

Windstream Energy

Potential Employment and Income Impacts in Ontario from the Wolfe Island Shoals Project

Prepared by:

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Guelph, Ontario**

Project Number:

60188309

Date:

December 2010

December 17, 2010

Mrs. Nancy Baines
Windstream Energy
c/o ORTECH Consulting Inc.
804 Southdown Road
Mississauga, Ontario L5J 2Y4

Dear Mrs Baines:

Project No: 60188309

Regarding: Potential Employment and Income Impacts from the Wolfe Island Shoals Project


AECOM is pleased to provide you with our report that estimates the potential employment and income impacts that may arise from the development of the Wolfe Island Shoals Project. Our analysis draws on projected project costs for capital and operations provided to AECOM from ORTECH Consulting Inc. AECOM estimated the net impact to Ontario using the cost allocation estimates provided to us from ORTECH. Potential employment and income impacts to the Province of Ontario were estimated using multipliers derived from the most recent version of the Statistics Canada Interprovincial Input-Output model.

Our analysis indicates that if the Wolfe Island Shoals Project were to be developed according to the cost profile provided to AECOM, it would annually generate some 1,900 jobs during construction and about 175 jobs during operations within the Province of Ontario. This report provides the background and as well as the details of the analysis.

Sincerely,
AECOM Canada Ltd.

A stylized, handwritten signature in black ink, appearing to read 'A. Keir'.

Andrew Keir

A handwritten signature in black ink, clearly legible as 'Marvin Stemeroff'.

Marvin Stemeroff

Executive Summary

1. The total project capital investment is **\$1.36 billion**, of which **\$700** million will remain in Ontario.
2. Over the 5 year construction period the average annual number of jobs created in Ontario is **1,900** and the associated annual labour income is **\$89** million.
3. Over the 20 year operations period the average annual number of jobs created in Ontario is **175** and the associated annual labour income is **\$9 million**.
4. The approach and methods used to determine these benefits are;
 - a) based on the most recent input/output multipliers available from Statistics Canada,
 - b) consistent with how the Government of Ontario assesses the economic benefits of major capital projects, and
 - c) complementary to recent findings of the Conference Board of Canada in their just issued report, *"Employment and Economic Impacts of Ontario's Offshore Wind Power Industry"*.

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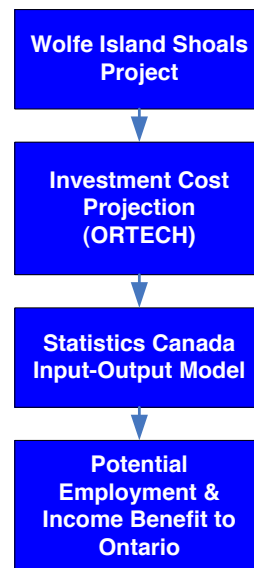
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1. Background

AECOM was retained by Windstream Energy, through ORTECH Consulting Inc., to conduct an independent and objective assessment of the potential employment and labour income impacts that might arise from the construction and operations of the Wolfe Island Shoals project. This project was recently awarded a Feed in Tariff (FIT) contract from the Ontario Power Authority (OPA) to provide 300 MW of off-shore wind power under the Green Energy Act. This assessment relied on investment projections provided to AECOM from ORTECH Consulting Inc.

The investment projections were divided into two phases, construction (years 1 to 5) and operations (years 6 to 25). All capital and operating costs were expressed in 2010 dollars. Estimates of the portion of the capital and operating costs that will be spent in Ontario were also provided by ORTECH Consulting Inc. Once these projected costs were converted to annual cash flow expenditures AECOM determined the direct, indirect and induced employment and income effects to Ontario using the most recent multipliers derived from Statistics Canada's Interprovincial Input-Output (I-O) model.¹



2. Project Investment

The Wolfe Island Shoals project is a very significant infrastructure undertaking. Its current cost is estimated to be about \$1.35 billion to construct. Of this total almost \$690 million is estimated to be spent on goods and services within Ontario.

Total Project Capital Cost

		Euros	CDN
Development	Planning & Design	€ 15,894,009	\$ 21,852,673
	Site Investigation	€ 3,973,502	\$ 5,463,168
	Technical Analysis	€ 3,973,502	\$ 5,463,168
	Permitting and Approvals	€ 1,702,930	\$ 2,341,358
	Legal	€ 2,838,216	\$ 3,902,263
	Sum of Development	€ 28,382,159	\$ 39,022,631
Material Supply	Foundations	€ 161,355,981	\$ 221,848,339
	Turbines	€ 527,908,163	\$ 725,820,933
	OHVS	€ 47,227,913	\$ 64,933,658
	Inter-array Cables	€ 19,299,868	\$ 26,535,389
	Export Cables	€ 12,488,150	\$ 17,169,958
	Sum of Material Supply	€ 768,280,076	\$ 1,056,308,277
Construction	Foundations	€ 34,331,060	\$ 47,201,774
	Turbine Erection	€ 30,652,732	\$ 42,144,441
	OHVS	€ 45,411,455	\$ 62,436,209
	Infield Cabling	€ 62,440,750	\$ 85,849,788
	Export Cabling	€ 15,894,009	\$ 21,852,673
	Sum of Construction	€ 188,730,006	\$ 259,484,886
Onshore	Substation	€ 2,157,044	\$ 2,965,720
Total Project		€ 987,549,286	\$ 1,357,781,513

Total Project Capital Cost Expended in Ontario

		Percent	Dollars
Development	Planning & Design	60.00%	\$ 13,111,604
	Site Investigation	60.00%	\$ 3,277,901
	Technical Analysis	75.00%	\$ 4,097,376
	Permitting and Approvals	95.00%	\$ 2,224,290
	Legal	100.00%	\$ 3,902,263
	Sum of Development		\$ 26,613,434
Material Supply	Foundations	80.00%	\$ 177,478,671
	Turbines	50.00%	\$ 362,910,467
	OHVS	40.00%	\$ 25,973,463
	Inter-array Cables	0.00%	\$ -
	Export Cables	0.00%	\$ -
	Sum of Material Supply		\$ 566,362,601
Construction	Foundations	25.00%	\$ 11,800,444
	Turbine Erection	25.00%	\$ 10,536,110
	OHVS	25.00%	\$ 15,609,052
	Infield Cabling	50.00%	\$ 42,924,894
	Export Cabling	50.00%	\$ 10,926,337
	Sum of Construction		\$ 91,796,837
Onshore	Substation	80.00%	\$ 2,372,576
Total Project			\$ 687,145,448

¹ See Appendix A for a brief description of terminology and assumptions in modeling economic benefits with Input-Output analyses.

The construction period covers 5 years, but the bulk of activity is estimated to occur over three years, with the first year mostly devoted to site preparation, and the 5th year for completing construction. The offshore wind farm is currently estimated to begin operations at the end of year 5 and continue for 20 years. This means that final construction and operations overlap in one year.

Annual project operating costs are currently estimated at just over \$30 million over 20 years with just over \$20 million of this amount being spent in Ontario.

Operating Costs

	Quantity	Units	Unit Cost	Total Cost USD	Total Cost CDN
Service Contract	999,324	MWH	\$ 28.20	\$ 28,180,937	\$ 28,479,373
Power Consumption	95	EA	\$ 4,500	\$ 427,500	\$ 432,027
Insurance	95	EA	\$ 12,250	\$ 1,163,750	\$ 1,176,074
Owners Administration	12	Monthly	\$ 10,000	\$ 120,000	\$ 121,271
Legal Support	1	LS	\$ 25,000	\$ 25,000	\$ 25,265
Engineering Support	1	LS	\$ 120,000	\$ 120,000	\$ 121,271
Environmental Monitoring	1	LS	\$ 30,000	\$ 30,000	\$ 30,318
Owners Operator	1	person year	\$ 75,000	\$ 75,000	\$ 75,794
Owners Maintenance Crew	2	person year	\$ 60,000	\$ 120,000	\$ 121,271
Contingency	1	10%	\$ 205,139	\$ 205,139	\$ 207,311
Sum of OpxItems	Σ			\$ 30,467,326	\$ 30,789,975

Ontario Capture

Service Contract	63%
Power Consumption	100%
Insurance	100%
Owners Administration	100%
Legal Support	100%
Engineering Support	100%
Environmental Monitoring	100%
Owners Operator	100%
Owners Maintenance Crew	100%
Contingency	100%

3. Potential Benefit to Ontario

The key result of the analysis shows that many new jobs will be potentially created as the Wolfe Island Shoals project is developed. During the 5-year construction period, about 1,900 jobs will be created annually in Ontario, with almost 175 jobs created annually during the 20-year operations period.

Average Annual Number of Jobs

	Direct	Indirect	Induced	Total	Σ
Construction	\$ 34,357,272	\$ 19,240,073	\$ 35,325,788	\$ 88,923,133	
Operations	\$ 3,037,891	\$ 2,430,313	\$ 3,604,070	\$ 9,072,274	

Average Annual Labour Income

	Direct	Indirect	Induced	Total	Σ
Construction	\$ 34,357,272	\$ 19,240,073	\$ 35,325,788	\$ 88,923,133	
Operations	\$ 3,037,891	\$ 2,430,313	\$ 3,604,070	\$ 9,072,274	

These new jobs will in turn create nearly \$89 million per year in added income to Ontario during construction. During operations over \$9 million of income per year will be added to the Ontario economy.

Appendix A:

Economic Impact Analysis and Methodology

A dollar spent on construction or operation circulates and re-circulates within the economy, multiplying the effects of the original expenditures on overall economic activity. This process is referred to as the economic **multiplier effect**. It operates at several levels:

- The initial construction and operational expenditures on wages and materials are generally referred to as the direct costs of operation and their effects are referred to as the **initial (direct) effects**.
- Subsequent purchases by suppliers of materials and services to sustain the original and derivative expenditures are called the **indirect effects**.
- The **induced effects** emerge when workers in the sectors stimulated by initial and indirect expenditures spend their additional incomes on consumer goods and services.

Multipliers – These are summary measures that represent the division of the total impacts (direct, indirect and induced) by the initial expenditures.

If the economy is operating at full employment, additional expenditures will most likely reflect themselves in higher prices and wages as additional workers attracted to the project are drawn from other employment. Only if the economy is operating with excess capacity, some unemployment and slack in critical sectors and there exists no apparent bottlenecks anywhere in the economy, is it possible to claim that the person-years associated with the activity expenditures represent additional or incremental employment..

Economic impact analysis is a useful mathematical tool capable of quantifying the patterns and magnitudes of interdependence among sectors and activities. It is predicated on two fundamental propositions.

- First, regardless of the inherent value of primary activities such as construction or operation and maintenance, to the extent that these activities involve the use of scarce resources they generate economic consequences that can be measured and compared.
- Second, economic impacts are only partially captured by assessing direct expenditures. In as much as the economy is a complex whole of interdependent and interacting activities, there are some significant indirect and induced impacts associated with these direct expenditure. Invariably most of the indirect and induced impacts are larger than the direct impacts.

Appendix B:

About AECOM

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Enhancing the world's built, natural and social environments



About AECOM

Since AECOM (NYSE: ACM) first launched as an employee-owned company in 1990, we have become one of the largest and most respected providers of professional, technical and management support services in the world. Our markets include transportation, facilities, environmental, energy, water and government.

Today we have approximately 45,000 employees serving clients in more than 100 countries. We are a recognized industry leader, consistently ranked No. 1 in key market sectors globally, according to *Engineering News-Record's The Top 500 Design Firms Sourcebook for 2009*.

AECOM's global network of resources provides our clients with access to, and delivery of, our worldwide capabilities and professional expertise. Our vast array of services ranges from financing, strategizing and planning to procurement, design, construction management and operations. AECOM is integrated across its businesses and regions to best serve clients and enhance and sustain the world's built, natural and social environments.

Innovation, efficiency, global reach and collaboration — AECOM's winning combination benefits clients, communities and stakeholders around the globe.

A *Fortune 500* company, AECOM has annual revenue in excess of US\$6 billion.

More information about AECOM and its services can be found at www.aecom.com.

AECOM is recognized globally as an industry leader. We hold the following rankings in *Engineering News-Record's The Top 500 Design Firms Sourcebook for 2009*:

- #1 in Pure Design
- #1 in Transportation
- #1 in General Building
- #1 in Hazardous Waste
- #2 in Global Design Firms
- #3 in the Top 20 in Water
- #3 in Program Management
- #4 in Green Design
- #6 in the Top 20 in Power

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Our Capabilities



Architecture

We help shape the world around us — from high-rise buildings to educational, cultural, research and transportation facilities. Our design process is based on energy-efficient building systems, and appropriate selection of materials and form to maximize environmental conditions and long-term performance.

Building Engineering

We deliver creative solutions for building projects for industry, government, commercial and leisure sectors. Our building engineering specialists have expertise in structural and building services engineering, fire engineering, acoustics, facades and seismic design. We embed sustainability principles in every design.

Design + Planning

Our professionals specialize in design, master planning, environmental and ecological planning, strategic planning and economic development. We create implementable solutions that promote sustainable land use and enhance quality of life.

Economics

We provide services with a concentration in economic analysis. Our economic services encompass planning and programming, measuring and testing, and strategy and implementation for a broad range of clients.

Energy

We address the complete spectrum of energy challenges, including clean and renewable energy, energy efficiency and carbon management, hydropower and dams, thermal, geothermal and wind power generation, and transmission and distribution.

Environment

Our team of environment specialists offers clients expertise in air quality, impact analysis and permitting, environmental health and safety management consulting/due diligence, remediation consulting/engineering and construction/site restoration, specialty and emerging technologies, waste services, and water and natural resources.

Program Management

Our specialists are responsible for management and control of hundreds of major capital programs totaling over US\$300 billion across all continents and market sectors, including transportation/infrastructure, mining and minerals, environmental, facilities and energy.

Government

We have the international presence, personnel networks and procurement infrastructure to deliver support for any mission, anywhere. We optimize the reliability, availability and sustainability of equipment, logistics systems and facilities for clients around the world.

Transportation

We provide professional services in areas such as aviation, transit, freight rail, highways and bridges, planning, and ports and marine. Our global network of top-tier specialists delivers comprehensive services over the full life cycle of a project to benefit clients in government and private industries.

Water

We create comprehensive delivery solutions for water, wastewater and wet weather systems, desalination, water resources, water reuse, tunneling, and community infrastructure through traditional and alternative delivery services such as program management and design-build.