

# Wind is the way forward.



Wind energy is environmentally friendly and helps us make wiser choices with our precious natural resources. Compare wind to conventional forms of electricity generation like thermal power, which burns fossil fuels and contributes to climate change or to nuclear power, which uses vast quantities of fresh water and leaves behind toxic waste.

Wind power is a pollution-free and endless source of energy. It's clean and limitless and leaves a small environmental footprint on our planet. Wind is the natural choice.



**According to Environment Canada, 18% of Canada's greenhouse gas emissions are created by burning fossil fuels to generate electricity.**



## Wind: a power unlike any other.

### An environment with fewer emissions.

Electricity is a necessity of modern life. But modern life also means making wise choices. Wind energy is that choice. It helps diversify our energy mix and gives us a cleaner way to generate power for all Canadians.

Let's take a look at conventional ways to create the electricity used in our homes and workplaces. In many parts of Canada, much of this electricity comes from power plants that burn fossil fuels like coal or natural gas. An inevitable by-product of burning these fuels is air pollution.

When considering electricity generating options, we need to consider the full range of costs – including those associated with environmental impacts like air pollution and its long-term health effects.

With wind, there is a change in the air: Wind energy generates no air emissions at all. Turbines are powered by wind, naturally, and generate no air pollution. Wind energy doesn't contribute to smog, acid rain or climate change.

Adding wind to Canada's energy mix is a smart choice for the future – and the right one too.

### Where there's wind energy there's less impact on water.

Fresh water is a precious natural resource we all want to preserve. Adding wind energy to Canada's energy mix is a great way to help us accomplish this goal.

Some hydroelectric power plants can disrupt existing water flows and flood vast areas of land. Nuclear and coal-fired power use over 500 times as much water, per unit of energy, as wind.<sup>1</sup> Thermal power production in Canada withdraws more fresh water than the manufacturing, municipal, agriculture, and mining sectors combined.<sup>2</sup>

Other than occasionally washing the blades in regions with extremely low rainfall, wind farms require no water to operate.<sup>1</sup>





## The real cost of energy.

When we evaluate the cost of energy, we also like to consider the total environmental impact of getting energy from its initial source to you. This includes site construction, mining, transporting fuel, and the cost of closing down the power plant. Known as a lifecycle analysis, it helps us understand the real environmental and economic cost of energy.

Wind energy has very low lifecycle environmental costs – largely associated with producing and installing the turbines – and that's a good thing.

Conventional sources of energy have higher environmental lifecycle costs<sup>1</sup> because of all the activity it takes to turn these natural resources into electricity. For instance, coal and natural gas must first be extracted from the ground before being shipped by truck or train or sent by pipeline to power plants for conversion into electricity. All this uses energy and creates air pollution.

Whereas a wind turbine generates electricity whenever the wind blows with no need for extraction, transportation or any other environmentally damaging process. Just the pure movement of air is all it takes to power the turbines.

**Recent Environment Canada statistics show air pollution causes an estimated 5,000 premature deaths in Canada per year and thousands more suffer from adverse health effects. Children and seniors suffer the greatest risk.**

**Nearly 12% of Canada's smog is a result of burning fossil fuels to produce electricity. The faster we bring more wind energy on line, the faster we can clear the air.**

## Footprints in the wind.

So what is the environmental impression wind energy leaves behind? Minimal. That's why the time is right for wind energy. Generating energy from wind doesn't contribute to climate change, leaves behind no hazardous or toxic wastes and uses no water.

This might explain why this low-impact<sup>2</sup>, renewable, environmentally friendly source of "green power" is a rapidly growing component of Canada's energy mix.

That's why wind is the right choice right now.

**According to the Renewable Energy Policy Project<sup>3</sup>, a coal-fired power plant's lifecycle costs are over twice as high as a wind farm's, per unit of energy produced.**



## CASE STUDY

### Ride the Wind!<sup>TM</sup>

Vision Quest – TransAlta's wind business – and ENMAX Energy power Calgary's train system.



photo courtesy of Vision Quest

**"Powered by wind-generated electricity, Calgary Transit operates the only emissions-free Light Rail Transit system in North America"**  
 Ron Collins, Calgary Transit spokesman

**In September 2001** the City of Calgary decided to power their C-Train with electricity from commercial wind energy and named it Ride the Wind!<sup>TM</sup> because riders would actually be traveling with the help of energy captured from the wind.

**Before the switch**, the C-Train's energy supply accounted for about 20,000 tonnes of greenhouse gases and other air pollution every year – still less than 1/10 of the pollution that would have resulted if all C-Train passengers had driven in their own cars. Most of that electricity came from coal-fired generating stations.

**How it works:** Each of the 12 turbines that power the C-Train, can produce more than 600 kW of electricity, or 1.3 million kWh of electricity annually – enough to supply nearly 250 average Alberta homes – and more than enough to meet the needs of C-Train commuters.

**The results:** Under the Ride the Wind!<sup>TM</sup> program, the C-Train's expected air emissions from electricity use have been reduced from 20,000 tonnes to practically zero. The resulting greenhouse gas reduction is like taking 4,000 cars off the road for a full year.



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CanWEA acknowledges the contribution of Natural Resources Canada.

1: Source: <http://www.awea.org/faq/water.html>  
 2: Environment Canada, National Water Research Institute  
 3: Renewable Energy Policy Project is available at: [http://www.repp.org/articles/static/1/binaries/wind\\_issue\\_brief\\_FINAL.pdf](http://www.repp.org/articles/static/1/binaries/wind_issue_brief_FINAL.pdf)  
 4: For the definition of low impact energy see: [http://www.environmentalchoice.com/English/ECP\\_Footer/About\\_Us/Criteria/Electricity\\_Products/Electricity\\_Generators](http://www.environmentalchoice.com/English/ECP_Footer/About_Us/Criteria/Electricity_Products/Electricity_Generators)