Wind Farms and Water

Water is a precious resource and essential to life. Access to clean, fresh water for families, farms, businesses and communities is an important issue in Canada and around the world, and it will only grow in importance as the stresses on our water supplies from climate change and population growth become more prominent. The wind energy industry strives to protect and preserve water resources during the development, operation and decommissioning of wind farms.

Protecting water wells by planning ahead

In rural areas, many citizens rely on wells for their fresh water supply. The responsibility for making sure that drinking water remains safe is shared among all levels of government, businesses, industries, and individual consumers. Health Canada[1] states, "As drinking water travels on its journey to you, it can become contaminated in many ways."

Threats to drinking water can be seasonal, such as droughts or flooding. They can include impacts from minerals, silt, vegetation, fertilizers and agricultural run-off. There can be problems with the well, like improper installation of well casings or caps, poor well-drilling practices or water pump conditions, or a lack of well maintenance.

Nearby recreational, commercial or industrial activity can also pose risks of contamination. The wind energy industry is aware of this potential impact and embraces a preventative risk management approach to ensure water supplies remain safe. This includes the careful evaluation and testing of local conditions to identify known and potential risks, prevention-focussed planning aimed at reducing or eliminating these risks, and adherence to provincial and local regulations that guide environmental assessments.

Managing risks responsibly

Before construction of Canadian wind farms can begin, thorough environmental approvals must be granted by government agencies. An environmental assessment requires the comprehensive analysis of a project area to determine if there are potential adverse environmental impacts from the proposed development, including impacts on local water supplies.

The assessment process can include a variety of tests and analyses, and, where warranted, can include geological and hydro-geological surveys, site-specific geotechnical investigations, and obtaining baseline water quality information and/or detailed assessments on water wells in collaboration with the property owners.

In the communities where wind turbines are constructed, operated or decommissioned, if concerns arise about impacts on local water supplies, the wind energy industry takes them seriously. Wind energy developers are committed to avoiding or minimizing impacts on water wells, to the responsible management of risks and concerns, and to on-going collaboration with authorities and local communities.

1 https://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water.html

Preserving water by not using it

The power sector is one of the world's biggest users of water, but wind energy uses virtually no water to produce electricity, except for minimal and occasional use for washing turbine blades or keeping dust down on access roads.

Other major types of electricity generation such as nuclear power or electricity generated from fossil fuels like coal or natural gas use substantial amounts of water to produce the steam that spins the turbines to generate electricity; and water is also used to cool the power plants. In comparison, the use of wind energy for electricity generation, since it consumes very little water, contributes to the preservation of Canada's fresh water resources.

Mitigating the threats to water caused by climate change

Climate change is a major threat to the world's fresh water resources. Heat-trapping greenhouse gases are causing the earth's temperature to rise and this is resulting in significant changes in the amount, distribution, timing and quality of fresh water available for a growing population.

Wind energy does not emit greenhouse gases and therefore mitigates these threats to water by providing a solution for reliable, affordable electricity that does not contribute to climate change. This makes wind energy one of the most environmentally-sustainable choices for power generation available today.

Strengthening and diversifying communities

Wind energy developments are making positive and lasting contributions in communities across Canada while helping to preserve and protect water resources.

These local contributions include:

- significant economic and social benefits through new municipal tax revenues,
- stable income for farmers and landowners from land lease agreements,
- the creation of high-value jobs for local trades-people and contractors during construction, as well as full-time permanent jobs once the wind farm is operational, and
- direct investment into communities in the form of contracts for raw materials and infusion of dollars to local services and retail businesses.