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Harnessing Nature: New Energy Thinking

Wind Power

Will It Work in Saskatoon?

Sticking a 10-foot propeller on a 50-foot pole in your back yard might not sit well with neighbours who don't necessarily share your enthusiasm for saving the planet.

Most people already know that they can purchase wind power as part of their utility package, paying a small monthly charge of \$2.50 for every 100 kilowatts of electricity from 116 turbine units churning away in three huge wind farms near Swift Current and Gull Lake.

Large scale wind energy involves a more costly investment than non-renewable sources such as our province's coal generation facilities. That may change in the future, as the cost of conventional generation rises and "alternative" generation falls. For now, if you want to go "green" in the energy department, you have to pay a price, even if it's small one. Think of it as investing in a better future.

Saskatchewan currently produces 172 megawatts of electricity from the wind, about five percent of total generation, which is the highest provincial output in Canada. Coincidentally, it's about the same amount of power that disappears through normal transmission losses, an unavoidable result of having to generate our electricity so far from where we consume it. Transmission losses occur regardless of how our electricity is generated, but what if we could generate it closer to home, say, at our own back doors?

Raum Energy, a Saskatoon-based wind energy company that designs its own wind turbine systems, currently manufactures a 1.3 kilowatt system and plans to introduce a three kilowatt model to be released next spring.

To get a sense of scale, consider that you'd need more than a thousand of the smaller units to get the output of just one of the 83 gigantic turbines at SaskPower's Centennial Wind Power Facility southeast of Swift Current. But with just 1.3 kilowatts of power, you'd still get enough to offset the electrical cost of an



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outdoor hot tub on your patio, from a device not much bigger than your microwave oven. Aside from the initial cost, about \$6,000, all the electricity you produce is free better than free, in fact, if you take advantage of the provincial government's net metering program which lets you pump electricity back into the grid and get paid for it.

While Saskatoon winds do not blow as consistently and strongly as in the province's southwest, we do get pretty respectable winds here. Near Swift Current, for example, a 1.3 kilowatt system would produce about 4,000 kilowatt-hours of electricity per year, says Darryl Jessie, president of Raum Energy. Winds around Saskatoon would get you about 2,500 kilowatt-hours.

"An average home uses about 8,000 kilowatt-hours a year," says Jessie. "On a good site towards the south of the province, you'd get about half of that out of our machine. Let's say you're two empty nesters and you only use 6,000 kilowatt-hours. You'd be getting close to three-quarters of your power (from wind). You're looking at around 30 percent of an average home's use here (in Saskatoon)."

Wind turbines could be a tough sell in the city, though. For one thing, the idea of sticking a 10-foot propeller on a 50-foot pole in



blow unconstrained and your nearest neighbour is too far away to be affected by anything you do. They hold tremendous promise for those living on acreages and city residents looking to cut down on the cost of operating a seasonal cottage (connected to net metering, your cottage would be earning money for you during your absence). Within urban industrial parks, where taller towers and larger turbines would be both permissible and feasible, the problems affecting residential neighbourhoods would largely be absent. Adjacent to schools, where playgrounds would provide more than adequate separation from even the most sensitive of neighbours, wind turbines would reduce the cost of running our education system while providing lessons in responsible energy use far better than having your mother tell you to remember to turn off the lights.

"Schools are a great avenue for it," says Jessie. "You're training your children to become accustomed to green energy. So often, we take things for granted. We walk into a room, we flick our light switch. But if you walk out of your school and see the turbine turning, you know that power's going into your school and you're using it somewhere. At night, you're hundreds of metres from homes, so it shouldn't be a problem for complaints."

Updates

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What this means for the average citizen is that although you might not have a wind turbine in your back yard, encouraging small scale wind energy production still lowers the overall draw of electricity from non-renewable sources. We make a monumental reduction in our environmental footprint through a series of incremental improvements, instead of looking for a single, big fix.

Your back yard might not sit well with neighbours who don't necessarily share your enthusiasm for saving the planet. Systems designed for residential use comply with height and safety regulations, but the city's noise bylaw is sufficiently broad that even the slightest whisper from a device that makes less noise than rustling leaves could still be enough to get you shut down.

More importantly, urban wind is turbulent. Like a pot of boiling water, air bubbles and twists as it undulates over rooftops, swirls around high rises and gets lost in trees that can be taller than most allowable wind towers. Energy potential is dragged down by such surface roughness, disturbing and slowing the wind to the point where the turbines aren't useful or economical. In addition, very small units, those in the 200 to 400 watt range commonly available at hardware stores and specialty businesses, tend to be mounted at lower heights, where winds are weaker. Such turbines mounted on the outside walls of houses can induce vibrations that are at the least annoying to occupants and potentially damaging to the structure, especially to masonry. All in all, you might think that it adds up to a pessimistic outlook for small domestic wind turbine use within city limits.

All is not lost, however. Wind turbines work great outside the city, where wind can

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