashing lights as a reason for their objection.

## **RECOMMENDATIONS**

- The proposed guidelines need to be consistent with CASA's current policy over obstacles not located within the vicinity of an aerodrome.
- Obstacle lighting for wind farms should be assessed on a case by case basis. The guidelines should include a provision for independent, expert aviation assessments to be performed on individual wind development projects on the developer's initiation to determine if lighting is appropriate. If the independent assessment recommends that lighting is not appropriate and is not going to provide a material benefit to aviation safety, CASA should be required to consider and accept these recommendations. If CASA disagrees, it could seek further information from the developer or commission its own assessment.
- If it is deemed by either an independent assessment or CASA that lighting would be of material benefit to safety, CASA should allow greater flexibility with regards to the 900 metre rule. If this 900 metre rule is applied rigidly, this could result in more turbines being lit than necessary causing undue impact on surrounding communities.
- Clarification is required in the connection between "hazard" and "hazardous objects" to ensure that the guideline is clear. The guidelines should reasonably indicate the circumstances that would see a wind turbine considered an obstacle to aviation and/or a hazardous object.
- Paragraphs 18 and 30 need to be corrected. Experience has also shown that shielding of obstacle lights to the level outlined in the guidelines will not significantly alter the visual impact in some locations. The rotating blades can cause reflections and strobing resulting in further concerns to the community

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### **Lighting of wind turbines in the vicinity of an aerodrome**

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The CEC strongly opposes the use of separate supporting structures adjacent to wind turbines as is suggested in Paragraph 24 in the proposed Guidelines. In order to install obstacle lights on separate supporting structures at a height that corresponds to the highest point of the rotating blade of the turbine, lattice towers similar to those used for telecommunications and meteorology would be required. With modern wind turbines having blades of up to 152 metres in height, the required maximum 900 metre lighting intervals, a 50 turbine wind farm could require 25 separate 152 metre high lattice towers and the concrete footings required. These towers would present their own aviation obstacles; impact upon the visual amenity; have additional impacts upon birds and bats as these towers can be harder to detect than

wind turbines; further impact aerial spraying; increase wind farm capital costs; and cause turbulence effects on the wind turbines resulting in lower annual energy yields.

### **RECOMMENDATIONS**

The requirement for separate supporting structures should be removed from the proposed guidelines. Instead, obstacle lights should be installed only on the nacelle in such a manner as to provide an unobstructed view for aircraft approaching from any direction as is in line with the International Civil Aviation Organization (ICAO) recommendations and other standards around the world including the United Kingdom and mainland Europe.

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### **Marking of wind turbines**

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Paragraph 17 of the Guidelines states *“the white colour universally adopted for wind turbines installed so far in Australia.”* This is wrong. Colours specified for marking wind turbines by various planning authorities can range from white, off-white, light grey, pale grey or grey.

### **RECOMENDATION**

The statement in Paragraph 17 should be amended to reflect the range of colours used to mark turbines.

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### **Marking and lighting before and during construction**

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The proposed guidelines need to clarify what timelines are used to determine when a wind farm is being “progressively installed”. Installation and erection of all turbines can take up to one year due to supply, transportation and erection factors. The need for obstacle lighting should be assessed on a case by case basis to determine if it is appropriate.

If CASA is at this stage unsure of when it would be most appropriate to suggest or require lighting during a construction period, the CEC would be happy to coordinate a technical workshop to assist CASA in finalising this section of the guidelines.

### **RECOMMENDATIONS**

This requirement should also be considered on a case by case basis and include additional clarity around when such a requirement would be necessary and when it would not be necessary. Guidance should be provided for assessors to take into consideration the marginal safety benefits weighed up against impacts on wind farm construction and surrounding community amenity.

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### **Closing**

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The guidelines as currently drafted contain a number of inaccuracies and the intent of a number of elements is unclear. A number of amendments are required to ensure they are reasonable and clear for all parties involved and appropriately balance the interests of aviation, wind developers and surrounding communities. Further and more detailed consultation with the industry is required as these guidelines are developed further.

If you have any further questions please contact Felicity Sands via telephone on 03 99294100  
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Yours sincerely

<original signed>

Russell Marsh

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