

# Small Wind in Canada and North America

## CanWEA Presentation

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CANADIAN WIND  
ENERGY ASSOCIATION

ASSOCIATION CANADIENNE  
DE L'ÉNERGIE ÉOLIENNE

# Presentation Outline

- Overview of Canadian markets
  - Residential grid connect
  - Farming/commercial
  - Remote and northern communities
- Small wind policies in Canada
- Opportunities
- CanWEA activities



# About CanWEA

## ➤ About CanWEA

- CanWEA has more than 420 members, most of whom are focused on large wind
- Small wind committee guides activities, includes manufacturers, installers, service providers ...

## ➤ How we see small wind:

- 300 kW and under
- Tremendous interest in small wind from the general public
- Small wind market is now where large wind was 20 years ago
- There is an opportunity to “not miss the boat” on manufacturing
- Small wind and large wind are linked – comfort with small wind breeds comfort with large wind



# CanWEA Small Wind Manufacturers

## ➤ Canadian-based:

- WES Canada (80 kW, 250 kW)
- Endurance (5 kW, 35 kW, 50 kW)
- Mamanna (50 kW)
- ReDriven (3 kW, 5 kW, 10 kW, 20 kW, 50 kW)
- Cleanfield Energy Corp. (3 kW)
- Vbine (not yet rated)

## ➤ U.S. based:

- Bergey (1 kW, 1.5 kW, 10 kW)
- Northern Power Systems (100 kW, 2.2 MW)
- All Earth Renewables (2.5 kW)
- Southwest Windpower (900 w, 1 kW, 3 kW)
- Mariah Power (1.2 kW)



# Markets and Prospects

- Residential applications (1 to 10 kW)
  - On-grid residential, system providing up to 150% of house electricity
  - Buyer motivation: environmental interests, longer-term paybacks
- Farming and commercial applications (11 to 100 kW)
  - On-grid systems providing over 50% of electricity for farms and businesses
  - Buyer motivation: stable cost of electricity, interest in energy independence
- Remote communities (50 to 300 kW)
  - Over 300 northern and remote communities, mostly using diesel generation
  - Electricity prices range from \$0.25 to \$1.50 per kWh
  - Buyer motivation: reduced diesel use, long-term cost reductions
  - Significant Canadian expertise in these systems



# Canadian and U.S. Markets

## ➤ Canada

### ➤ As of 2007:

- 5 MW of capacity installed overall
- 15% annual growth

### ➤ 2010 Market survey preliminary results:

- 4 MW were installed in 2009
- 71% of all sales in Canada were imports, 82% of sales from Canadian manufacturers were exports

## ➤ US market

- 2008: grew 78% - total of 80 MW installed capacity
- 2009: grew 15% with an additional 20 MW
- 11-100 kW category was largest segment in terms of new capacity installed



# Growth Potential in Canada

- 2007 Market study predicted growth potential with incentives and reduction in barriers:
  - Residential grid connect (1-10 kW)
    - 32% annual growth rate between present and 2025
    - Total of 44,000 units installed by 2025 (310 MW) (correlates to less than 1% of rural residents)
  - Farm and commercial systems (10-300 kW)
    - 43% annual growth between present and 2025
    - Total of 30,000 installations, 1,500 MW installed (correlates to less than 10% of Canadian farms)



# Growth Potential (cont'd)

- Northern and Remote communities:
  - Over 300 remote communities in Canada that depend on diesel for heating and electricity
  - 80 communities with average electricity consumption of 8000 MWh or less with average annual wind speeds of 5 m/s
  - CanWEA study verified that it was practical and feasible for 50 projects over the next 10 years with average capacity of 300 kW for a total of 15 MW
  - Rapidly expanding market: ¼ of 50-100 kW turbines sold in 2008 were for wind diesel applications in northern and remote locations (AWEA market study)



# Small wind policies in North America

- Support in Canada is currently limited
- Incentives:
  - Province of Saskatchewan provides rebate for 35% of cost up to a maximum of \$35,000 for systems up to 100 kW
  - Farm Credit Canada provides special interest rate and no loan processing fees on the first \$500,000 for small wind
  - Nova Scotia recently announced enhanced net metering program for generation up to 1 MW (all renewables) and will offer retail rate for excess power
- Legislation
  - Net metering allowed in most provinces; many municipalities with small wind-specific zoning bylaws



# Small wind policies in North America

- US has a favourable policy environment for small wind
  - US Economic Stimulus Bill provides consumers with a 30% tax credit for the purchase and installation of small wind turbines with rated capacities of 100 kilowatts or less (no cost caps)
  - Rebates and incentives are available in many states (DSIRE database): California and New York have very strong programs for smaller systems (direct rebates up to 40% of cost)



# Canadian Market Opportunities

## ➤ Ontario:

- Feed-in-tariff program for solar: 44.3-80.2 ¢/kWh; All onshore wind: 13.5-14.4 ¢/kWh
- Big demand for small wind and its inclusion in the FIT program

## ➤ Nova Scotia:

- Excellent wind resource, manufacturer of mid-sized systems in Nova Scotia
- Enhanced net metering program
- Community FIT program to be introduced this year: price levels TBD

## ➤ Alberta:

- Significant interest in policy for mid-sized applications (farm and commercial)

## ➤ British Columbia:

- To introduce a Green Energy and Technology Act in May 2010



# CanWEA activities

## ➤ Incentives

- Recommends Feed-In Tariff (FIT) for qualifying small wind turbines, differentiated by size
- Price levels for small wind based on similar model used for solar FIT prices in Ontario (12% ROE and 70/30 debt/equity ratio):
  - **1-10 kW**: 50 to 55¢/kWh (assuming 15% CF, \$7,500/kW)
  - **11-100 kW**: 35 ¢/kWh (assuming 20% CF, \$6,000/kW)
  - **101-500 kW**: 25 ¢/kWh (assuming 20% CF, \$4,500/kW) w/ adder for remote



# CanWEA activities (cont'd)

## ➤ Education

- CanWEA small wind website : Information for the public, policy makers and installers
- CanWEA Purchase Guide and fact sheets

## ➤ Legislation

- Small wind zoning guidelines actively being promoted with municipalities and provinces



# Summary

- Canadian small wind market currently very small
- With favourable policies, tremendous potential for growth
- Several jurisdictions across the country receptive to supporting small wind
- CanWEA actively working in these jurisdictions to promote growth of the industry

Invite all who are interested to work with CanWEA to grow the small wind market in Canada

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