

Economic Contribution of the Wind Energy Industry in Canada ¹

Results of the 2006 Annual Survey of CanWEA Members

1. INTRODUCTION

1.1 BACKGROUND

Over the last five years, Canada's installed wind energy capacity has grown by an average of 38% each year. As the industry develops, a growing number of firms enter the market, resulting in increased activity in a variety of areas including resource assessment, project development, manufacturing, construction and operations. This growth has an impact on the Canadian economy in terms of job creation, direct investment, contribution to Gross Domestic Product (GDP) and induced benefits.

In February 2005 CanWEA, with the support of Industry Canada, contracted Inshtrix Research to carry out a quantitative economic survey of the Canadian wind energy industry, focusing on 2004 calendar year. This survey provided a "snapshot" of the current state of the industry and also a baseline against which subsequent survey results could be compared.

In 2006, CanWEA (again with the support of Industry Canada) retained Inshtrix Research to undertake the survey again, this time focusing on the 2005 calendar year. The results of this 2006 survey are provided below, both as stand-alone figures and in comparison to the 2005 baseline.

1.2 SURVEY COVERAGE

The 2006 survey was revised on the basis of experience with the 2005 survey; certain questions were dropped or refined, while others were added. A new section on employment was also added to reflect a growing interest in understanding the likely job composition of the Canadian wind industry over the next five years.

Of the 210 active corporate organisations within CanWEA, 174 organizations completed at least a portion of the survey for an overall response rate of 83%. This response rate is up significantly from 2005, where 99 of 152 eligible organisations responded to all or part of the survey, representing a response rate of 65%.

Of the 174 survey respondents, 102 provided detailed information on their revenues and expenditures, while 109 provided detailed information on their current and future employment figures.

¹ CanWEA would like to acknowledge the contribution of Industry Canada who provided funds for this survey. CanWEA would also like to thank the companies who took the time to complete this survey.

2. KEY FINDINGS

This section summarises key findings in terms of industry activities, economic contribution, employment & job creation, and international trade.

2.1 INDUSTRY ACTIVITIES

The Canadian wind industry consists of a wide variety of organisations. Among the respondents, 46 companies (26% off the total) identified their primary activity as wind power development. A further 43 companies (25%) identified themselves as wind energy consultants; 17 (10%) indicated that they are accessory equipment manufacturers, and another 7 identified themselves as turbine manufacturers. A breakdown of each is provided below:

- Of the 46 companies primarily involved in wind power development, 59% are in project development, another 27% are independent power producers, while 11% are involved in “other” business activities.
- Of the 43 companies who are primarily involved in consulting, 56% conduct feasibility study activities. 46% conduct engineering and environmental monitoring or assessment activities, 39% conduct wind resource assessments, 37% conduct design consulting activities, and 31.7% conduct other consulting activities.²
- Of the 17 companies who are primarily involved in accessory manufacturing, nine companies manufacture electrical components, four companies manufacture control systems, three manufacture monitoring devices and the remainder produce other accessories.
- Of the 7 companies primarily involved in turbine manufacturing, four manufacture turbines of 20 kW and 300KW. Another three manufacture turbines under 20 kW, while two manufacture turbines over 300 kW.

The industry remains largely Canadian, private sector-based, with almost 80% of respondents indicating that they are privately-held companies, and 85% indicating that their head offices are in Canada. There is some diversity in terms of scope of project activity; 40% indicated that their organizations’ scope of operations is “international”, another 38% indicated “provincial or regional”, while 17% are “national”.

2.2 ECONOMIC CONTRIBUTION

Overall, 102 respondents provided, at a minimum, their total expenditure amounts for 2005. These firms are included in the economic impact analysis; any other numbers that were not supplied by these respondents were estimated based on the averages from those organizations that responded to every question.

² Note that respondents were asked to “check all that apply”; therefore, the total for each activity can add up to more than 100%.

Exhibit 1 provides an overview of the key economic indicators for the wind industry, compared with last year's results.³

Exhibit 1 Key Economic Indicators for the Canadian Wind Industry

	2005 Survey	2006 Survey	
	Industry Total (estimated)	Total Reported *	Industry Total (estimated) **
Economic Impact of the Wind Industry in Canada			
Impact on national economy (i.e. net gain in economic output, or GDP, in Canada resulting from wind industry)	\$438 M ***	\$368 M	\$736 M
<i>Total Direct and Indirect Impacts</i>		\$222 M	<i>\$444 M</i>
<i>Total Induced Impacts</i>		\$146 M	<i>\$292 M</i>
Payroll			
Payroll Expenditures (including benefits)	\$ 48.0 M	\$108 M	\$216 M
Expenditures			
Total Expenditures:	\$ 395 M	\$241 M	\$482 M
Impact of expenditures on :	not reported	\$690 M	\$1380 M
<i>Economic output (impact of wind energy industry expenditures on the sales of firms in Canada)</i>		\$239 M	\$478 M
<i>Labour income (increase in people's income from employment)</i>			
Percent spent on Canadian goods and services suppliers	64 %		
Revenues			
Total Revenues	not reported	\$274 M	\$548 M
<i>Percentage derived from domestic firms</i>		82%	

* Respondents were asked to provide breakdowns of their total expenditures, top ten expenditure items, payroll expenditures, number of employees, and revenues. This information was used to calculate the economic impacts listed above using the Canadian Regional Input-Output Model (CanRIOM). This model takes into account the different effects of different types of expenditures and does not rely on one universal multiplier effect.

** Industry total figures were extrapolated to the entire CanWEA corporate membership on the basis of full-time equivalent (FTE) figures. Note that not all participants in the Canadian wind industry are members of CanWEA, and the figure provided here can be considered a conservative estimate.

*** Note that due to the different economic impact model used in the 2006 assessment, the 2005 and 2006 figures are not directly comparable.

Highlights for 2006

The following are highlights of wind industry economic activity for the 2005 calendar year.

- The total impact of the wind industry on the nation's GDP (net gain in economic output in Canada) is approximately \$736 million. The total impact of wind energy related expenditures on economic output (sales of all firms in Canada) is approximately \$1.38 billion for the entire sector.

³ Note that the 2006 survey was modified and expanded from the 2005 survey and there are certain cases therefore where 2005 figures are no available for comparison.

- The total estimated payroll expenditures exceed \$216 million for an average of \$1.06 million per firm. On average, nearly half of all firms' expenditures are allocated to payroll.
- Total annual expenditures for the industry are estimated to be \$480 Million, while total annual revenues are estimated to be \$550 million. On average 82.4% of revenues were derived from domestic firms. Almost 70% of respondents did not receive revenue from government incentive programs in 2005 for their wind energy business.

Trends, Past and Future

The following trends can be noted with respect to the baseline year (2004 calendar year) and future growth expectations.

- The total direct expenditures of \$480 Million represent a 22% increase over last year's reported expenditures of \$395 Million.
- The median reported change in expenditures from 2004 to 2005 was an increase of 55%. Looking forward over the next twelve months, respondents indicated that they anticipate their expenditures to increase by 81% (median of reported figures).
- The median reported change in revenues from 2004 to 2005 was an increase of 100%. Looking forward over the next twelve months, respondents indicated that they anticipate their expenditures to again increase by 100% (median of reported figures).

It is apparent that the industry's growth is translating into increased revenues and expenditures, with overall industry profitability (revenue exceeding expenditures by 14%). The trend appears likely to continue in the future as respondents are generally optimistic for future growth, anticipating 80% to 100% increases in expenditures and revenues, respectively, in the next 12 months.

2.3 EMPLOYMENT AND JOB CREATION

Overall, 109 respondents provided figures on current and future employment. Exhibit 2 provides an overview of the key indicators for the wind industry, compared with last year's results.⁴

Highlights for 2006

It is estimated that there are currently 1,200 FTE direct jobs in the Canadian wind industry. Roughly 70% of these jobs (850 FTEs) are in "core", non-support functions including managers, consultants, engineers & scientists, trades people and other occupations. Another estimated 360 FTEs are in support staff, including labourers, assistants and others.

It is estimated that a total of 2,280 direct and indirect FTE jobs result from the activities of the Canadian wind industry (note that this does not include "induced" impacts).

⁴ Note that the 2006 survey was modified and expanded from the 2005 survey, and there are certain cases where 2005 figures are not available for comparison.

Exhibit 2
Direct Employment Indicators and Trends for the Canadian Wind Industry
(expressed in terms of Full-Time Equivalents, or FTE)

	2005 Survey		2006 Survey		
	For Year 2005	For Year 2006		For Year 2011	
	2005 Industry Total (estimated)*	Total Reported	Industry Total (estimated)*	Total Reported	Industry Total (estimated)*
Total Employment	722	627	1,200	2737	5,300
Non-support staff	not reported	441	850	1672	3,200
<i>Management and Supervisors</i>		119	230	345	700
<i>Engineers and Scientists</i>		126	240	327	600
<i>Trades</i>		97	190	681	1,300
<i>Other occupations</i>		100	190	321	600
Support staff	not reported	186	360	1065	2,100
<i>Labourers (assembly etc.)</i>		140	270	924	1,800
<i>Other support staff</i>		46	90	141.1	300

Trends, Past and Future

From 2004 to 2005, it is estimated that the wind industry workforce (direct employment only) grew from 720 FTEs to 1,200 FTEs, an increase of roughly 65%. On average, respondents have an average of 5.8 FTEs per firm, up from 4.4 FTEs last year. This indicates that the average wind industry organisation is small, but growing in size with the industry.

Looking forward, respondents indicated that they expect substantial employment growth in the next five years. Overall, indications are that the workforce will grow fourfold from 1,200 FTEs in 2005 to 5,300 FTEs in 2011. It is expected that the highest growth rates will occur among trades people and labourers, with a nearly sevenfold increase from 190 to 1,300 FTEs, and 270 to 1,800 FTEs respectively. At the same time, the results indicate an expected threefold increase in the number of scientists, engineers, managers and other core staff.

Training Needs

Respondents were asked if they felt that Canada's colleges and universities provided adequate training to fill their recruitment needs. Roughly two-thirds of respondents indicated that training was adequate for managers and engineers, but this level dropped to just over half (55%) with respect to training for the trades. This may reflect the figures above, where the greatest increase in demand is expected among the trades.

There was no clear trend in terms of methods used by employers to train their staff. 58% of respondents indicated that they provide some kind of training for their managers, with the preferred method being conferences (37% indicated they used these for training purposes) and in-house training (29%). For engineers, 53% of employers provide some kind of training, with the preferred training methods being conferences (30%) and in-

house training (29%). For trades people, only 37% of employers indicated that they provided any kind of training. When they did, training took place through in-house courses and job shadowing.

2.4 INTERNATIONAL ACTIVITIES AND FINANCE

Survey respondents were asked to provide feedback on their current and expected international activities, as well as anticipated methods for company financing:

- 47% of respondents have not pursued business in other countries. 39% have pursued business in the United States and 20% in Western Europe. Another 16% have pursued business in Asia Pacific, while 15% have sought business in Latin America and the Caribbean.
- Looking forward, 45% of respondents do not anticipate pursuing business in other countries in the next 3 years. 40% anticipate pursuing business in the United States and 22% anticipate pursuing business in Asia Pacific.
- 45% of respondents anticipate using working capital for financing their company in 2006. Another 38% anticipate using private equity, while 23% anticipate using other funding sources.

It is apparent that most companies are focused on the Canadian market, with considerable interest in the U.S. market as well. However, there appears to be comparatively little activity, and little interest in pursuing overseas markets.

2.5 SUBSEQUENT SURVEYS

Respondents were asked to provide feedback on the survey itself. The following reflects trends in these responses:

- Many respondents felt that the survey did not closely reflect their own particular activities within the wind industry (as a non-profit, a utility, a small company etc. This reflects the fact that there are a large number of organisations in the industry, and that the majority of these organisations are small.
- Many organisations were either uncomfortable with confidential questions on revenue and expenditures, or indicated that these figures were very difficult to derive.
- Respondents indicated that the survey length was either “just right” or too long, suggesting that subsequent surveys (at the very least) should not exceed the length of the 2006 survey.

CanWEA will consider these comments as it prepares a survey for next year.