



Fact Sheet 2

Wind Power

	On-shore Wind Power	Near-off-shore Wind Power
2001 Capacity	213 MW	0 MW
Technology Definition	Conversion of wind to power for on-grid production	Conversion of wind to power for on-grid production. Turbines are placed on shallow banks, near-shore or off-shore.
Product(s)	<ol style="list-style-type: none"> 1. Electricity 2. Natural hedge against hydrocarbon fuel price 3. Emission Reductions 4. Environmental Attributes not directly associated with emission reductions. 	<ol style="list-style-type: none"> 1. Electricity 2. Natural hedge against hydrocarbon fuel price 3. Emission Reductions 4. Environmental Attributes not directly associated with emission reductions.
Equipment Manufacturing centers	Denmark, Germany, Japan, California, US, Spain, India	Denmark, Germany, Japan, California, US, Spain, India
Technology Stage	Mature	Pre-commercial
Applications	Large scale utility sized production for power supply.	Large scale utility sized production for power supply
Cost estimate for generation	C\$65-100/MWh CAPEX: C\$1500-2000/kW installed OPEX: C\$11-16/MWh ¹	C\$100+/MWh CAPEX: C\$2300-2500/kW installed OPEX: C\$8-12/MWh ²
Impacts: Positive	<ul style="list-style-type: none"> • Zero emissions associated • Non-depleting resource • Grid stability products available. • Reduction in Line Loss in remote regions. • Long term jobs within remote community 	<ul style="list-style-type: none"> • Zero emissions associated • Non-depleting resource • Grid stability products available. • Reduction in Line Loss in remote regions. • Long term jobs within remote community
Impacts: Negative	<ul style="list-style-type: none"> • Intermittent supply requires spinning reserve. • No black start capability. • Avian Impact (minimized through good siting process) • Noise (alleviated with good siting techniques) • Aesthetics (minimized through good consultation and siting process) 	<ul style="list-style-type: none"> • Intermittent supply requires spinning reserve. • No black start capability. • Avian Impact (minimized through good consultation process) • Aesthetics (minimized through good consultation and siting process)
Potential in Canada	1992 study estimated potential 28,000 MW (11% of energy used in 1990) ³	No studies to date.
Existing barriers in Canada	<ul style="list-style-type: none"> • Availability and integrity of wind data. • Environmental and land use permitting process. • Limited transmission capacity and excessive interconnection requirements/ costs • Regulated electricity jurisdictions. • Lack of comprehensive policy measures • Dispatchability /scheduling requirements for power in most provinces • Firm and high transmission tariffs. • Patent for Variable speed pitch regulated turbines in North America. 	<ul style="list-style-type: none"> • Not as cost effective as on-shore wind in Canada. • Same barriers as for on-shore wind

1. Includes operations, maintenance, property tax and land lease payments.

2. Little experience internationally

3. Canadian Wind Energy Technical and Market Potential, CANMET Energy Technology Centre, Department of Natural Resources Canada, October 1992