FACT SHEET 11

Wind Farm Safety Issues

How Safe Are Wind Farms?

The wind energy industry enjoys an outstanding health and safety record. In over 20 years of electricity generation with more than 100,000 machines installed worldwide, no member of the public has ever been injured during the operation of a wind farm. The reality is that wind power, like most renewable energy technologies, poses a very low risk to human beings.

Are Wind Turbines Designed To Be Safe?

Modern wind turbines are sophisticated machines built to last for at least 20 years in all the extremes expected in their operational environment. International safety standards are used in machine design by all major wind turbine manufacturers. Compliance to these standards is audited by third party organisations.

Wind turbines have special inbuilt safety equipment to deal with emergencies. For example, they are equipped with vibration sensors to detect rotor problems and all modern turbines allow complete shut down during excessive wind speeds, virtually eliminating the risk of the turbine rotor or tower failing. In fact wind turbines are considered so safe that at wind farms on public land in Australia, the general public is allowed to walk to the base of turbines at any time.

How Is The General Public Protected?

Many of the potential risks to the public are reduced by the use of enclosed tubular steel towers (rather than open lattice towers), locking systems on doors, intruder alarms, and protective safety fencing around open switchyards.

Wind turbines do not burn anything to generate electricity and therefore, produce no harmful emissions. The only potentially toxic or hazardous materials involved in the operation of wind farms are relatively small amounts of lubricating oils, hydraulic and insulating fluids. The potential for exposure of the general public to any of these is very small.

What Are The Air Safety Implications?

Unless they are constructed on or located near airports, wind farms are unlikely to impact on the safety of commercial and domestic air transport . In relation to the impact of wind farms on aviation operations, wind developers are required to liaise with the Civil Aviation Safety Authority (CASA) and the RAAF Aeronautical Information Service, which maintains a database of structures on behalf of CASA. Each wind farm is assessed by a CASA Flying Operations Inspector for its potential aviation risk and any obstruction lighting requirements.

Do Wind Farms Impact Agricultural Aviation?

The pilots of crop dusting or super phosphate fertiliser spreading aircraft are highly skilled and are easily able to negotiate between the wind turbines which are normally positioned hundreds of meters apart. These pilots regularly navigate other less obvious hazards such as power and phone lines. During the wind farm design phase, landowners (and in some cases pilots) are consulted on the position of wind turbines, particularly any machines near the approach and takeoff paths of unregulated rural airstrips.

How Do Wind Farms Impact Recreational Aviation?

The operation of recreational aircraft is less predictable than that of commercial aircraft. The array of flight instruments is typically less extensive and sophisticated and often the pilot is less experienced than commercial pilots.

Under Visual Flight Rules, pilots must have good visibility, fly at sub-sonic speeds and must not fly lower than 500 feet above the highest point of the terrain or any object on it. This is well above the height of any part of a wind farm.

What About Impacts on Hang Gliders?

The nature of operation of hang gliders, micro-light aircraft and model aeroplanes varies considerably. Takeoff points for these activities are sometimes favoured as attractive wind generation sites and local groups need to be consulted during the planning process to assess the impacts. Whilst the modification of activities may be required, they may not need to be precluded altogether.

Are There Fire Risks?

The risk of fire at wind farms is very low; both fire damage to wind turbine generators and fire caused by the generators themselves. This is because of the following factors :

- The flammable components are located high above the ground
- There is normally no vegetation around the base of the turbine towers
- High-voltage connections are underground
- Access tracks act as firebreaks and provide fire fighting access
- Lightning protection devices are installed on every wind turbine
- Dedicated monitoring and control systems shut down the wind turbines when the threshold temperatures of critical components are reached

Does Lightning Pose A Threat?

Wind turbines are often struck by lightning, but are equipped with comprehensive lightning protection systems. These systems transfer the high voltages and currents to the ground, without affecting turbine operations. In particular, turbine blades usually have internal lightning conductor rods running all the way to the blade tips.

Blade Icing

Experience has shown that icing in severely cold weather only occurs when the rotor is stationary. Once operation recommences, blade flexing causes the ice to break off and fall vertically to the ground. Actual "sling shooting" of ice has never been reported.

What About Safety During Manufacture & Construction?

As with other similar heavy engineering there are occupational safety risks for employees during manufacturing and construction. These include :

- Working at heights (particularly in windy conditions)
- Working with cranes
- Heavy machinery
- Rotating machinery
- High voltage electricity
- Working in hazardous weather conditions
- Driving vehicles

How Many Deaths Has The Industry Seen?

Since the early 1970's the wind energy industry has experienced 14 worker fatalities worldwide, directly or indirectly during wind farm construction or related accidents. All of these deaths could have been prevented if today's safe work practices had been adopted.

AusWEA
Australian Wind Energy Association
www.auswea.com.au