

**Considerations for  
Construction of Towers (Wind, Meteorological, Cell etc.) & Power Lines**

**Important Information for Rural Municipalities (RM)**

- Petitions to construct towers should be provided to local government zoning authorities, plus provincial and regional agricultural aviation associations, a minimum of 30 days prior to permit application approval for tower construction.
- Stakeholder consultations should be held on prospective tower sites, wind farms, and power lines in rural areas. Dimensions, heights, lighting, and routing should be included in the information provided to stakeholders.
- Power lines should not be erected in a diagonal pattern across arable or prime agricultural land.
- Towers should not be erected or inhibit aerial applicator access to arable or prime agricultural land.
- If a proposed tower is to be constructed on or near agricultural land, person(s) owning and /or farming the land should be informed that the proposed tower may result in the land no longer being accessible to aerial applicators. Lands within one mile may not be accessible due to the safe turning area required by aircraft.
- In the event a proposed tower is constructed on arable or prime agricultural land, or in the vicinity of such land, towers should be freestanding without guy wires and include lighting and marking to ensure they are clearly visible. Furthermore, towers should be constructed in a linear pattern, not a disordered or clustered patterns that could make an area completely inaccessible by air.
- If a towers must be erected with guy wires it should be marked with two visible warning spheres on each guy wire, highly visible sleeves on the lower end of the cables, extending at least 8 feet above the height of the highest crop that may be grown there. High visibility markings for meteorological testing towers are suggested as follows;
  - The top 5 sections of the tower must be painted in orange and white (orange-white-orange-white-orange)
  - One high visibility ball must be installed on each outer guy wire
  - Four high visibility flags must be attached to each of the outer guy wires
  - High visibility sleeves must be used in the lower part of the guy wires to mark the anchors and the lower part of the outer guy wire.
- Any proposed wind projects should be a Conditional Use, not a Permitted Use in the RM
- The tax generated by these projects may be minimal in the future and become a net liability to the RM. Furthermore if the federal government issues green (tax exempt status) to these energy projects there will be no taxation revenue generated for the RM.
- The RM may be responsible for ongoing road maintenance and infrastructure issues relating to the project and may be responsible for emergency services, such as training the volunteer fire department and special equipment required in case of a wind tower fire.
- Prior to approval of towers, RM's should research other RM's with similar projects to determine future issues and concerns.

### **Important Points for Land Owners**

- A wind project in the area will restrict aerial application within the footprint of the project plus a 1 mile buffer around the perimeter of the project. Land Owners not participating in the wind project will be affected if their land falls within this zone.
- A caveat can be placed on land with wind tower leases for up to 25 years which would prevent the land from being sold without the new owner agreeing to the conditions of the caveat or having the caveat discharged by the wind farm developers.
- An average canola crop, (\$9 per bu and 30 bu per acre), on a section of land that is lost to Bertha Armyworm if spraying could not be completed in time is worth \$172,800. That equates to the maximum revenue from approximately 35 wind towers for a farmer.
- Land containing a wind tower will be open for access by the wind company 24 hours a day, 7 days a week, 365 days a year. The farmer is liable for any complaints regarding pesticide exposure if someone gains access to the land following a pesticide application.
- Land owners considering participation in the wind project should seek independent legal and financial advice on how wind leases could affect them.
- A land owner can lose their ability to conduct aerial application and have to change their present farming practices due to a neighbor's wind lease.
- A wind tower can lessen the landowner's ability to sell or rent the farmland.
- The average wind turbine only operates 33% of the time and the payment to the landowner is based on operation time.

### **Important Points for Home Owners**

- Home owners may experience cordless telephone, radio and/or TV interference, and flickering of house lights. Furthermore, noise and vibration from the wind turbines is common with home owners.
- Home owners may have a view of turbines from their home for as long as they own the property so ensure the turbines are set back far enough from your home.
- Determine if these turbines will lessen your property value, and if so how much, to determine if the compensation will be adequate.

### **Important Points for Aviation**

- The new 1.8 megawatt wind towers have rotor disk diameters of over 260 feet, which is larger than the wingspan of a Boeing 747.
- The top of the Tri-blade disk is over 400 feet above the ground.
- When combining the physical size of wind turbines with blade rotation, the result is a visual distraction which divides pilot attention, exponentially increasing the likelihood of a life threatening error.
- Wind tower spacing is two-to-three rotor diameters apart, equaling a few hundred meters.
- There does not appear to be a single pattern for wind towers but in a typical commercial wind farm there are approximately 5 or 6 turbines per square mile. In any given aerial application operation, a radius of three quarters of a mile from the target site is utilized for maneuvering between swath runs, clean up passes, and target site surveillance; equating to an operations area of approximately two square miles. This results in 10 to 12 turbines within a typical operations area.
- Unlike other obstructions aerial applicators must avoid, wind turbines are taller than the maximum height achieved during the turnaround. This means that a pilot would generally never reach a safe altitude to allow a check of aircraft systems, treatment volumes, etc.
- Wind farms need to be located near large transmission lines to effectively distribute the electricity which adds another hazard.
- Wind farms also usually include at least one meteorological tower of approximately 200 feet in height amongst larger wind towers
- Wake turbulence for aerial application aircraft is the most dangerous hazard as it is invisible. All airfoils in motion create wake turbulence. The turbulence created is proportional to the weight and angle of attack of the airfoil; the heavier the weight and greater the angle of attack, the greater the wake turbulence. A commercial wind turbine's three blades can weigh as much as 40,000 pounds and operate at a very high angle of attack. The result is turbulence severe enough to induce loss of control to an aerial application aircraft.