



NORTHERN ROCKIES REGIONAL AIRPORT

ECONOMIC IMPACT

FINAL REPORT



MARCH 2014 – PROJECT: 131-24425-00

NORTHERN ROCKIES REGIONAL AIRPORT ECONOMIC IMPACT
FINAL REPORT

Presented to

Northern Rockies Regional Municipality

By

WSP Canada Inc.

Approved by:



Christian Couette
Project Director

MARCH 2014
131-24425-00

We were GENIVAR.

We are now WSP.

As part of its global expansion, GENIVAR Inc. changed its name to WSP Canada Inc. on January 1st, 2014. The acquisition of WSP has expanded our global reach and we now have a broader depth of multidisciplinary expertise and experience from which to draw upon. We are well-positioned to support our clients no matter how they grow, what they choose to do, or where they move. Our global expertise provides us with the resources to respond to all of our clients' needs and expectations.

EXECUTIVE SUMMARY

During the development process of the Airport Strategic Plan, it was determined that the airport's economic impact on the Northern Rockies should be assessed.

The purpose of the economic impact assessment is to measure both the current and future economic contribution of the Northern Rockies Regional Airport (NRRRA) to British Columbia (BC). The current impacts were based on the 2012 operational year. The future impacts were based on the forecasts of passenger and movement traffic estimated in the NRRRA strategic plan.

This economic impact study measures three separate effects:

- **Direct Impacts** which result from activities carried out by firms and others with a direct involvement in the operation and management of an airport and associated aviation related services.
- **Indirect Impacts** are attributable to non-aviation industries largely off-site, which result because of the airport activity, e.g. travel agencies, hotels, etc.
- **Induced Impacts** are the effect that results from the re-spending of the direct and indirect impacts.

In 2012, the airport generated over 193 full time positions with total salaries of 11.5 millions of dollars.

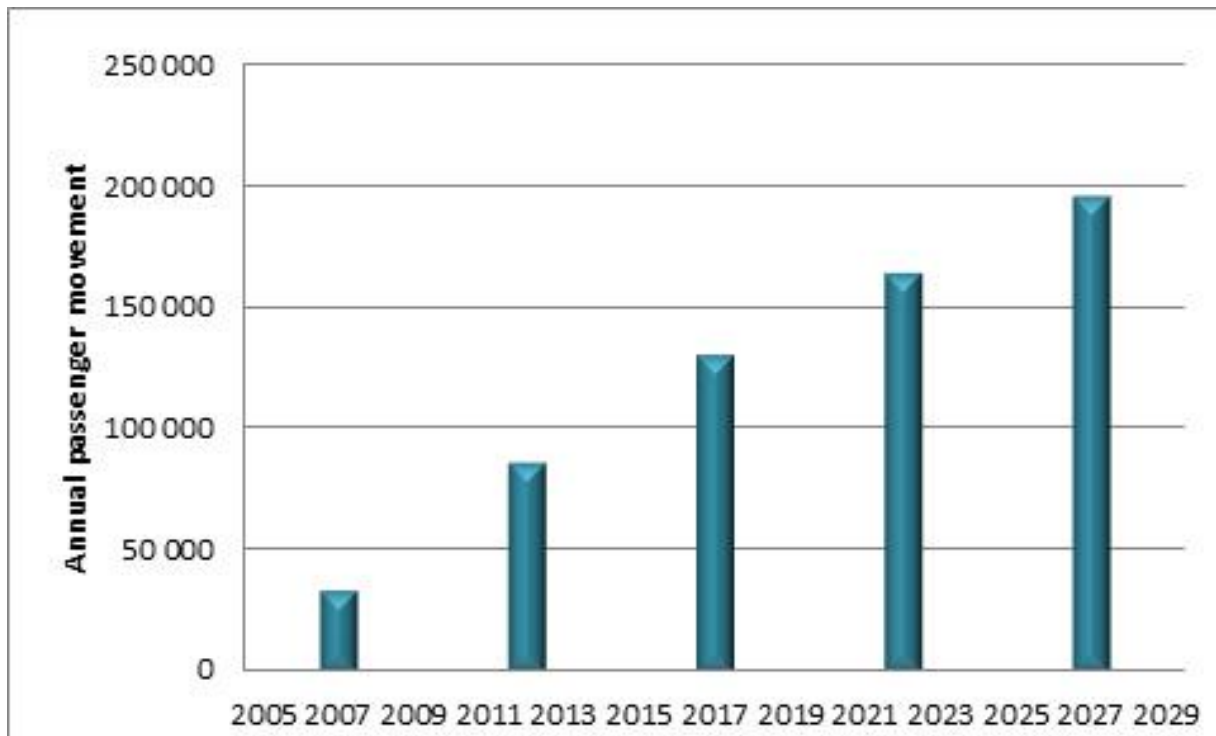
In 2012, the airport generated over 193 full time positions with total salaries of 11.5 millions of dollars. The NRRRA airport output for this operation year was over 40 millions of dollars.

Economic Impact	Employment (FTE)	Labour Income (\$M)	Output (\$M)
Direct	98	6.52	22,96
Indirect	57	3.24	11,02
Induced	37	1.73	6,89
Total	193	11.48	40.87

The operation of the NRRRA generated 2.8 millions of dollars in taxes for the same year.

Taxes	2012 ('000 \$)
Personal income tax	2,300
GST + PST	482
Total	2,782

Overall, Northern Rockies Regional Airport is of crucial importance in the development of the whole region. It plays a major role in connecting the region to the rest of the country. It is a major partner in the development of the oil and gas industry.



Source : NRRRA terminal expansion analysis

The NRRRA experienced a significant growth over the last few years. 2012 was a record breaking year in terms of airport activity. The airport authority is confident that the airport activity will significantly grow in the future.

There is no doubt that air transportation facilitates employment and economic development in the national and regional economy through increased trade, attracting new businesses to the region and encouraging investment. Better air transport connectivity attracts businesses that would not otherwise be located here.

WORK TEAM

WSP Canada Inc.

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GLOSSARY OF TERMS

CAPEX:	Capital expenditures
Direct Impact	Employment, income, GDP and tax revenue generated directly by the Project, including the resulting employment, income, GDP and tax revenue generated by industries directly contracted to supply the on-site goods and services used by the Project.
E/D Passenger:	Entry and departure passenger.
Economic Impact:	The sum of all the economic activities in term of output, wages and employment generated by a business, an industry or an organisation.
Full time equivalent (FTE):	The total weekly hours worked by an employee divided by the average working week (full time). A FTE of 1.0 means that the person is working full-time worker for a year while an FTE of 0.5 signals that the worker is only working half-time.
Gross Domestic Product (GDP):	The GDP is measure of the total output of the economy of a country. It is the market value of all officially recognized final goods and services produced within a country in a year, or other given period of time.
Gross Output:	The total revenues from output including materials and supplies.
Indirect Impact:	Employment, income, GDP and tax revenue associated with all industries that are ultimately supplying the goods and services used by the industries directly supplying the Project, and include all transactions to the beginning of the supply chain (excluding direct on-site suppliers to the Project and the Project itself).
Induced Impact:	Employment, income, GDP and tax revenue associated with economic activity because of workers spending their incomes on goods and services, including those directly and indirectly employed because of the Project.
Input–output model:	I/O model : An I/O model is a quantitative economic technique that represents the interdependencies between different branches of a national economy or different regional economies
Labour Income:	The salaries and wages of a given workforce.
OPEX	Operating expenditures.
Tax Revenues:	Personal income tax, and sales taxes (PST+GST).

1. INTRODUCTION

1.1 Background and Context

The purpose of the economic impact assessment is to measure both the current and future contribution of the Northern Rockies Regional Airport (NRRA) for British Columbia (BC). This economic impact study is following the new NRRA Long-Term Strategic Plan (2010) and 10 Year Capital Plan (2013) and indeed uses the most updated numbers related to operation and capital costs.

An economic impact study heightens business and community awareness of the airport and its contribution to the economic well-being of the region. It also identifies economic linkages between the aviation industry and other sectors of the economy. This type of study is an important tool for the airport community as the results are used to build public support for airport programs and initiatives.



1.2 NRRA at glance

The NRRA experienced a significant growth over the last few years. 2012 was a record breaking year in terms of airport activity. The airport authority is confident that the airport activity will significantly grow in the future. (Figure 1.1)

The airport currently hosts six weekly flights between the NRRA and Vancouver via Dawson Creek as well as flights to the urban centres of Prince George, Edmonton (two weekly direct), Calgary and Fort St. John. It provides reliable transportation, faster than road travel and safe year-round.

The presence of the NRRA facilitates employment and economic development in the national and regional economy through increased trade, attracting new businesses to the region, encouraging investment, and facilitating the movement of necessary manpower in resource development.

This study will demonstrate the importance of the economic activities generated by the airport presence as well as the economic windfall that would result from future airport upgrade and increased activities. It will highlight the central role played by the NRRA in the development of the Horn River shale play.

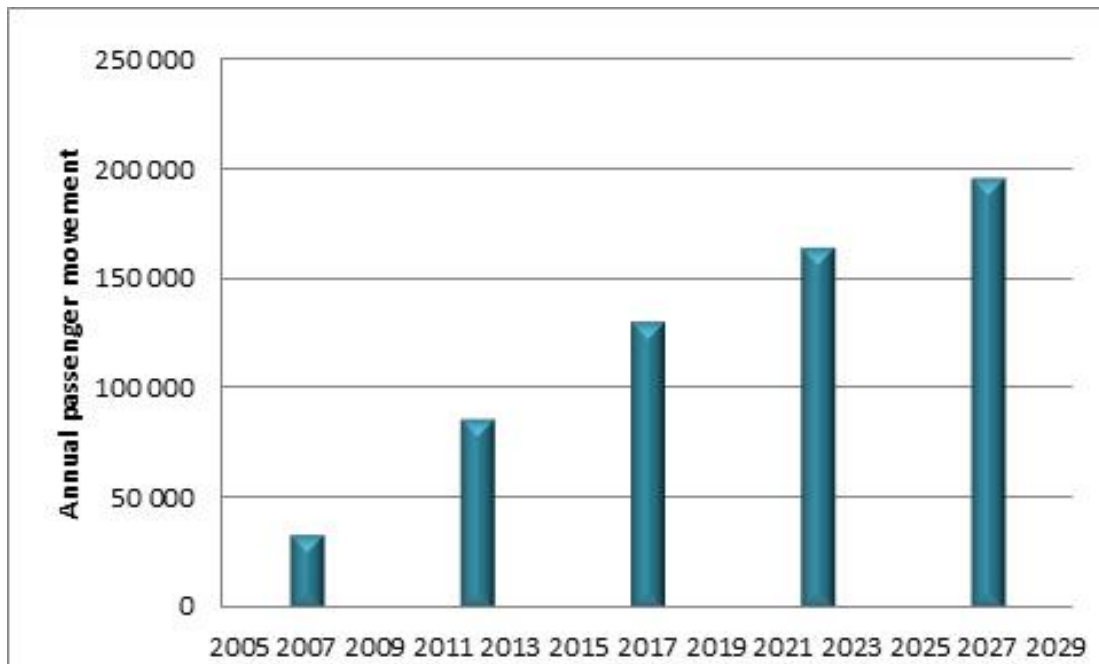


Figure 1.1 Current and forecasted passenger movement

1.3 What is economic impact? How it is measured?

1.3.1 BC Economic Multipliers Models

The NRRA's economic impact in BC (at the provincial level) has been quantified using the BC economic multipliers models provided by the Ministry of Finance. The economic multipliers are used to assess the impacts on the economy of an exogenous change in final demand or output of a given industry. Based on the Input/Output (I/O) tables released by Statistics Canada, they provide a measure of the interdependence between an industry and the rest of the economy.

Impacts are estimated in terms of total output, gross domestic product, employment and labour income. There are two types of economic multipliers used in this study:

1. Open model (direct and indirect impacts); and
2. Closed (direct, indirect and induced impacts).

The multipliers are also supplemented by commodity supply ratios, which represent the aggregated proportion of the supply that comes from within and outside BC for each major commodity group. Data collected and inferred was used as inputs in the model.

The Input/Output method of determining economic impact measures three separate effects:

- **Direct Impacts** which result from activities carried out by firms and others with a direct involvement in the operation and management of an airport and associated aviation related services. The distinguishing feature of a direct impact is that it is an immediate consequence of airport activities. Most direct impacts are generated on-site.
- **Indirect Impacts** are attributable to non-aviation industries largely off-site, which result because of the airport activity, e.g. travel agencies, hotels, etc. This economic activity would not take place absent the airport.
- **Induced Impacts** consist of the multiplier effect that results from the re-spending of the direct and indirect impacts.

In this study, economic impacts were measured and quantified in different ways:

- **Gross Output \$** - the total revenues from output including materials and supplies.
- **Labour Income \$** - the salaries and wages of a given workforce.
- **Employment** - the full time equivalent workers (FTE) based upon a 40 hour work week.
- **Tax Revenues \$** - the personal income tax and retail sales tax.
- **Value-Added Gross Domestic Product \$ (GDP)** - output net of intermediate revenues.

Finally, readers should be aware of the caveats and limitations of the economic multipliers:

- The relationship between industry inputs and outputs is linear and fixed. The multipliers do not account for economies/diseconomies of scale or structural changes in production technologies.
- Prices are fixed in the model.
- I/O models reflect industry averages for technology use and average input costs.
- I/O models are static and do not take into account the amount of time required for changes to happen.
- There are no capacity constraints (e.g. unlimited labour supply) and all industries are operating at capacity.

- The impacts reflect the structure of the economy and industry linkages at a point in time, e.g. 2009. If these linkages have changed, the calculation of the impacts in another year (e.g. 2012) will be less valid. Generally, the more removed the year of analysis from the year of the multipliers, the greater the limitations.
- Since I/O models are static and do not reflect the time it takes for changes to happen, multipliers do not give any indication about when the impacts will occur or how long they will last.

1.3.2 Input Data

Economic Impact Related to Current Operation

The economic impact related to the current operation of the airport were calculated using data of operation costs, work, earnings and wages and output from NRRA tenants and service providers.

The primary data collection tool was an online survey/questionnaire issued to airport tenants and service providers.

Sixteen companies were contacted to gather data about employment, wages and output related to the operation of the NRRA. Those companies were active in the business of:

- Air Carrier operators;
- Aircraft/ Aviation Services;
- Airport Commercial Services;
- Airport Operation;
- General Aviation.

Overall, 75% of the businesses and organisations contacted responded to the survey.

Overall, 75% of the businesses and organisations contacted responded to the survey, representing over 85% of the estimated total person year of direct airport employment for 2012.

To remedy the lack of data, different hypothesis were made and their results, validated with data from previous airport economic impact study.

To insure the confidentiality of the data collected, the details of the metrics used to assess the economic activity of each sector are not presented. However, a general presentation of the hypothesis used is discussed in the following sentences.

The largest part of the data on employment was obtained directly from twelve companies. Estimations of the employment level for non-respondent organisations were made in discussions with the NRRRA authority as well as comparisons with airports of similar sizes were made and online business databases consulted.

Four organizations reported their total salaries and wages. For the most part of non-respondent, the median annual work income for the Northern Rockies Regional Municipality from the National Household Survey (2011) was used. It was adjusted for inflation and now stands at \$66,562. However, for some commercial unskilled job positions, an annual wage of \$35,000 was deemed more appropriate. In some cases, the average income in similar airports was used.

The total output was gathered from five organisations. This data served as a baseline to determine the per FTE (or per dollar of salary) output for each categories, when applicable. When unavailable for a specific category, the FTE output was estimated using data from similar airports in similar categories. When applicable, the inflation adjusted average output per dollar of salary from the Financial and Taxation Statistics of Statistics Canada (2011) was used.

The data was completed using forecast projection and updates from the new NRRRA Long-Term Strategic Plan (2010) and 10 Year Capital Plan (2013). Moreover, a sensibility analysis was conducted to ensure that the data was consistent with the actual and forecasted structure of the airport economic activities.

The analysis resulted in a complete set of employment, total wage and output numbers. These numbers were used as inputs for the completion of the current economic impact assessment of the NRRRA. Table 1.1 presents the employment, wage and output numbers collected and inferred.

Table 1.1 Distribution of Direct Employment, Labour Income and Gross Output

	Employment	Labour Income (\$)	Gross Output (\$)
Air Carrier operators	47	3,190,966	14,001,986
Aircraft / Aviation Services	17	1,103,293	1,816,059
Airport commercial services	3	105,000	\$477,544
Airport Operation	7	542,211	2,940,714
Others	23.5	1,575,537	3,721,168
Total	97.5	6,517,007	22,957,471

Future Economic Impact

Future economic impact is generated by both recurrent (ongoing) operations, as well as by temporary activities related to construction and development at the airport.

Economic impact of recurrent operations represents a snapshot in time. The economic impact was based on the current economic impact applied to forecasts of passenger and movement traffic estimated in the NRRRA strategic plan. Current economic impact per passenger ratios was used to estimate future impact.

Economic impact of temporary activities related to construction and development at the airport was estimated using expected capital expenditures determined in the NRRRA 10 Year Capital Plan. Table 1.2 presents the expected capital expenditures for the next 10 years.

Table 1.2 Expected Capital Expenditures (2013-2022)

	Development Phase		
	Short Term (\$) (2013-2017)	Medium Term (\$) (2018-2022)	Long Term (\$) (2023+)
Infrastructure Rehabilitation and Development			
Priority 1	17,918,862	0	8,500,000
Priority 2	1,600,000	0	0
Priority 3	11,600,300	25,599,000	0
Priority Unassigned	10,665,900	10,115,000	14,382,500
<i>Subtotal</i>	<i>41,785,062</i>	<i>35,714,000</i>	<i>22,882,500</i>
Equipment			
Priority 1	0	0	0
Priority 2	1,141,364	363,636	62,727
Priority 3	0	251,894	45,455
Priority Unassigned	529,274	194,545	45,455
<i>Subtotal</i>	<i>1,733,638</i>	<i>810,075</i>	<i>153,637</i>
TOTAL	43,518,700	36,524,075	23,036,137

Source: EBA (2013).

The future economic impact assessment will be presented for 2013-2017 (short term), 2018-2022 (medium term) and beyond 2023 (long term).

2. NRRA'S ECONOMIC IMPACT FOR 2012

2.1 Employment

The NRRA contributes to a total of 193 full time equivalent workers (FTE).

Based on the input data collected and inferred presented in section 1.2.2, the NRRA contributes to a total of 193 full time equivalents workers (FTE). Table 2.1 summarizes employment by direct, indirect and induced impacts.

Table 2.1 2012 Employment Impacts

Economic Impact	Employment (FTE)	Employment (FTE) per E/D Passenger
Direct	98	0.0013
Indirect	57	0.0008
Induced	37	0.0005
Total	193	0.0025

The NRRA directly contributes to 98 FTE. Indirect employment is calculated using BC Input/Output multipliers. The multiplier value of 1.586 is applied to the direct employment figures to attain the total employment effect in an “open” model (direct + indirect). Indirect employment is the difference between the total employment effect and the direct effect in an open model. Indirect employment therefore results in 57 FTE.

Induced employment is calculated also using BC Input/Output multipliers. The multiplier value of 1.968 is applied to the direct employment figures to attain the total employment effect in a “closed” model (direct + indirect + induced). Induced employment is calculated by subtracting the direct and indirect employment from the total employment effect in the closed model. Induced employment therefore results in 37 FTE.

2.2 Labour Income

Based on the input data collected and inferred presented in the section 1.2.2, the NRRA contributes to a total of \$11.5 million in labour income. Table 2.2 summarizes labour income by direct, indirect and induced impacts.

The NRRA contributes to a total of \$11.5 million in labour income.

Table 2.2 2012 Labour Income Impacts

Economic Impact	Labour Income (\$M)	Labour Income per E/D Passenger
Direct	6.52	0.00009
Indirect	3.24	0.00004
Induced	1.73	0.00002
Total	11.48	0.00015

NRRA directly contributes \$6.5 million in labour income. Indirect labour income is calculated using BC Input/Output multipliers. The multiplier value of 1.497 is applied to the direct labour income figure to attain the total labour income effect in an “open” model (direct + indirect). Indirect labour income is the difference between the total effect and the direct effect in an open model. Indirect labour income therefore results in \$3.2 million.

Induced labour income is also calculated using BC Input/Output multipliers. The multiplier value of 1.762 is applied to the direct labour income figure to attain the total labour income effect in a “closed” model (direct + indirect + induced). Induced labour income is calculated by subtracting the direct and indirect labour income from the total labour income effect in the closed model. Induced labour income therefore results in \$1.7 million.

2.3 Gross Output

Based on the input data collected and inferred presented in the section 1.2.2, the NRRA contributes to a total of \$40.9 million in output. Table 2.3 summarizes output by direct, indirect and induced impacts.

Table 2.3 2012 Output Impacts

Economic Impact	Output (\$M)	Output per E/D Passenger
Direct	22,96	0.00030
Indirect	11,02	0.00015
Induced	6,89	0.00009
Total	40.87	0.00054

The NRRA contributes to a total of \$40.9 million in output.

The NRRA directly contributes to \$23 million in direct output. Indirect output is calculated using BC Input/Output multipliers. The multiplier value of 1.480 is applied to the direct output figure to attain the total output effect in an “open” model (direct + indirect). Indirect output is the difference between the total output effect and the direct effect in an open model. Indirect output therefore results in \$11 million.

Induced output is also calculated using BC Input/Output multipliers. The multiplier value of 1.780 is applied to the direct output figure to attain the total output effect in a “closed” model (direct + indirect + induced). Induced output is calculated by subtracting the direct and indirect output from the total output effect in the closed model. Induced output therefore results in \$6.9 million.

2.4 Taxes

Statistics Canada provides average expenditure statistics for households in each province. In BC, the average household spends 20% of their income on personal income taxes. By applying this percentage to the \$11.5 million in total earnings associated with airport activity, approximately \$2.3 million in personal income taxes were remitted to the provincial and federal governments in 2012.

\$2.3 million in personal income taxes were remitted to the provincial and federal governments.

Statistics Canada also reports that the average household in BC spends 35% of their income on retail goods and services. By applying 12% for GST+PST to the amount spent on retail goods and services (35% x \$11.5 million), we estimate that \$482,000 in goods and services tax were remitted to the provincial and federal governments in 2012.

2.5 Gross Domestic Product

Total GDP is estimated at \$31.4 million.

Total GDP is calculated using BC Input/Output multipliers. The multiplier value of 1.893 is applied to the total output figures to attain the total GDP effect in a “closed” model (direct + indirect + induced). Total GDP is estimated at \$31.4 million.

Table 2.4 2012 GDP Impacts

Economic Impact	GDP (\$M)	GDP per E/D Passenger
Direct	16,69	0,00022
Indirect	8,20	0,00011
Induced	6,71	0,00009
Total	31,59	0,00042

3. NRRA'S FUTURE ECONOMIC IMPACT

As discussed previously, the future economic impact is generated by both recurrent (ongoing) operations, as well as by temporary activities related to construction and development at the airport.

3.1 Recurrent Operations

Recurring operation output, employment and wages will more than double in the long term.

Economic impacts of recurrent operations are provided in Table 3.1 and represent a snapshot in time. These are based primarily on forecasts of passenger growth.

Current (2012) economic impacts per E/D passenger ratios were used to estimate future impacts.

Table 3.1 Impacts of Future Recurrent Operations (2012 M\$)

Variable with Traffic		Short Term (2013-2017)		Medium Term (2018-2022)		Long-Term (2023-2028)	
		Total	Average Annual	Total	Average Annual	Total	Average Annual
OUTPUT (\$)	Direct	157.1M	31.4M	217.8M	43.6M	326.7M	54.5M
	Total	279.7M	55.9M	387.7M	77.5M	581.6M	96.9M
EMPLOYMENT	Direct	671	134	930	186	1,395	232
	Total	1,320	264	1,830	366	2,744	457
WAGES (\$)	Direct	44.6M	8.9M	61.8M	12.4M	92.7M	15.5M
	Total	78.6M	15.7M	108.9M	21.8M	163.4M	27.2M

3.2 Investments

Table 1.2 of section 1.2.2 summarizes the distribution of some \$80 million in capital expenditures proposed for the NRRA between 2013 and 2022.

Multipliers have been used to determine the temporary economic impacts of the proposed capital expenditures, as shown in Table 3.2.

Table 3.2 Temporary Impacts Related to Expected Capital Expenditures (2012 \$M)

Construction / Development		Short Term (2013-2017)		Medium Term (2018-2022)	
		Total	Average Annual	Total	Average Annual
OUTPUT (\$)	Direct	43.5M	8.7M	36.5M	7.3M
	Total	77.3M	15.5M	65.0M	13.0M
EMPLOYMENT	Direct	193	39	162	32
	Total	396	79	332	66
WAGES (\$)	Direct	12.1M	2.4M	10.1M	2.0M
	Total	23.9M	4.8M	20.1M	4.0M

From 2013 to 2022, capital expenditures will generate an output of 142 \$M, 728 FTE and \$M 44 of wages.

3.3 Total Future Impacts

Table 3.3 below summarizes the economic impacts from both forecasted recurrent operations as well as through planned capital investment at the airport. Between 2018 and 2022, the NRRRA will generate 453 \$M in output, 2,162 FTE and 129 \$M in wages.

Between 2018 and 2022, the NRRRA will generate 453 \$M in output, 2,162 FTE and 129 \$M in wages.

Table 3.3 Total Projected Economic Impacts (2012 M\$)

Recurrent and Temporary		Short Term (2013-2017)		Medium Term (2018-2022)	
		Total	Average Annual	Total	Average Annual
OUTPUT (\$)	Direct	200.7M	40.1M	254.3M	50.9M
	Total	357.1M	71.4M	452.7M	90.5M
EMPLOYMENT	Direct	864	173	1,092	218
	Total	1,716	343	2,162	432
WAGES (\$)	Direct	56.7M	11.3M	72.0M	14.4M
	Total	102.5M	20.5M	129.0M	25.8M

4. NRRA'S QUALITATIVE SOCIO-ECONOMIC IMPACTS

This section aims to identify the qualitative socio-economic impacts of the NRRA, and thus measure the qualitative benefits that result from the airport activities in order to demonstrate its importance for the local and regional economy.

4.1 **Socio-Economic Profile**

The NRRA is located 7 km west of the town of Fort Nelson, in the Northern Rockies Regional Municipality (NRRM), and 387 km northeast of Fort St. John. The airport occupies approximately 1,115 ha of land.

4.1.1 Population and Demography

Fort Nelson is the largest community within the NRRM, and is home to nearly 80% of the NRRM's population.

According to Statistics Canada, the population of Fort Nelson was 3,902 people in 2011, a decrease of 13.6% compared to the population in 2006 (4,514). In comparison, NRRM's population fell by 12.5% for the same period, from 5,702 in 2006 to 4,987 in 2011. The population decline can largely be explained by the downturn in the forestry sector. Fort Nelson is the largest community within the NRRM, and is home to nearly 80% of the NRRM's population (Statistics Canada, 2012 and Statistics Canada, 2013).

The NRRM's population is expected to grow in the next years and available projections indicate that the population should increase to approximately 8,000 residents (60%) in the next five years depending on the oil and gas development scenario (see Table 4.1 on next page). In addition, temporary workers could add an additional 4,000 residents, for a total of 12,000 by 2016 (Intervistas, 2011). The resurgence of the forest industry would also contribute to population growth.

4.1.2 Labour Force, Employment and Occupation

According to the National Household Survey (Statistics Canada, 2013), employment indicators shows that the regional economy is presently healthy. More specifically, in NRRM, the unemployment rate is 4.6%, which is low compared to the province of BC (7.8%) and the Canada (7.8%). The participation rate (81.9%) and the employment rate (78.2 %) are also significantly higher when compared to the provincial and Canadian averages, as see in Table 4.2 on next page.

Table 4.1 Projected Growth in the NRRM's Permanent Population Based on Development Scenarios¹

Years	Base Case	Scenario 2	Scenario 3	Scenario 4
2013-2015	6,931	6,931	6,931	6,931
2016-2020	7,345	8,040	8,309	8,364
2021-2025	8,122	9,462	9,728	10,444
2026-2030	8,525	9,522	9,749	10,436

Source: NRRM Economic Profile, 2012a.

Table 4.2 Labour Force Status

Geographic Area	Participation Rate (%)	Employment Rate (%)	Unemployment Rate (%)
NRRM	81.9	78.2	4.6
British-Colombia	64.6	59.5	7.8
Canada	66.0	60.9	7.8

Source: Statistics Canada, 2013.

Concerning the distribution of employment by sector in the NRRM, it is clear that the oil and gas sector plays an important role in the NRRM's regional economy with 13.5% of total employment (Figure 4.1).

The oil and gas sector plays an important role in NRRM economy with 13.5% of total employment.

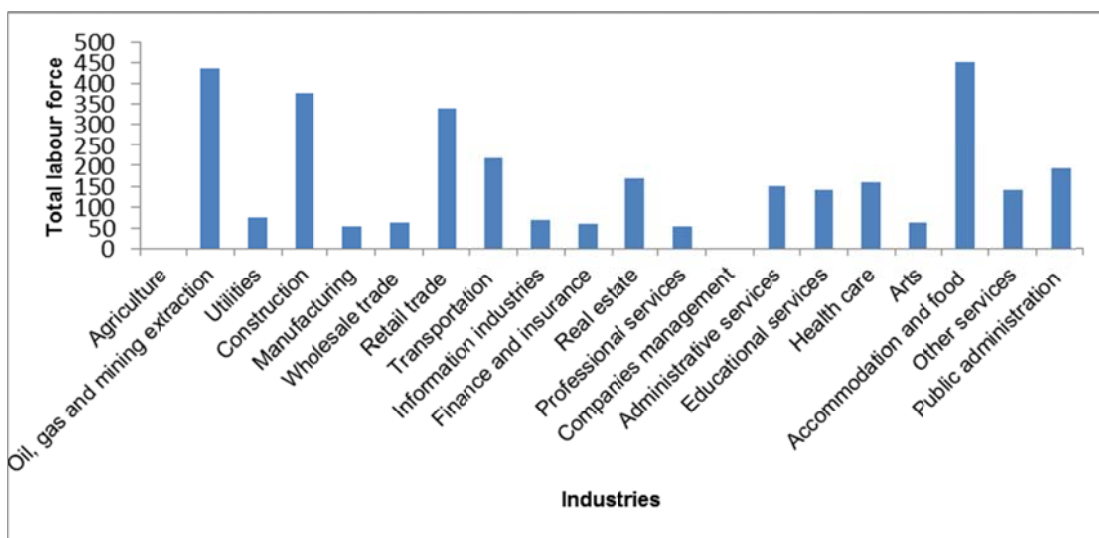


Figure 4.1 Total Labour Force by Industry (Population over 15 Years Old)

Source: Statistics Canada, 2013.

1 Development scenarios. **Base Case** assumes domestic demand on North American gas prices. **Scenario 2** assumes domestic market plus Kitimat LNG Project (Chevron & Apache Canada) & BC LNG Project (Haisla Nation & LNG Partners LLG). **Scenario 3** assumes domestic market plus Shell LNG (with majority of supply from Montney Basin). **Scenario 4** assumes five LNG plants (Petronas & British Gas in addition to those above), with domestic market demand.

The following table shows the projection of the number of resources needed for oil and gas production until 2030 (Intervistas, 2010).

Table 4.3 Direct Oil and Gas Jobs Required in the Future to Develop and Operate the Shale Gas Basins

Years	Gas Plant Construction	Gas Plant Operations	Field Drilling, Completions, Operations	Total
2013-2015	51	64	1,566	1,681
2016-2020	138	138	3,677	3,953
2021-2025	191	297	6,561	7,049
2026-2030	75	392	6,176	6,643

Source: NRRM Economic Profile, 2012a.

In comparison, the employment proportion in the primary sector in BC is 3.7%, while in Canada it is 3.9%. Thereafter, the labour force is distributed to 13.3% in the secondary sector and mainly in the construction industry. The services sector comprises a 70.9% share of jobs, mainly concentrated in accommodation and food services as well as retail trade (Statistics Canada, 2013).

The median earnings for 15 to 65 year old workers in the NRRM were \$40,002 in 2011. This is 39% higher than the provincial average of \$28,765 and 33.9% higher than the national average of \$29,878 (Statistics Canada, 2013).

4.1.3 Natural Resources: Oil and Gas, Mining and Forestry

In the NRRM, oil and gas exploration constitutes one of the main economic activities. Moreover, recent data reveals that the estimated quantity of Shale gas in the Horn River Basin is as high as 78 Bcf (BC Ministry of Natural Gas Development, 2013). The following table presents the data regarding the potential availability of natural gas.

Table 4.4 Ultimate Potential for Marketable Natural Gas in BC – Year End 2012

BC Area	Trillion Cubic Feet		
	Ultimate Potential	Cumulative Production	Remaining
Conventional	52		
Unconventional			
<i>Horn River Basin</i>	78		
<i>Montney</i>	271	25	376
Unconventional total	349		
Total	400		

Source: BC Ministry of Natural Gas Development, 2013

Regarding the mining industry, some \$109.3 million were spent in exploration for 17 projects in the north-east region in 2012 (BC Ministry of Energy and Mines, 2012). In comparison, the exploration expenses were only \$21 million in 2009. In 2012, four coal mines were in operation, located approximately 400 km to the south of the NRRM. The mining sector employed annually 30,000 workers in British Columbia, twice as many as in 2001 (Ministry of Energy and Mines, 2012).

Forestry activity also constitutes an important part of the local economy. Indeed, the Fort Nelson’s Forestry Roundtable Committee (FNFRT) has recently sought to integrate the use of wood fibre in the various oil and gas exploration processes. Nonetheless, the Forest industry in the NRRM is experiencing significant difficulties (NRRM, 2012a) through 2014 despite solid wood product markets in North America, Europe, and Asia.

4.1.4 Industries

In Fort Nelson, industrial activities are mainly related to natural resources development. Indeed, there are numerous companies, including those of the Horn River Basin’s Producer Group, that use local suppliers and equipment as well as regional infrastructure for their activities. To meet this growing demand, the City is developing a new industrial zone. It should be noted that over 61% (733.37 ha) of the total area (1,200 ha) of the two other NRRM industrial parks is already occupied for commercial or industrial uses (NRRM, 2012b).

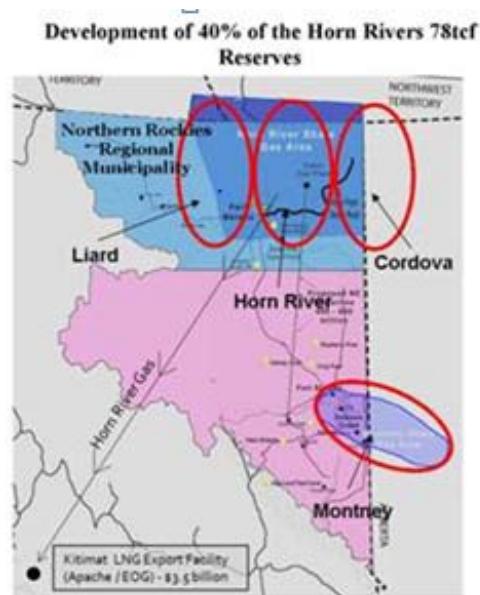


Image source : NRRM Status Update, august 2013

4.1.5 Tourism

According to the regional tourism association, there are 320,000 visitors to Fort Nelson in the summer, and only nearly 2,000 in the winter (NRT, 2007). In 2012, Fort Nelson proposed a series of 26 festivals and events in the city. In general, the regional tourism is centred on historical and cultural activities related to the Alaska Highway (97) as well as outdoor (walking, fishing, kayaking, etc.) and leisure activities. The region also offers numerous national parks including Stone Mountain Provincial Park, Muncho Lake Provincial Park and Liard River Provincial Park.

4.1.6 Urban Infrastructure

Fort Nelson also offers numerous cultural and community facilities for the pleasure of both visitors and residents. The city has a theatre, a museum as well as numerous leisure facilities, including the Northern Rockies Recreational Centre, the Northern Rockies Aquatic Centre and the Phoenix Theatre (NRRM, 2012b).

Approximately 100 licensed pilots use the NRRM for recreational flying, either with their own or a rented plane.

In terms of services, the city also has all the facilities required by holiday-makers, including hotels, motels and convenience stores. Fort Nelson Hospital provides all the health services necessary to the local population (NRRM, 2012b).

Moreover, according to the Canadian Owner and Pilots Association (COPA, 2008), in Fort Nelson and area, “approximately 100 licensed pilots use the airport for recreational flying, either with their own or a rented plane. In fact, most pilots are here precisely for the opportunity that the combination of lifestyle and a local airport offers”.

4.2 **Qualitative Impacts**

The current section aims to describe qualitative benefits in Fort Nelson community created by current and future NRRM’s transportation activities.

It provides reliable transportation, faster than road travel and safe year-round.

4.2.1 Regional Transportation System

In the NRRM, there could be a rapid increase in the demand for equipment and human resources in the short and medium terms, at the same pace as regional economic investments increase. TransCanada plans to construct the Keystone XL

and Energy East pipelines whereas Enbridge wants to develop its Northern Gateway and Line 9b Reversal projects. In this context, the presence of the NRRRA, already facilitating the air transportation of resources throughout the province, would improve travel to Horn River Basin, Northern Alberta, and the southern parts of the Northwest Territories as well as to the ports of Prince Rupert or Kitimat.

In Fort Nelson, the population should grow at the same pace as the oil and gas industry. Currently, there are six weekly direct flights between the NRRRA and Vancouver as well as flights to the urban centres of Prince George, Edmonton, Calgary and Fort St. John. It provides reliable transportation, faster than road travel and safe year-round. For example, the airport has only had to close due to poor weather for 2.2 days during the last three years (NRRM, 2012b). Thus, the NRRRA is an essential component of intercity passenger transportation.

4.2.2 Regional Services

The new industrial zone is positioned so as to provide easy access to the airport and other infrastructures to ensure optimal transport of goods. Without the NRRRA, current and expected industries may not move to Fort Nelson's new light industrial zone.

Between Fort St. John (south) and the Alaska border, the NRRRA is the only airport in northeastern BC serving Fort Nelson and the NRRM as well as the main important services centre. Therefore, the NRRRA's activities are essential in order to provide essential safety services within the NRRM, including (COPA, 2008):

- Training and educational uses by the Sekirk College Aviation program and other flight training schools;
- Emergency medical evacuation;
- Physician and medical transportation;
- Medical shipments and patient transfers;
- Forest fire protection (planned to upgrade to an Air Tanker Base);
- Search and rescue services;
- Emergency preparedness and disaster.

In fact, the NRRRA is the only central location for these services and equipment to ensure the safety of the population and of visitors.

Natural Resource-Based Industrial Sectors

First, according to the NRRM's (2013) website, "the region today boasts 30% of BC's natural gas production. There are 40 natural gas fields in the Fort Nelson area, and interest is growing among gas producers in shale gas production, particularly in the Horn River Basin". So, it is important to maintain the NRRM's infrastructure and services in order to:

The NRRM region today boasts 30% of BC's natural gas production.

- respond to recent and future oil and gas growth as a result of activity in the northeast gas basins;
- support the mining industry's exploration and production activities;
- further promote wood fibre utilisation in the Horn River Basin development.

In general, the transportation of materials and people provides certain vitality to the local and regional economies. At the same time, the companies who use these resources invest money into the community, which promotes local activity. Moreover, the NRRM already has facilities to accommodate and meet the needs of all the companies involved in the economic development of the region. In this context, the NRRM contributes to the productivity and efficiency of community businesses that use air transportation. With the NRRM's infrastructure, oil & gas and mining activity play a vital role in the regional economy by creating jobs and contributing to economic development.

4.2.3 Regional Tourism

In 2010, tourism generated an estimated \$47 million in annual economic spinoffs for the regional economy (Intevistas, 2010). The NRRM and Fort Nelson are far from the various southern urban centres, which mean many visitors must fly to the region and thus pass through the NRRM. Without the NRRM, current and expected tourists and visitors may not come to Fort Nelson. This situation would cause local and regional

In 2010, tourism generated an estimated \$47 million in annual economic spinoffs for the regional economy.

businesses to lose out financially, in terms of lost lodging, transportation, leisure and food related revenue. Thus, the NRRM is a vital component of the region's tourist industry.

5. CONCLUSIONS

With a significant contribution for 2012 in terms of jobs, wages and output, the NRRA is a major economic actor.

Airports are significant economic actors at the local, regional, provincial and national level. They have become an integral part of the economy and act as catalyzers for business development, national and international trade, transportation of persons and the tourism industry. They act as regional development hubs providing the community numerous benefits and economic windfall.

Table 5.1 2012 Economic Impacts

Economic Impact	Output (M\$)	Employment (FTE)	Wages (M\$)
Direct	22.96	98	6.52
Indirect	11.02	57	3.24
Induced	6.89	37	1.73
Total	40.87	193	11.48

The NRRA plays a significant role in the local economy by providing services for the natural resource industries, the tourism industries and the retail business. It also plays a key role in attracting and retaining business as it connects the region to the world economy.

The proposed airport upgrade will further contribute to the whole regional economy.

The NRRA plays its role as an regional hub as it connect business, managers, service providers together allowing synergies to be built therefore reinforcing the capacity of the regional stakeholders to develop and promote the region. These benefits cannot always be quantified by the economic theory but play a role of vital importance to the local economy.

With a significant contribution for 2012 in terms of jobs, wages and output, the NRRA is a major economic actor in the region and generates large scale economic activities. Moreover, with the proposed airport upgrade, the NRRA, in the short, medium and long term will further contribute to the whole region economy.

