

25 April 2008

Emerging wind-diesel markets - Canada ?

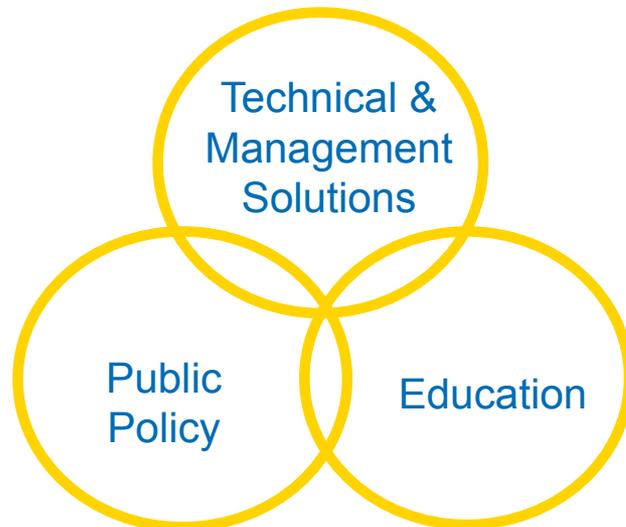
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When the Government is the Landlord

Economic Rent, Non-renewable Permanent Funds, and Environmental Impacts Related to Oil and Gas Developments in Canada

Pembina Institute for Appropriate Technology
Amy Taylor • Chris Severson-Baker • Mark Winfield • Dan Woyrnilowicz • Mary
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Under-Mining the ENVIRONMENT FACT SHEET
JANUARY 2008
ENVIRONMENTAL MANAGEMENT • LAND • AIR • WATER • CLIMATE CHANGE

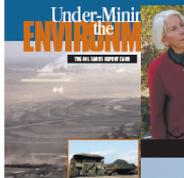


The Oil Sands Report Card

In *Under-Mining the Environment, The Oil Sands Report Card*, nine of Alberta's 10 operating, approved and applied for oil sands mines get a failing environmental grade. The average score among all oil sands projects, surveyed by

Oil sands mines were ranked on 20 different environmental indicators in five categories: environmental management, land impacts, air pollution, water use, and management of greenhouse gases. Companies were invited to complete the survey questionnaire and provided with two opportunities to comment on their

Under-Minir the ENVIRONMENT
THE OIL SANDS REPORT CARD



Feeding the grid
RENEWABLY FACT SHEET
MAKING RENEWABLE ENERGY A PRIORITY



How Feed-In Tariffs Maximize the Benefits of Renewable Energy

Renewable energy holds the promise of reducing pollution, creating jobs and diversifying the market while providing a long-term, secure, local energy supply to fuel the economy.

Governments that are serious about encouraging renewable energy development increasingly understand that feed-in tariffs are the most effective policy instrument at their disposal.

A feed-in tariff is simply a guaranteed price set by the government for anyone who wants to sell renewable electricity to the grid, and a guarantee that they will have access to the grid to do so.

The price, or tariff, is set so that a modest profit is ensured, thereby unleashing the collective capital resources of the entire province, state or country to be part of the transition to renewable energy. The additional cost of purchasing the renewable power is shared among all consumers.

Germany is considered to be the country most successful at rapidly transitioning toward renewable energy systems through feed-in tariffs.

Using feed-in tariffs, Germany currently generates 12.5% of its electricity from renewable sources, while employing more than 215,000 people in the renewable energy sector, according to the German Federal Ministry of Economics and Technology¹

Feed-in tariffs exist in more than 20 other countries as well. They are the most common policy for encouraging renewable energy systems, in part because "feed-in mechanisms achieve larger deployment at lower costs" than other policy mechanisms such as quotas, direct incentives or voluntary goals².

Feed-in tariffs have consistently demonstrated that they are, to date, the most effective mechanism to stimulate a rapid, sustained and diverse deployment of renewable energy.



▲ Farmers such as this one in Waterloo, Ontario were quick to take advantage of the first Feed-in tariffs-style law in North America. PHOTO: THE WEIS

Making the Case for Small Wind and Federal Small Wind Incentives in Canada

The Benefits and Opportunities for Small Wind

Final Report

Tim Weis
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Jeremy Moorhouse
Meg Gluckman
John Maissan
Larry Sherwood
Amy Taylor

July 2007



Renewable. It's Doable!

1 www.german-renewableenergy.com
2 David E. Carter on the importance of climate change, www.renewableenergy.org.uk

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Greening Canada's Energy Landscape

Learn more about how your business or organization can help green Canada's energy



Communities Program

Yukon

1. Old Crow
2. Pelly Crossing

NWT

3. Norman Wells
4. Wha Ti
5. Yellowknife
72. Tuktoyaktuk

British Columbia

6. Kwadacha FN
7. Tsay Keh FN
8. Gitga'at FN
9. Oweekeno FN
10. Ka:'yu:'k't'h' / Che:k'tles7et'h' FN
11. Hupacasath FN
12. Bowen Island
13. Tsleil-Waututh FN
14. Douglas FN
15. Xeni Gwet'in FN
16. Quesnel
17. Uchucklesaht FN
18. Ehattesaht FN
19. Kluskus FN
20. Kitasoo FN
21. Tsawtanaieuk FN
22. Dawson Creek
55. Skatin FN
56. Samahquam FN
69. Abbotsford
70. Hudon's Hope
71. Salmon Arm

Alberta

23. Little Red River Cree FN
24. Chipewyan Prairie FN
25. Tallcree FN
26. Driftpile FN
27. Beaver Lake FN
28. Kikino Metis Settlement
29. Alexander FN
30. Enoch FN
31. Samson FN
32. Blood FN
54. Tsuu T'ina FN

Saskatchewan

33. Fond du Lac FN
34. Black Lake FN
35. Hatchet Lake FN
36. Waterhen FN
37. Ahtakakoop FN
38. Beardy's and Okemasis FN
39. Red Pheasant FN
40. James Smith FN
41. Gordon FN
42. Cowessess FN

Manitoba

43. Flying Dust FN
44. Kinistin FN
45. Birch Narrows FN
46. Mistawasis FN
47. Montreal Lake FN
48. Barren Lands FN
49. Skownan FN
50. Rolling River FN
51. Peguis FN

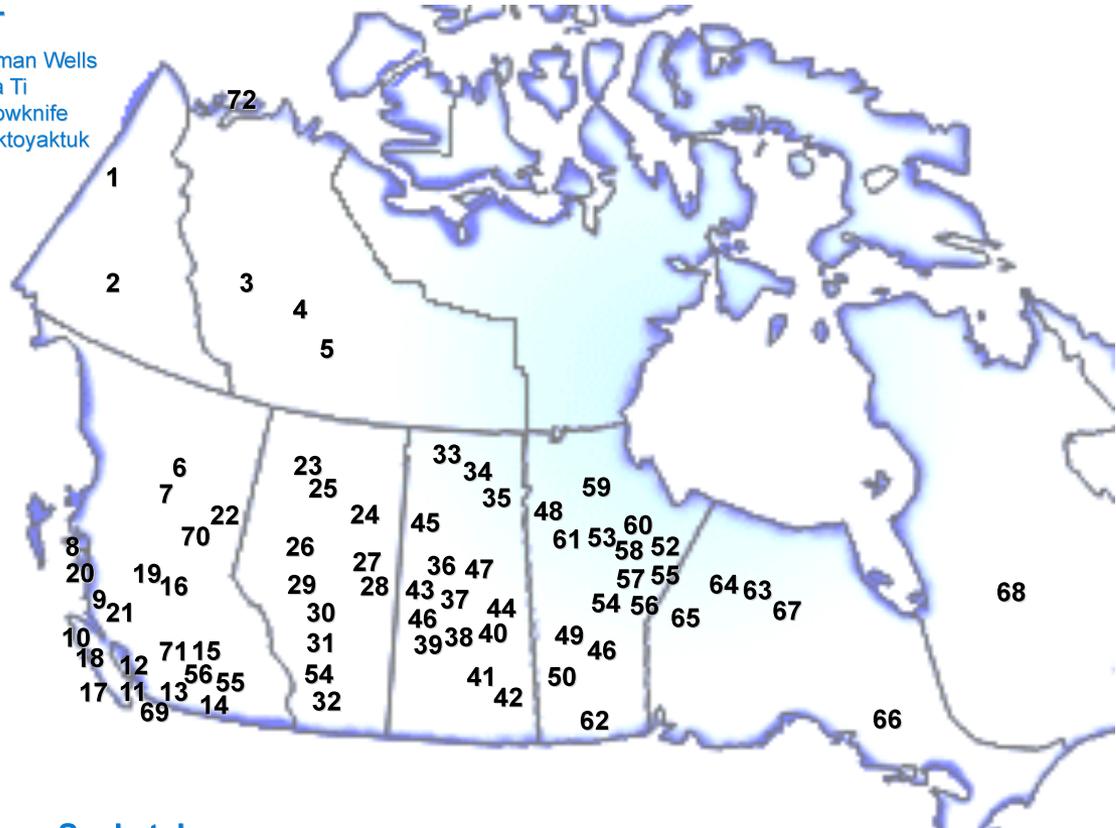
52. Manto Sipi FN
53. Bunibonabee FN
54. Wasagamack FN
55. Red Sucker Lake FN
56. St. Theresa Point FN
57. Garden Hill FN
58. God's Lake FN
59. Sayisi Dene FN
60. Shamattawa FN
61. Northlands FN
62. Swan Lake FN

Ontario

63. Wapekeka FN
64. Kitchenuhmaykoosib Inninuwug FN
65. Keewaywin FN
66. Pic Moberk FN
67. Kasabonika Lake FN

Québec

68. Nemaska FN



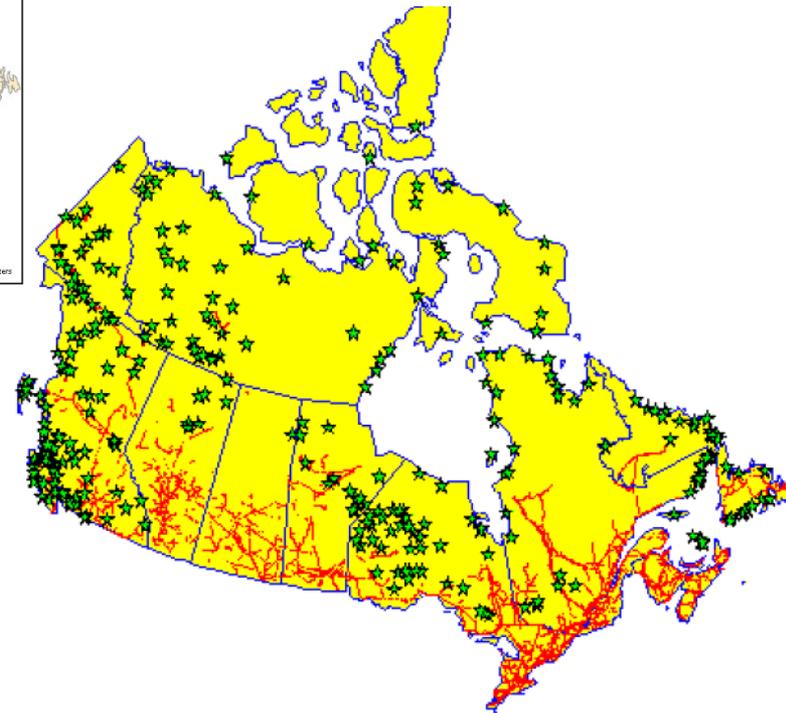
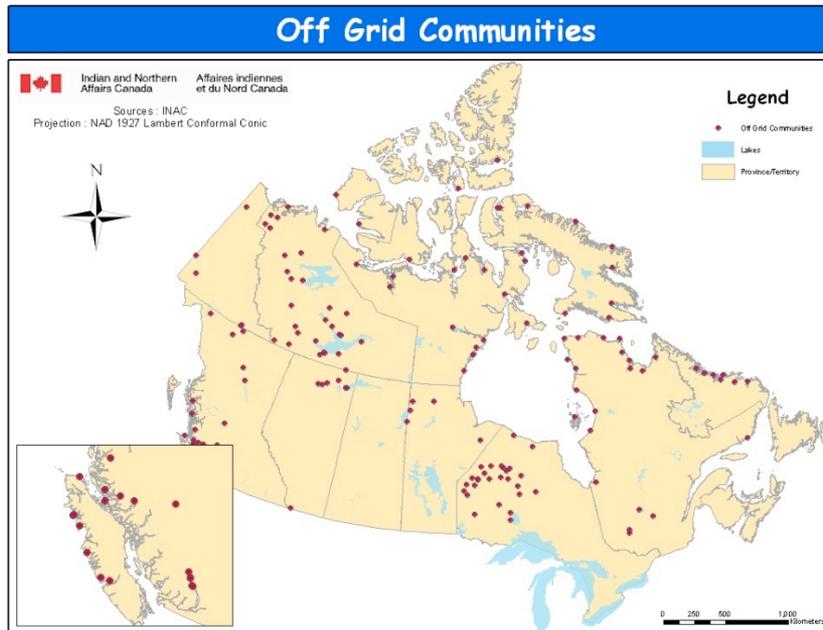
Drivers for remote wind

- Significant interest in remote communities to look for alternatives to diesel
 - Reduce pollution
 - Reduce import costs
 - Minimize risks of spill
 - Increase local sustainability
 - Retention of energy \$ within community
- Several remote communities and mines are actively monitoring the wind



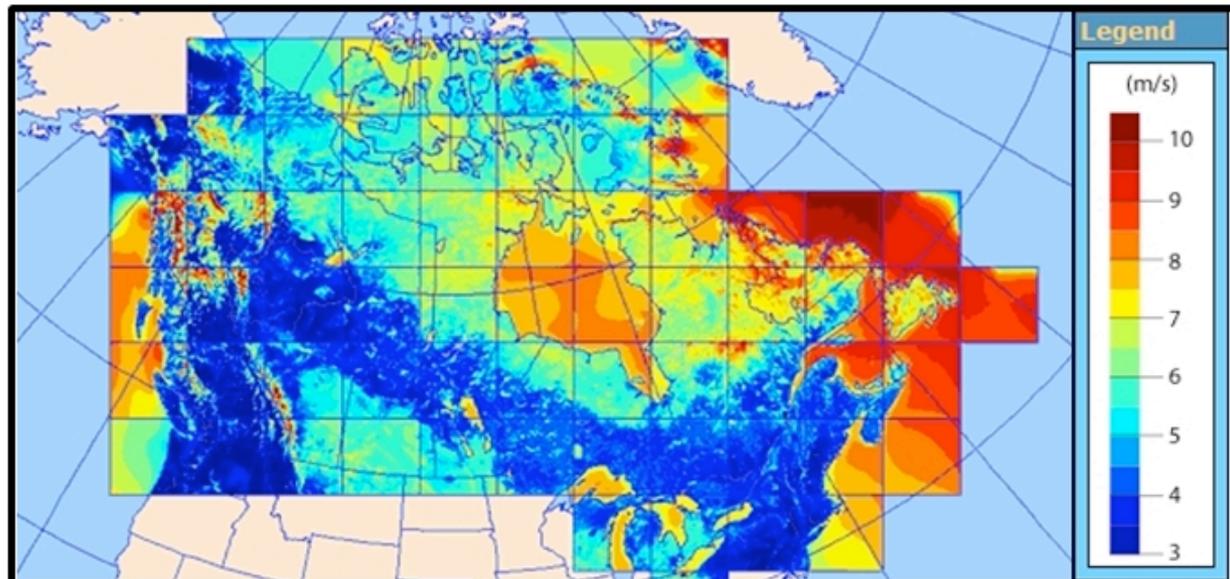
Photo: Tim Weis

Canadian Potential



Canadian Potential

- Moving target
- Theoretical vs. Practical
- System configuration
- With or without support





Comprehensive list of Canadian remote wind incentives

-
-
-
-
-



Canadian Potential

- Two distinct categories
 - 1 – Large communities and mines
 - 10+ MW loads
 - Large-scale turbines
 - 2 – Small communities
 - 300 kW~2 MW loads

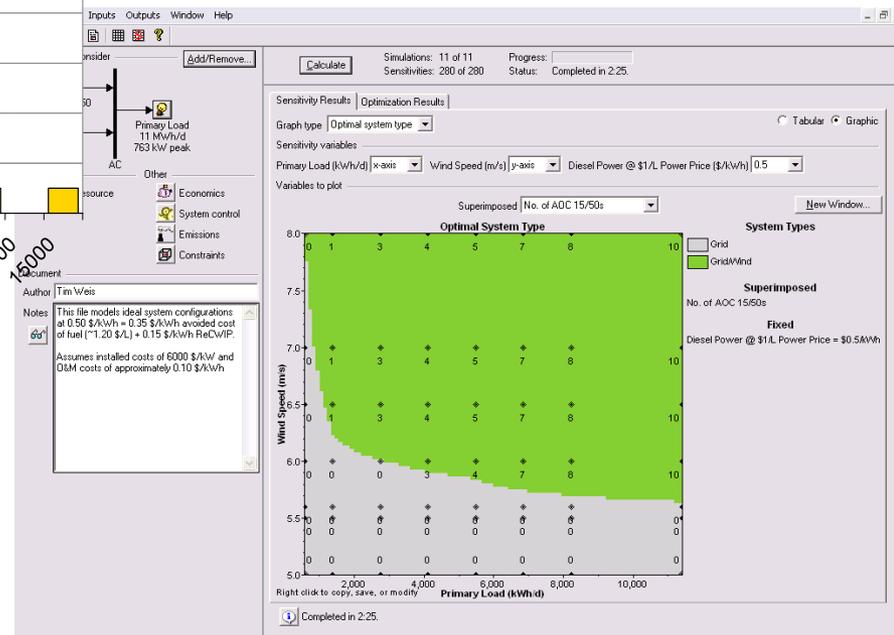
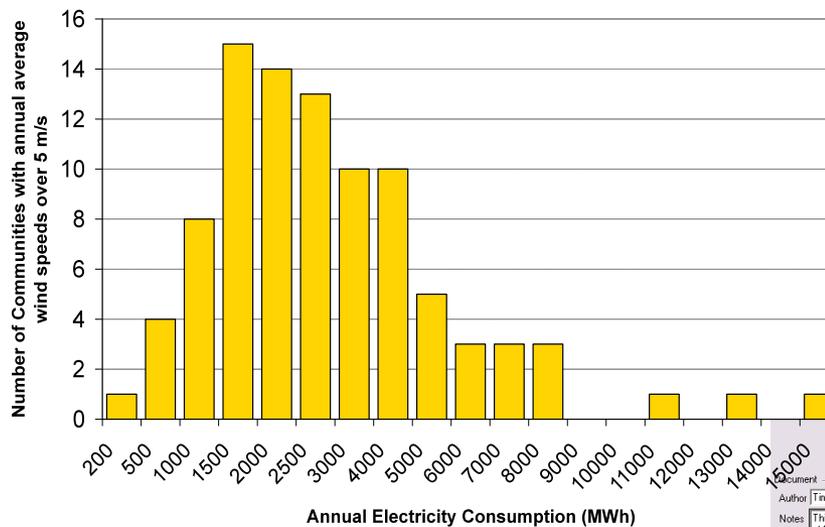


Theoretical Potential

- Study by Pinard and Weis for WEICan
 - Category 1 (large)
 - 40-190 MW of potential (low to high pen.)
 - 25 mil – 120 mil L of diesel savings/yr.
 - Category 2 (small)
 - 30-130 MW of potential (low to high pen.)
 - 16 mil – 77 mil L of diesel savings/yr.

Near Term Practical Potential

- 10-year potential study done by Weis and Maissan for CanWEA (2008-2018)





Modeling results

- 2008-2018 practical potential
 - Category 1 (large)
 - 30-80 MW of potential
 - 25 mil – 75 mil L of diesel savings/yr.
 - Category 2 (small)
 - 32 MW of potential
 - 16 mil L of diesel savings/yr.

The realities

- 1 wind-diesel system operating (360 kW)
- Alaska has over 2,000 kW of wind power installed and has been installing new turbines almost every year since 1999
- Canada is thinking small (pilot projects), while Alaska (and others) are doing big



Ramea, Newfoundland

Photo: Carl Brothers, Frontier Power Systems



The barriers

- Disperse populations
- Overlapping jurisdictions
 - 8 provinces and territories have remote communities
 - Federal gov't responsibilities for Aboriginal and Northern communities
- Lack of utility confidence
- Legacy of failed projects looms
- No stable, long-term support



Moving forward

- Long-term strategies
- Long-term incentive
- Beyond ‘pilot project’ thinking
- Kick start development with hub projects
 - Canada’s first large-scale wind machines did not get built until early after 2000
 - Growth coincided with 1 ¢/kWh production incentive
- Need an incentive tailored to the North

Climb up the learning curve before being kicked up

Gas will soar to \$2.25 in 2012, economist projects - Windows Internet Explorer

http://www.cbc.ca/consumer/story/2008/04/24/gas-prices-consumer.html

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Gas will soar to \$2.25 in 2012, economist projects

Last Updated: Thursday, April 24, 2008 | 6:32 PM ET [Comments](#) 214 [Recommend](#) 131
CBC News



The price of gas will surge to \$1.40 this summer and more than \$2.25 by 2012 as oil supplies continue to deplete, a Canadian economist projected Thursday.

Jeff Rubin, chief strategist and chief economist at CIBC World Markets in Toronto, said the International Energy Agency's oil production projections are overstated. He noted that oil production has not increased in two years, straining supply.

"Whether we have already seen the peak in world oil production remains to be seen, but it is increasingly clear that the outlook for oil supply signals a period of unprecedented scarcity," Rubin said in a statement.

"Despite the recent record jump in oil prices, oil prices will continue to rise steadily over the next five years, almost doubling from current levels."

In Churchill Falls, N.L., drivers were shelling out \$1.40 a litre for gas on Thursday, while filling stations in Montreal were charging \$1.35. (CBC)

National average climbs to \$1.23

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[FEATURE: What drives the price of gas at the pump?](#)

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Video

CBC's Nancy Wilson interviews George Murphy, spokesman for the Consumer Group for Fair Gas Prices (Runs: 7:59)

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Signs of hope

- Ramea project
- Significant renewed interest from utilities
- CanWEA's ReCWIP push
- Monitoring programs
- Community interest
- Government commitments
 - British Columbia remote electrification
 - Northwest Territories is planning for a hub and spoke model
 - Tuktoyaktuk conference in Nov. 2007:
www.remotewindenergy.ca

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