



RETScreen® International

Clean Energy Decision Support Centre

CASE STUDY

ASSIGNMENT

03

WIND ENERGY PROJECT

GREEN POWER PRODUCTION/ ALBERTA, CANADA

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Customer Support

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disponible en français.*

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DESCRIPTION OF ASSIGNMENT

You have been hired by an Independent Power Producer (IPP) to prepare a pre-feasibility study on their behalf. The IPP firm wants to enter the new deregulated electricity market, and is investigating how to do this. In order to be cautious, it is planning a single wind turbine installation to begin with. The IPP firm wants to use a proven wind turbine technology and has chosen a 600 kW model. To help minimise initial investment costs, it has chosen a 40-m tower over taller versions.

One of the challenges of this project is how to balance the costs of investigating the wind turbine location, preparatory work and equipment against the sources of potential revenue. The company has identified two sources of revenue: the new Power Pool or electricity exchange, which operates as a spot market for “merchant plants;” and the potential for a Green Power market.

SITE INFORMATION

The site is located in southwest Alberta. The nearest public wind data station is at Lethbridge. It is assumed that the site under investigation will have a wind speed at least 0.8 m/s higher than in Lethbridge because it has good wind site conditions. The site is less than 0.5 km from a suitable power line for interconnection, and there is good access for cranes and construction equipment. With communities nearby, the cost of travel and accommodation is modest.

FINANCIAL INFORMATION

Typical financial figures for the analysis are provided by the firm (income tax rate of 28%, inflation at 2.5%, debt ratio of 60%, debt interest rate of 8.5%, discount rate of 9%, and a debt term of 10 years). If it can be shown that this turbine is the first of a planned windfarm, then Canadian tax law may permit the capital cost of the wind turbine, exploration activity costs and interconnection costs to be written-off immediately and in their entirety. Otherwise, the capital cost is depreciated at a 30% declining balance. The project is expected to last for 25 years. The average price on the Pool spot market over the past year is \$0.044/kWh. Typical premium charges for Green Power are thought to be on the order of \$0.035 to \$0.040/kWh.

Prepare a RETScreen study, documenting any assumptions that you are required to make, and report on the significant conclusions from this analysis.



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