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"Where Do We Go From Here?" is a feature service of the Prairie Centre.

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WHERE DO WE GO FROM HERE?

'Who has seen the wind?' A history of wind energy in Saskatchewan May 10, 2006

Wind power is burgeoning in every industrialized country of the world. Saskatchewan has also caught the winds of change but exclusively through one company - SaskPower. This is the first of a four-part series by Dr. Darryl Jessie, PEng, which examines what could be possible if private investment into wind energy was encouraged.

Wind power was a very important technology for the early dry-land farmers of the Canadian west. While kerosene lamps provided light and root cellars provided refrigeration in the home, multi-blade turbines pumped water for cattle and crops. During the 1920s, wind-generated electricity began to bring some comfort by providing lighting, powering a few appliances and a radio. By the 1930's, rural electrification was underway in the US and areas of Canada. Saskatchewan, however, would have to wait until 1949 when the SaskPower Act would be legislated.

Sixty years ago you could buy lemons at 15 cents a pound, eggs were 39 cents a dozen, and a Sears fridge would have cost you about \$100. Based on an average annual inflation rate of 4%, that's \$1050 in today's dollars, which is interesting because that is about what you would now expect to pay for a decent fridge. The difference is, back then a large fridge had 6 cubic feet of storage space and weighed 400 pounds!

The first wind turbine designed for residential electrical production was designed by the Zenith Corporation in the 1920's. Others followed, with the likes of Sears, Parris-Dunn, Jacobs, and Wincharger. Parris-Dunn alone sold 37,000 units in 15 years. In 1946 a 1000 watt Wincharger would have cost \$219.50 (\$2300 in 2006 dollars) which included a regulator for battery charging. A set of Globelite batteries would have run about \$200 (\$2000 in 2006). Curiously, a similar 10 foot diameter wind turbine of today is still rated at 1 kilowatt and, at \$2200 USD, costs roughly the same price. The newer model weighs in at 65 pounds as opposed to a massive 268 pounds for the original. Other advances in today's wind turbines have included noise reduction, higher reliability and lower maintenance requirements.

Back in the 1940's, the government pro-

vided a discount of 8% if the wind turbine equipment was to be installed on a farm. Remember that farm incomes were much higher *vis a vis* farming costs in 1946. Wheat, for example, sold at about \$1.50 a bushel - the equivalent of \$15 a bushel now! This would suggest that in 1946 farmers were more able to purchase a wind-based electrical system than they are today. Yet, there was still a government-endorsed incentive plan.

With today's concerns over clean energy and our dependence on non-renewable resources, one must wonder why Saskatchewan does not have an incentive plan for installing wind turbines in the 21st century like many other states and provinces. (This issue will be more fully explored in a later article.)

In the late 1940's, there were 120,000 farm families residing in the province - close to half the provincial populace was a rural resident. It has been estimated that 6,000 farms had wind turbines that supplied electricity for lighting, a few electrical appliances, and radios. Because Saskatchewan has already had a massive and broad deployment of wind turbines in the province using early-20th century technology, technical feasibility is a non-issue. However, there are only three known wind turbines of Wincharger size installed and operating in the province today, while sales of this class of machine are in the thousands per year throughout North America.

The reason for lack of residential turbines in the province today has more to do with SaskPower's policies and attitudes toward independent, grid connected power generation than technology and economics.

Almost all large communities in the province had their own utility in the 1940's. With the passing of the SaskPower Act in 1949, they were sold, one by one, to SaskPower which ensured their power monopoly over most of the province. The only holdouts were Saskatoon Light and Power and the City of Swift Current utility.

With the passing of the Act, SaskPower's goal was to grid electrify 50% of all rural homes within 10 years. By

1959, 60% of farms had grid supplied power. But, there were restrictions. SaskPower would not run a grid line to your farm if there was a wind turbine in operation. Although there were some technical issues associated with mixing 32 volt DC with 110 volt grid AC, it seems they were largely a handy excuse to rid the province of competition and the technical expertise of what was considered a rival.

So within little more than a decade, the battery charging turbines, a hallmark of prairie vistas, were gone. Possibly more damaging was the slow erosion of technical expertise in practical wind applications in the province. By the time wind energy was resurrected in this province in the late 1990's, there had been no turbines in the province for over 30 years.

As the energy crisis of the 1970's awakened western countries to how fragile our energy supply really is, both small and large, megawatt-size turbine research and development was spurred on. Government incentives came and went through the 1980's and 90's, particularly in the United States and Europe. The wind industry went through boom and bust during that same period. In the last five years, however, wind energy has become cost competitive with fossil fuel generation and is experiencing sustained growth. This coupled (again) with concerns about energy supplies and the added anxiety about greenhouse gas emissions have created an industry growing at 30% a year.

Saskatchewan had a deep and broad expertise in the wind industry for the first half of our province's history, while the last half has been dominated by a centralized, coal-based, public utility. The next article will investigate the financial health of SaskPower; their prodigious capital expenditures slated over the next decade, and will raise questions as to how they plan to provide low-cost, green electrical generation in the 21st century to the citizens of Saskatchewan.

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