APPENDIX J
EMPLOYMENT AND ECONOMY

Appendix J EMPLOYMENT AND ECONOMY

J.1 ECONOMIC BENEFIT ANALYSIS

Blue Hill Wind Energy Project
Economic Benefit Analysis

Prepared for:
Algonquin Power

Prepared by:
Stantec Consulting Ltd.

December 2017

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Abbreviations

ABEX	Decommissioning Expenditure
CAPEX	Capital Expenditure
IOIC	Input-Output Industry Codes
MW	Megawatt
NAICS	North America Industry Classification System
O & M	Operation and Maintenance
OPEX	Operations Expenditure
PY	Person Year
RM	Rural Municipality
SCIPIOM	Statistics Canada Inter-Provincial Input Output Model

Glossary

Person years	Person years (PYs) is a unit of measurement used to describe the amount of work done by one person, working on a full-time basis, in one year.
Direct Employment	Employment with the Proponent and its contractors created through construction, operation and decommissioning of the Project (e.g., construction labour, project management).
Gross domestic product	Gross domestic product (GDP) is the total value of the goods and services produced in a given area (e.g., country) over a given period of time (typically on an annual basis). GDP can be measured in three ways: production approach, income approach and expenditure approach.
Indirect Employment	Employment created through Project spending on goods and services (e.g., employment with suppliers/manufacturers of materials used during construction).
Induced Employment	Employment created through the spending on behalf of direct and indirect workers on consumer goods and services (e.g., restaurant servers, retail positions).
Input-output Industry Classification	Input-output Industry Classification (IOIC), a variant of the North American Industry Classification System (NAICS), is used by Statistics Canada System of National Accounts which includes input-out tables, national and provincial multipliers and Statistics Canada Interprovincial Input-Output Model, among others.
National and provincial multipliers	Statistics Canada national and provincial multipliers, derived from input-output tables, are used to assess the effects on the economy of an exogenous change in final demand for the output of a given industry. Multipliers provide a measure of the interdependence between an industry and the rest of the economy. Multipliers show the direct, indirect, and induced effects on gross output, the detailed components of GDP, jobs, and imports. The provincial multipliers show the direct, and indirect effects.

North American Industry Classification System	The North American Industry Classification System (NAICS), formally adopted in 1997 by Canada, Mexico and the United States (against the backdrop of the North American Free Trade Agreement [NAFTA]), provides a common statistical framework and definition of the industrial structure of these countries. The Canadian version of NAICS is managed by Statistics Canada and is composed of sectors, subsectors, industry groups, and industries.
Statistics Canada Interprovincial Input-Output Model	The Statistics Canada's Interprovincial Input-Output Model (SCIPIOM), based on input-out tables, is used to simulate the economic impact on the business sector of an expenditure ('shock') on a given set of goods and services or the output of one of several industries. The model simulates direct and indirect impacts, including the number of jobs created, indirect taxes and subsidies generated and gross domestic product (among others).

1.0 INTRODUCTION

Algonquin Power (Algonquin) is proposing to construct the Blue Hill Wind Energy Project (the Project), a 177 megawatt (MW) wind energy facility, located in southern Saskatchewan, within the Rural Municipalities (RM) of Morse and Lawtonia. The Project will benefit both Saskatchewan and Canada through economic development and diversification, job creation, and increased government revenue. It will also support the current provincial government's strategic interest in developing the province's wind energy portfolio to meet 2030 renewable energy targets (SaskPower 2015).

This technical report estimates the Project's economic benefits during construction, operation and maintenance, and decommissioning. This information supports the discussion of Project Benefits, provided in Section 2 of the Environmental Impact Statement (EIS), and assessment of potential effects on employment and economy, provided in Section 10. Project benefit information provided in this report include employment, government revenue (e.g., tax revenue), and economic contributions to the Saskatchewan and Canadian economy.

BLUE HILL WIND ENERGY PROJECT
ECONOMIC BENEFIT ANALYSIS

Introduction
December 2017

2.0 METHODS, ASSUMPTIONS, AND LIMITATIONS

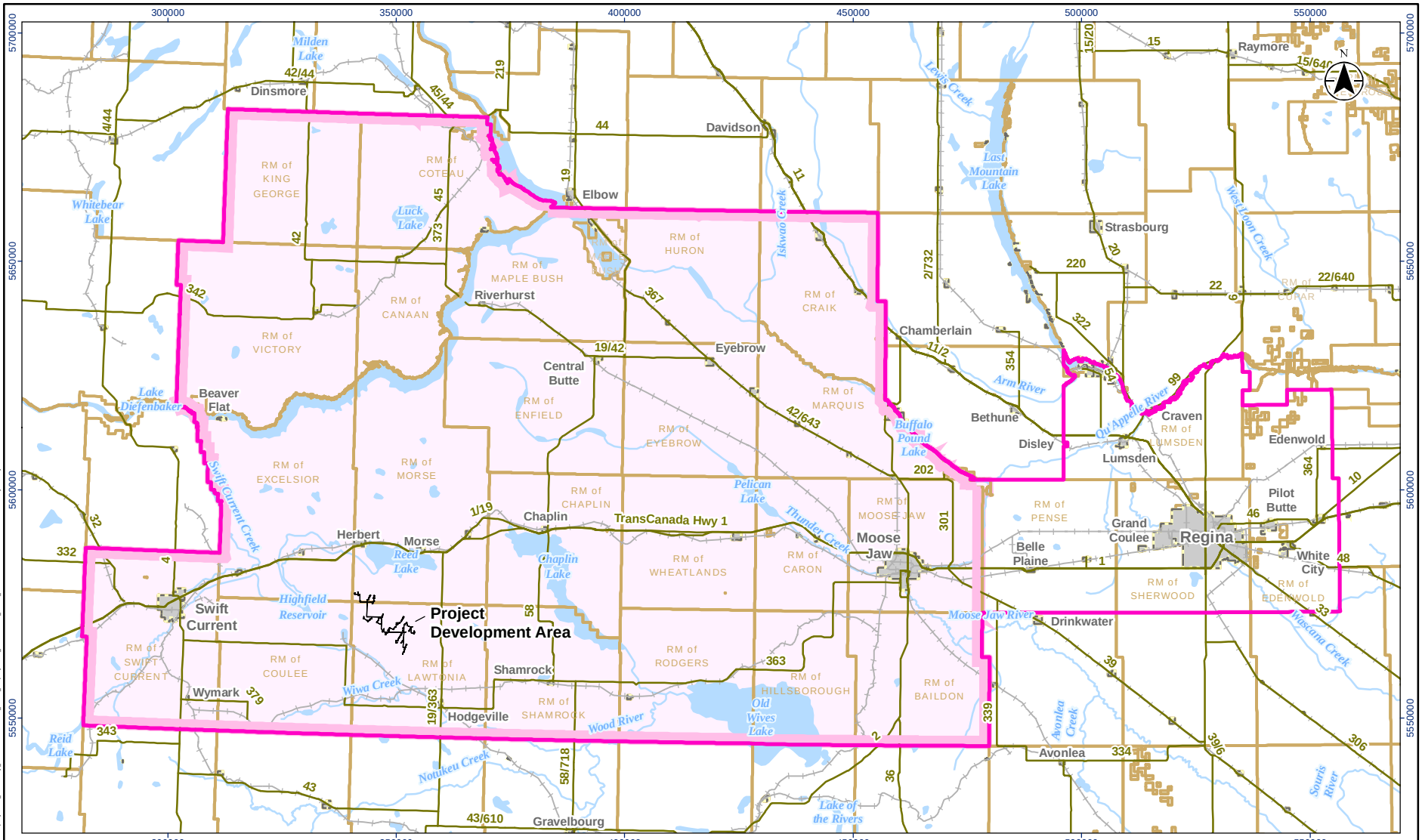
2.1 METHODS

Economic impacts were estimated using the following steps:

- The benefits analysis was undertaken at the local, provincial (Saskatchewan), and national levels. As depicted in Figure J1-1, the Local Assessment Area (LAA) and Regional Assessment Area (RAA) are defined as:
  - LAA: Communities within the Swift Current Census Agglomeration (CA) 720, and the Moose Jaw Census Division (CD) No. 7
  - RAA: Includes the LAA and communities within Regina CMA No. 705.
- Expenditure information provided by Algonquin Power for the three Project phases (construction, operation and maintenance, and decommissioning), were broken down by expenditure type, and region within which the expenditure will likely occur. Expenditures occurring in Saskatchewan were broken down into LAA, RAA, and "Other Saskatchewan." Other expenditures in Canada were classified as "Other Canada." Expenditures occurring outside of Canada, such as the purchase of equipment manufactured overseas, are not counted in the analysis.
- Expenditures were then categorized into commodity classes, based on North American Industry Classification (NAICS) 2012 and Statistics Canada Input-Output Industry Codes (IOIC).
- Economic impacts at the provincial (Saskatchewan) and federal level were estimated using multipliers obtained from Statistics Canada's Interprovincial Input-Output Model (SCIPIOM), for each commodity class (available from Statistics Canada 2017a). Multipliers are either expressed as a quotient of expenditure (e.g., dollars of GDP generated per dollar of expenditure), or as a relationship (e.g., number of jobs per $1 million of expenditure). Multipliers were used to estimate direct, indirect, and induced effects.

- The SCIPIOM does not provide local area multipliers. The following steps were undertaken to derive LAA and RAA employment multipliers:
  - LAA and RAA employment multiplier adjustment quotients were estimated by first deriving area multipliers for the LAA and RAA using Moore's equation[1] (from Thulin 2014), and then dividing these multipliers by the area multiplier for the province of Saskatchewan.
  - Applying Moore's equation, local area multipliers for the LAA and RAA are estimated at 1.83 and 2.23, respectively, while the area multiplier for the province of Saskatchewan is estimated at 2.70. Based on these multipliers the LAA and RAA adjustment quotients are estimated at 0.68 and 0.83, respectively.
  - These adjustment quotients were then applied to provincial level employment multipliers for each commodity class to estimate indirect and induced employment within the LAA and RAA.
- Government revenue includes corporate income taxes (federal and provincial), personal income taxes (federal and provincial), sales taxes (federal and provincial), and municipal taxes (i.e., property taxes).
- Sale and other consumption taxes were estimated based on SCIPIOM multipliers, from Statistics Canada 2017a.
- Corporate income taxes associated with expenditures were estimated based on a function of gross operating surplus, estimated from expenditures based using SCIPIOM multipliers, and nominal federal and provincial corporate tax rates.
- Personal income taxes were estimated based on a function of employment income and federal and provincial individual tax rates.
- Property tax information was provided by Algonquin.

[1] From Thulin (2014), Moore's Equation is M = 1/[1-(-0.20365 + 0.13783(logP))], where M is the multiplier and P is the population. Moore's Equation is based on empirical research undertaken in the USA in the 1970s, which demonstrated that there is a direct relationship between population and the magnitude of economic multiplier. Areas with larger populations tend to have higher multipliers because the greater diversification of the economy supports larger potential for the recycling of dollars.



2.2 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations apply to the estimates provided in this report:

- Estimates are provided in 2017 nominal Canadian dollars
- The Project is at an early stage in planning, so expenditure estimates are subject to change
- Regional breakdown of expenditures reflects a pre-procurement estimate, and may be subject to change
- The results of the multiplier analysis using the SCIPIOM multipliers are considered accurate to within +/-25%
- Estimates of employment are rounded to the nearest 5 person-years (PYs). Dollar values rounded to the nearest $0.1 million.
- Corporate tax revenue that may be payable from revenues earned from power sales not included in the estimate of government revenue.

3.0 PROJECT COSTS

3.1 CAPITAL COSTS

Total Capital Expenditures (CAPEX), excluding costs associated with the procurement of wind turbine generators, blades, and towers, associated with construction of the Project is estimated at $93 million. Wind turbine generators, blades, and towers will be purchased from foreign suppliers, and therefore do not result in economic impacts within Canada. Of total CAPEX labour accounts for approximately $11 million and equipment, materials, goods, and services are $82 million. Of total domestic CAPEX, approximately 53% ($49 million) is expected to occur within Saskatchewan and 47% ($44 million) within other parts of Canada (see Table 3-1). Within Saskatchewan, 24% of provincial CAPEX ($12 million) is expected to occur within the local area and 76% ($37 million) within Regina CMA No. 705. A summary of CAPEX by location of accrual is provided in Table 3-1.

Table 3-1 Domestic CAPEX by Location

Expenditure	$ millions				
	Saskatchewan			Other Canada	Total Canada
	LAA	Reginal CMA No. 705	RAA		
Labour	1.6	2.8	4.4	6.9	**11.4**
Equipment, materials, goods, and services	10.4	34.6	45.0	36.7	**81.6**
Total	**12.0**	**37.4**	**49.4**	**43.6**	**93.0**
NOTE: 1) Totals may not sum due to rounding					
SOURCE: Algonquin 2017					

A description of estimated CAPEX, including a breakdown by major types of commodities and services that will be procured during construction, and the distribution of costs between Saskatchewan and other parts of Canada are listed in Table 3-2. Expenditures listed in Table 3-2 are additionally categorized by IOIC. In addition to expenditures identified in Table 3-2, Algonquin will be incurring site acquisition costs.

Table 3-2 Categorization of CAPEX, IOIC Industries and Location of Spend

Expenditure Category	Statistics Canada IOIC	$ millions				
		Saskatchewan				
		LAA	Regina CMA No. 705	RAA	Other Canada	Total Canada
Labour						
Pre-development						
Algonquin	BS221100 - Electric power generation, transmission, and distribution	0.0	0.0	0.0	2.0	**2.0**
Permitting external Services	BS541600 - Management, scientific and technical consulting services	0.0	0.5	0.5	0.0	**0.5**
General external services	BS541600 - Management, scientific and technical consulting services	0.0	0.4	0.4	0.1	**0.5**
Engineering and Development						
Algonquin	BS541300 - Architectural, engineering and related services	0.0	0.0	0.0	2.1	**2.1**
Construction						
Algonquin	BS221100 - Electric power generation, transmission, and distribution	0.1	0.4	0.5	0.5	**1.0**
Construction Services	BS23B000 - Non-residential building construction	0.2	0.2	0.4	1.1	**1.5**
Earthworks and Civil	BS23B000 - Non-residential building construction	0.6	0.6	1.1	0.0	**1.1**
Foundations	BS23B000 - Non-residential building construction	0.4	0.2	0.6	0.1	**0.7**
Wind turbine generator erection	BS23B000 - Non-residential building construction	0.1	0.3	0.3	0.6	**0.9**
Building (O&M)	BS23B000 - Non-residential building construction	0.0	0.0	0.1	0.0	**0.1**
Substation installation	BS23B000 - Non-residential building construction	0.1	0.1	0.1	0.0	**0.1**
General transport	BS484000 - Truck transportation	0.0	0.0	0.1	0.0	**0.1**
Collector system	BS23B000 - Non-residential building construction	0.0	0.1	0.1	0.1	**0.2**

Table 3-2 Categorization of CAPEX, IOIC Industries and Location of Spend

Expenditure Category	Statistics Canada IOIC	$ millions				
		Saskatchewan			Other Canada	Total Canada
		LAA	Regina CMA No. 705	RAA		
Energization and commissioning	BS221100 - Electric power generation, transmission, and distribution	0.0	0.1	0.1	0.4	**0.5**
Common services	BS561100 - Office administrative services	0.1	0.0	0.1	0.0	**0.1**
Subtotal (Labour)		**1.6**	**2.8**	**4.5**	**6.9**	**11.4**
Equipment, Materials, Goods and Services						
Pre-development						
Permits and approvals	BS541600 - Management, scientific and technical consulting services	0.0	2.0	2.0	0.0	**2.0**
Construction						
Wind Turbine Generators						
Turbines	BS333600 - Engine, turbine and power transmission equipment manufacturing	0.0	0.0	0.0	0.0	**0.0**
Blades	BS333600 - Engine, turbine and power transmission equipment manufacturing	0.0	0.0	0.0	0.0	**0.0**
Tower sections	BS333600 - Engine, turbine and power transmission equipment manufacturing	0.0	0.0	0.0	0.0	**0.0**
Foundations	BS23B000 - Non-residential building construction	0.0	15.0	15.0	5.0	**20.0**
Turbine erection	BS23B000 - Non-residential building construction	0.0	1.7	1.7	15.3	**17.0**
Lighting (NavCanada, etc.)	BS23B000 - Non-residential building construction	0.0	0.0	0.0	0.3	**0.3**
SCADA system and testing	BS541300 - Architectural, engineering and related services	0.0	0.1	0.1	0.1	**0.2**

Table 3-2 Categorization of CAPEX, IOIC Industries and Location of Spend

Expenditure Category	Statistics Canada IOIC	$ millions				
		Saskatchewan			Other Canada	Total Canada
		LAA	Regina CMA No. 705	RAA		
Substation						
Main power transformer	BS23B000 - Non-residential building construction	0.0	0.0	0.0	2.5	**2.5**
Control house	BS23B000 - Non-residential building construction	0.0	0.3	0.3	1.0	**1.3**
Substation, 'other' equipment	BS23B000 - Non-residential building construction	0.0	1.0	1.0	2.9	**3.8**
Civil/earthworks	BS23B000 - Non-residential building construction	0.5	0.5	1.0	0.0	**1.0**
Foundations	BS23B000 - Non-residential building construction	0.0	1.0	1.0	0.0	**1.0**
SCADA	BS541300 - Architectural, engineering and related services	0.0	0.1	0.1	0.4	**0.5**
SCADA system and testing	BS541300 - Architectural, engineering and related services	0.0	0.1	0.1	0.1	**0.2**
Commissioning	BS221100 - Electric power generation, transmission, and distribution	0.0	0.0	0.0	0.4	**0.4**
Other Construction Components						
Batch plant	BS23B000 - Non-residential building construction	0.0	0.1	0.1	0.1	**0.3**
Laydown area(s)	BS23B000 - Non-residential building construction	0.2	0.2	0.4	0.0	**0.4**
Road maintenance	BS23C100 - Transportation engineering construction	0.8	0.3	1.0	0.0	**1.0**
Erosion control	BS541600 - Management, scientific and technical consulting services	0.4	0.1	0.5	0.0	**0.5**
Restoration	BS541600 - Management, scientific and technical consulting services	0.4	0.1	0.5	0.0	**0.5**
Building permits	GS913000 - Other municipal government services	0.0	0.0	0.0	0.0	**0.0**
Utilities	BS221300 - Water, sewage, and other systems	0.2	0.1	0.2	0.0	**0.2**
Misc. (fencing, screws, etc.)	BS416000 - Building material and supplies wholesaler-distributors	0.1	0.0	0.1	0.0	**0.1**

Table 3-2 Categorization of CAPEX, IOIC Industries and Location of Spend

Expenditure Category	Statistics Canada IOIC	$ millions				
		Saskatchewan				
		LAA	Regina CMA No. 705	RAA	Other Canada	Total Canada
Civil/Earthworks						
Access roads and RM road upgrades	BS23C100 - Transportation engineering construction	5.0	5.0	10.0	0.0	**10.0**
Temporary roads, pads, crossings	BS23C100 - Transportation engineering construction	2.5	2.5	5.0	0.0	**5.0**
Collector System						
Cable and plowing	BS23B000 - Non-residential building construction	0.0	2.0	2.0	6.0	**8.0**
Other	BS23B000 - Non-residential building construction	0.0	0.8	0.8	2.3	**3.0**
Other Facilities/Equipment						
O&M building	BS23B000 - Non-residential building construction	0.5	1.5	2.0	0.0	**2.0**
MET tower	BS334A00 - Other electronic product manufacturing	0.0	0.1	0.1	0.4	**0.5**
Office Lease	BS531100 - Lessors of real estate	0.0	0.0	0.0	0.0	**0.0**
Subtotal (Equipment, Materials, Goods and Services)		**10.4**	**34.6**	**45.0**	**36.7**	**81.6**
Total (Labour, Equipment, Materials, Goods and Services)		**12.0**	**37.4**	**0.0**	**49.4**	**43.6**

NOTE:
1) Totals may not sum due to rounding

SOURCE: Algonquin 2017

3.2 OPERATING AND MAINTENANCE COSTS

Project operation expenditures (OPEX) is estimated at $800,000 annually. This includes $700,000 in labour and $100,000 in equipment, materials, goods, and services. A description of estimated OPEX, including a breakdown by major types of commodities and services that will be procured during operation and maintenance, and the distribution of costs between Saskatchewan and other parts of Canada are listed in Table 3-3. Expenditures listed in Table 3-3 are additionally categorized by IOIC.

Table 3-3 Categorization of OPEX Expenditures, IOIC Industries and Location of Spend

Expenditure Category	Statistics Canada IOIC	$ millions				
		Saskatchewan			Other Canada	Total Canada
		LAA	Regina CMA No. 705	RAA		
Labour						
Algonquin	BS23C300 - Electric power engineering construction	0.1	0.0	0.1	0.0	**0.1**
Turbine	BS811A00 - Repair and maintenance (except automotive)	0.6	0.0	0.6	0.0	**0.6**
Subtotal (Labour)		**0.7**	**0.0**	**0.7**	**0.0**	**0.7**
Equipment, Materials, Goods and Services						
Common Services	BS23C300 - Electric power engineering construction	0.1	0.0	0.1	0.0	**0.1**
Subtotal (Equipment, Materials, Goods and Services)		**0.1**	**0.0**	**0.1**	**0.0**	**0.1**
Total (Labour, Equipment, Materials, Goods and Services)		**0.8**	**0.0**	**0.8**	**0.0**	**0.8**
NOTE: 1) Totals may not sum due to rounding						
SOURCE: Algonquin 2017						

In addition to expenditures described in Table 3-3, it is currently estimated that annual land owner payments of 0.4 million to 0.6 million will occur. These payments will occur within the LAA. Land owner payments are not included in Table 3-3 as indirect and induced effects are not modelled (subsequent spending of payments on the part of landowners is unknown).

3.3 DECOMMISSIONING

Decommissioning is estimated to occur over a two-year period following the 25-year operational life of the Project (should capital investments in prolonging the operational life of the Project not occur). Decommissioning costs (ABEX) are conceptual and based on an 'order-of-magnitude' estimation of total costs associated with constructing the project. Conceptually, decommissioning costs are estimated at roughly $50 million, inclusive of labour, equipment, materials, goods, and service costs. Approximately 50% of expenditures are estimated to occur in the LAA and 50% in Regina CMA No. 705. A description of estimated ABEX, categorized by IOIC, is provided in Table 3-4.

Table 3-4 Categorization of Estimated ABEX Expenditures, IOIC Industries and Location of Spend

Expenditure Category	Statistics Canada IOIC	$ millions				
		Saskatchewan			Other Canada	Total Canada
		LAA	Regina CMA No. 705	RAA		
Labour						
Construction, earthworks, equipment operation, transport, etc.	• BS221100 - Electric power generation, transmission, and distribution • BS23B000 - Non-residential building construction • BS484000 - Truck transportation	2.8	2.8	5.6	0.0	5.6
Common Services	• BS561100 - Office administrative services	0.0	0.1	0.1	0.0	0.1
Subtotal (Labour)		**2.8**	**2.9**	**5.7**	**0.0**	**5.7**
Equipment, Materials, Goods and Services						
Turbine and general infrastructure dismantling and removal; site remediation, road maintenance etc.	• BS23B000 - Non-residential building construction • BS23C100 - Transportation engineering construction • BS541600 - Management, scientific and technical consulting services • BS221300 - Water, sewage, and other systems • BS23C100 - Transportation engineering construction	22.0	22.0	44.0	0.0	44.0
Subtotal (Equipment, Materials, Goods and Services)		**22.0**	**22.0**	**44.0**	**0.0**	**44.0**
Total (Labour, Equipment, Materials, Goods and Services)		**24.8**	**24.9**	**49.7**	**0.0**	**49.7**
NOTE: 1) Totals may not sum due to rounding						
SOURCE: Stantec 2017						

4.0 EMPLOYMENT

Project expenditures during construction, operation and maintenance, and decommissioning have the potential to result in direct, indirect, and induced employment. Employment is created through three primary pathways:

- Project expenditures on labour will result in direct employment during all Project phases
- Project purchases of equipment, materials, goods and services from local and regional businesses could create indirect employment
- The purchase of consumer goods and services by individuals who are employed directly or indirectly by the Project could create induced employment

The following sections present estimated employment in person-years (PYs) for construction, operation and maintenance, and decommissioning.

4.1 CONSTRUCTION

Total domestic employment (direct, indirect, and induced) associated with Project construction is estimated at 295 PYs (Table 4-1). Total direct employment is estimated at 85 PYs and indirect and induced (combined) employment at 210 PYs. Total Saskatchewan employment is estimated at 65 PYs (22% of total domestic employment).

Table 4-1 Construction Employment (PYs)

Direct, Indirect or Induced Effect	Person-years				
	Saskatchewan			Other Canada	Total Canada
	LAA	Regina CMA No. 705	RAA		
Direct	20	25	45	40	**85**
Indirect	10	10	20	190	**210**
Induced					
Total	**30**	**35**	**65**	**230**	**295**
NOTE: 1) Totals may not sum due to rounding					
SOURCE: Algonquin 2017; economic multipliers taken from Statistics Canada 2017a					

4.2 OPERATION AND MAINTENANCE

Annual employment (direct, indirect, and induced) associated with Project operation and maintenance is estimated at nine PYs (Table 4-2). Total direct employment is estimated at seven PYs and indirect and induced (combined) employment at two PYs. All domestic operation and maintenance employment occurs in Saskatchewan.

Table 4-2 Operation and Maintenance Employment (PYs)

Direct, Indirect or Induced Effect	Person-years				
	Saskatchewan			Other Canada	Total Canada
	LAA	Regina CMA No. 705	RAA		
Direct	7	0	7	0	**7**
Indirect	2	0	2	0	**2**
Induced					
Total	**9**	0	9	0	**9**
NOTE: 1) Totals may not sum due to rounding					
SOURCE: Algonquin 2017; economic multipliers taken from Statistics Canada 2017a					

4.3 DECOMMISSIONING

Conceptually, total (direct, indirect, and induced) decommissioning employment is estimated at 180 PYs. Total direct employment is estimated at 60 PYs and indirect and induced (combined) employment at 115 PYs. Because decommissioning is estimated to occur 25-years into the future, a breakdown of employment by location is not provided.

5.0 LABOUR INCOME

Project expenditures during construction, operation and maintenance, and decommissioning have the potential to result in direct, indirect, and induced labour income. Labour income is created through three primary pathways:

- Project expenditures on direct labour
- Project purchases of equipment, materials, goods and services
- The purchase of consumer goods and services by individuals who are employed directly or indirectly by the Project

The following sections present estimated labour income for construction, operation and maintenance, and decommissioning.

5.1 CONSTRUCTION

Total domestic labour income associated with Project construction is estimated at $22.4 million. Direct employment accounts for approximately 51% ($11.4 million) of total labour income with indirect and induced employment accounting for the remaining 49% ($11.1 million). The average cost of direct labour is estimated at $133,780/full-time equivalent (FTE)[2] Canada-wide. The average cost of indirect and induced labour is estimated at $52,700/FTE. A summary of direct, indirect, and induced labour income associated with the Project is provided in Table 5-1.

Table 5-1 Domestic Construction Labour Income

Effect	$ millions				
	Saskatchewan			Other Canada	Total Canada
	LAA	Regina CMA No. 705	RAA		
Direct	1.6	2.8	4.4	6.9	**11.4**
Indirect	0.5	0.5	1.0	6.2	**11.1**
Induced				3.9	
Total[1]	**2.1**	**3.3**	**5.4**	**17.0**	**22.4**
NOTE: 1) Totals may not sum due to rounding					
SOURCE: Algonquin 2017; economic multipliers taken from Statistics Canada 2017a					

[2] One FTE is equivalent to one person working full-time for one year.

5.2 OPERATION AND MAINTENANCE

Annual labour income associated with Project operation and maintenance is estimated at $810,000. Direct employment accounts for approximately 89% ($720,000) of annual labour income with indirect and induced employment accounting for the remaining 11% ($90,000). The average cost of direct labour is estimated at $102,225/FTE Canada-wide. The average cost of indirect and induced labour is estimated at $53,312/FTE, respectively. A summary of direct, indirect, and induced labour income associated with the Project is provided in Table 5-2.

Table 5-2 Annual Operation and Maintenance Labour Income

Effect	$ millions				
	Saskatchewan				
	LAA	Regina CMA No. 705	RAA	Other Canada	Total Canada
Direct	0.7	0.0	0.7	0.0	**0.7**
Indirect	0.1	0.0	0.1	0.0	**0.1**
Induced					
Total[1]	**0.8**	0.0	0.8	0.0	**0.8**
NOTE: 1) Totals may not sum due to rounding					
SOURCE: Algonquin 2017; economic multipliers taken from Statistics Canada 2017a					

5.3 DECOMMISSIONING

Total labour income associated with decommissioning is estimated at $12 million (2017 dollars) based on conceptual ABEX estimates. Based on conceptual employment estimates) the cost of Canada-wide labour is estimated at $103,000/FTE for direct employment, $50,000/FTE for indirect and induced employment. Because decommissioning is estimated to occur 25-years into the future location-specific information on labour income is not presented.

6.0 GOVERNMENT REVENUE

The Project will contribute to government revenues through direct, indirect, and induced economic activity. Based on the location of the Project contributions to municipal, provincial, and federal governments are anticipated. Table 6-1 provides a summary of direct, indirect, and induced government revenue for Saskatchewan, and Canada for construction and operation and maintenance. Since decommissioning is estimated to occur 25-years into the future, at which time government tax rates will likely differ from those available at the time of writing, estimates of government revenue are not provided. Estimates of municipal revenue are limited to direct effects within Saskatchewan.

An estimated $16.6 million in federal government revenue will be generated during Project construction through the collection of corporate income tax, personal income tax and sales tax (Table 6-1). Provincial government revenue is estimated at $13.6 million.

Operation and maintenance activities are estimated to generate $0.4 million in federal government revenue and $0.3 million in provincial government revenue annually. As well, the Project will pay property tax, in an amount to be determined by the local taxing authority.

Table 6-1 Government Revenue (Direct, Indirect, and Induced)

Location	Type	$ millions	
		Construction (Total)	Operation and Maintenance (Annual)
Saskatchewan			
Federal	Corporate income tax	4.5	0.1
	Personal income tax	1.4	0.1
	Sales tax	0.0	0.0
	Subtotal	**5.9**	**0.2**
Provincial	Corporate income tax	3.6	0.1
	Personal income tax	0.7	0.1
	Sales tax	1.1	0.0
	Subtotal	**5.4**	**0.2**
Municipal	Other taxes	0.0	To be determined
	Subtotal	**0.0**	**To be determined**
	Subtotal	**11.2**	**0.4**

Table 6-1 Government Revenue (Direct, Indirect, and Induced)

Location	Type	$ millions	
		Construction (Total)	Operation and Maintenance (Annual)
'Other' Canada			
Federal	Corporate income tax	5.5	0.1
	Personal income tax	5.2	0.0
	Sales tax	0.1	0.0
	Subtotal	**10.8**	**0.1**
Provincial	Corporate income tax	4.8	0.1
	Personal income tax	2.9	0.0
	Sales tax	0.4	0.0
	Subtotal	**8.1**	**0.1**
	Subtotal	**19.1**	**0.2**
Total Canada			
Federal	Corporate income tax	9.9	0.3
	Personal income tax	6.6	0.1
	Sales tax	0.1	0.0
	Subtotal	**16.6**	**0.4**
Provincial	Corporate income tax	8.4	0.2
	Personal income tax	3.7	0.1
	Sales tax	1.5	0.0
	Subtotal	**13.6**	**0.3**
Municipal	Other taxes	0.0	To be determined
	Subtotal	**0.0**	**To be determined**
	Grand Total	**30.3**	**0.6**

NOTE:
1) Totals may not sum due to rounding

SOURCE: Algonquin 2017, Government of Canada 2017, Statistics Canada 2017a, 2017b, and 2017c

7.0 ECONOMIC CONTRIBUTION

7.1 CONSTRUCTION

Domestic CAPEX are predicted to generate $79.6 million in GDP, of which 45% ($35.7 million) will be generated in Saskatchewan and 55% ($43.9 million) within other parts of Canada. A summary of direct, indirect, and induced GDP generated through CAPEX associated with the Project is provided in Table 7-1. GDP effects are not calculated at the local/'other' regional level.

Table 7-1 Gross Domestic Product (million $), Construction

Effect	$ millions		
	Saskatchewan	**'Other' Canada**	**Total Canada**
Direct	22.5	20.9	**43.3**
Indirect	8.3	14.4	**22.7**
Induced	4.9	8.7	**13.6**
Total	**35.7**	**43.9**	**79.6**
NOTE: 1) Totals may not sum due to rounding			
SOURCE: Algonquin 2017; economic multipliers taken from Statistics Canada 2017a			

7.2 OPERATION AND MAINTENANCE

OPEX are expected to generate $0.7 million annually in GDP, all of which is estimated to be generated in Saskatchewan. A summary of direct, indirect, and induced annual GDP generated through OPEX associated with the Project is provided in Table 7-2. GDP effects are not calculated at the local level.

Table 7-2 Annual Gross Domestic Product, Operation and Maintenance

Effect	$ millions		
	Saskatchewan	**'Other' Canada**	**Total Canada**
Direct	0.5	0.0	**0.5**
Indirect	0.1	0.0	**0.1**
Induced	0.1	0.0	**0.1**
Total	**0.7**	**0.0**	**0.7**
NOTE: 1) Totals may not sum due to rounding			
SOURCE: Algonquin 2017; economic multipliers taken from Statistics Canada 2017a			

7.3 DECOMMISSIONING

It is estimated that ABEX could generate $35 million in GDP, all of which is estimated to occur in Saskatchewan. Direct effects are estimated to account for 63% ($22 million) of generated GDP, indirect effects 23% ($8 million), and indirect effects 14% ($5 million). GDP effects are not calculated at the local/'other' regional level.

8.0 REFERENCES

Algonquin. 2017. Blue Hill Project Expenditure Data.

Government of Canada. 2017. Corporation tax rates. Available at: https://www.canada.ca/en/revenue-agency/services/tax/businesses/topics/corporations/corporation-tax-rates.html. Accessed: November 2017.

SaskPower. 2015. News Release - SaskPower to develop wind, solar and geothermal power to meet up to 50% renewable target. Available at: http://www.saskpower.com/about-us/media-information/saskpower-targets-up-to-50-renewable-power-by-2030/. Accessed: September 2017.

Statistics Canada. 2017a. Provincial Input-Output Multipliers. 2013. Industry Accounts Division/Statistics Canada Catalogue n. 15F0046XDB. Ottawa. Released June 9, 2017. Available at: http://www5.statcan.gc.ca/olc-cel/olc.action?ObjId=15F0046X2017000&ObjType=46&lang=en. Accessed: November 2017.

Statistics Canada. 2017b. Final Statistics 2016 Edition (for the 2014 tax year). Available at: https://www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/income-statistics-gst-hst-statistics/final-statistics-2016-edition-2014-tax-year.html#_Tables_in_CSV_1. Accessed: November 2017.

Statistics Canada. 2017c. Table 384-0037 - Gross domestic product, income-based, provincial and territorial, annual (dollars), CANSIM (database). Available at: http://www5.statcan.gc.ca/cansim/a26. Accessed: November 2017.

Stantec. 2017. Estimate of decommissioning costs (order-of-magnitude based on construction-related expenditures applicable to decommissioning).

Thulin, P. 2014. Local multiplier and economic base analysis. Available at: http://entreprenorskapsforum.se/wp-content/uploads/2014/11/WP_29.pdf. Accessed November 2017.