# Making wind energy a reality.

photos courtesy of SaskPower

Building a wind farm is a very large undertaking and proposals pass through many stages before they can be approved and built. Many developers are looking into the potential for wind energy in a variety of communities across the country.

The cost of building wind farms ranges from about 1.8 to 2.2 million dollars per megawatt. No matter the size of the wind farm, planning, assessments, site selection, construction and a whole lot more must be completed before it can begin contributing clean energy to the marketplace.

## Building a wind farm.

### Step 1: Identifying potential sites.

Site selection is an important first step in building a wind farm. At this stage the wind resource is evaluated and other key factors are taken into consideration. Factors like how the electricity will be delivered… what are the obstacles, if any, to harvesting the wind… and how does the community feel about the project.

An example of the types of studies conducted include field trips by developers, the installation of a meteorological tower to assess the strength and consistency of the wind, transmission studies to examine the proximity and capacity of existing equipment and meeting with the landowner for initial discussions of lease agreements, terms and more.

This screening process results in a short list of potential sites that meet all of these critical requirements for a successful project.

### Step 2: Site preparation.

Should a proposed site be successful in its initial stages, it then moves onto the second stage where a series of more thorough studies take place. At this stage, environmental assessments are conducted to identify any impacts to wildlife, the landscape, and established land use. Should impacts be identified, a plan to resolve them needs to be developed.

It's at this stage when the numbers get crunched and all the paper work begins: calculating the economic viability of the project, starting applications for permits, preparing documents for all levels of government, meeting with the community, figuring out contractor costs and more. Even archaeological assessments are conducted.

photo courtesy of Vision Quest

## Step 3: Building the farm.

This is the stage when the project gets its green light. Everything goes into final design and construction. The service roads are built, foundations are prepared, turbines are shipped to the site and the construction crews install the equipment.

The costs of construction and, more significantly, the turbines themselves make up the majority of costs at this stage. There will be ongoing operations and maintenance costs to consider as well. However, unlike some forms of conventional energy, wind energy doesn't incur ongoing fuel costs – a contributing factor towards its economic viability and competitive edge.

*"According to Insightrix[1], the Canadian wind industry's 2004 expenditures amounted to roughly $400 million. Of that, two thirds is spent on Canadian goods & services."*

## Decreasing costs.

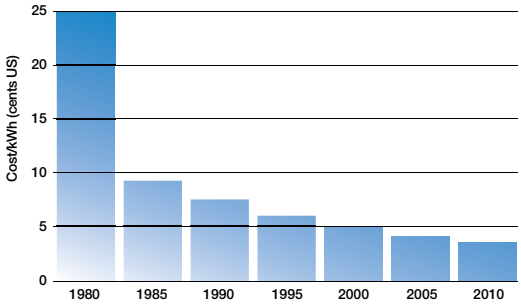
Aside from fuel, there are other factors that will lower the cost of energy generated from wind. Wind energy is built on a technology that improves every year and each improvement helps bring down the cost of generating electricity. Lighter materials enable taller towers to support larger blades that capture more energy – increasing the efficiency of each new generation of wind turbine. Increased efficiency means that more energy can be generated from each turbine.

As efficiency continues to increase, generation costs keep coming down – 80% in the last twenty years.[2] Power producers like that math, which helps explain the 38% average annual growth in Canada over the last 5 years. In 2005, growth accelerated to 54%. This steady increase in demand will fuel more Canadian manufacturing, creating jobs at home and saving shipping and transportation costs.

## Community commitment.

Although wind farms come in different shapes and sizes, all of them have one thing in common: Wind farms, and the power producers who run them, want to be good neighbours and great corporate citizens by becoming a vital part of the community itself.

**Steady Decrease in Cost of Wind Energy**




**Technological improvements such as lightweight materials have enabled the development of bigger, more efficient wind turbines. These changes have contributed to the 80% decrease in wind energy costs over the last 2 decades.[2]**

CASE STUDY

## Melancthon I Wind Project
## Shelburne, ON

www.canhydro.com

**Canadian Hydro Developers Inc.** completed this ambitious project in record time. After only nine months of construction and commissioning activities, the Melancthon I Wind Project went on line March 4, 2006 – about one month ahead of schedule. This is Ontario's first wind plant to become commercially operational under Ontario's new Renewable Energy Supply (RES) Contract.

This RES contract reduces some of the financial risk for renewable power producers by giving them a guaranteed rate for the power they produce for a 20 year term.

**This $126 million dollar wind facility** consists of 45 GE wind turbines, each rated at 1.5 MW for a total capacity of 67.5 MW – enough green power to supply more than 20,000 households. Additional benefits include:

- number of area companies employed: >25
- value of area contracts: >$15 million
- construction man-years created: 77
- full-time operating positions: 8
- annual average power output: ±195 GWh

For more info on the Melancthon Wind Project, please visit: www.mgwindpower.info



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*Powering Canada's future naturally*
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CanWEA acknowledges the contribution of Natural Resources Canada.

1: Economic Impacts of the Canadian Wind Energy Industry, February, 2005
2: Source: American Wind Energy Association