

Labour Market Supply Side Environmental Scan — BC's Natural Gas Sector



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Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

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Labour Market Supply Side Environmental Scan

1 > Executive Summary

This report addresses issues related to the supply of labour to the natural gas industry in British Columbia. An objective for the natural gas industry and by implication, the Province, is to ensure that an adequate number of trained people are available to drill for gas, construct and operate the pipelines and construct and operate proposed liquefied natural gas (LNG) plants. To help achieve these goals, this report addresses some key questions:

- What are the potential sources of labor supply?
- What are the challenges related to securing the supply of workers from these sources?
- What implications do these challenges have for developing a workforce strategy for the natural gas sector?

For the natural gas industry, the northern regions of BC may represent a limited source of labour for new projects. The Northeast is almost at full employment, but unemployment is higher in other regions, particularly in the North Coast and Nechako. Nechako also offers a more youthful population to potentially train for various occupations. What must be kept in mind, though, is that the combined population of the four regions is slightly over 300,000 and the labour force slightly under 250,000. The population is small number given that 22 major capital projects are already underway in the north and another 87 are proposed.

If the industry is to use local workers, many will require educational upgrading if they are to move beyond entry level labouring jobs. Competition for skilled trades and technical occupations and construction related workers will be tremendous, given the competition from other projects underway. The natural gas sector will need to develop strategies to inform local residents of the career options it provides and also offer attractive pay and work conditions.

In terms of attracting migrants from other regions of BC, Vancouver Island/Coast, Thompson/Okanagan and Kootenay regions have an industrial and occupational base that is transferable to the natural gas and heavy industrial construction industry. In fact, many workers previously downsized from pulp and paper and forestry have successfully transitioned into oil and gas. While the historical trend has been north to south migration, the chance to get new or better jobs, higher incomes and lower cost housing may entice some workers north.

Inter-provincial migration also represents a potential source of workers for the natural gas industry. Alberta is a likely source, as past experience has shown, and possibly Ontario, Manitoba and Atlantic Canada. The BC government is also making efforts to increase the numbers of interprovincial migrants, including the development of up to six industry-led recruitment missions and improved marketing efforts.

Aboriginal peoples are traditionally underrepresented in the labour market and represent an excellent potential source of workers for the natural gas industry. Mobilizing this workforce carries with it challenges that several organizations in BC are addressing. To succeed, they will require the active participation of industry as well as First Nations and governments.

Immigrants to BC will be an important part of the supply of labour. BC has been successful in attracting and retaining immigrants to the Lower Mainland, but has had more limited success in encouraging them to settle in the north. The emergence of new industry is an opportunity for the province to be more targeted in the programs it offers, in conjunction with the federal government. The federal government, for its part, is changing immigration and temporary worker programs in an attempt to make them more flexible and responsive to industry needs. The report provides an analysis of the immigrant work force and reviews programs and initiatives that may help the natural gas sector.

The workers the natural gas industry needs from northern BC in the construction and on-going operation phases will require skills training and upgrading. Some capacity exists for expanding the current apprenticeship training infrastructure in the northern regions. Nonetheless, new approaches will be needed to ensure the ongoing supply of trained workers. More active recruitment of under-represented groups through programs such as the Industry Training Authority's (ITA) Women, Aboriginal and Immigrant in Trades Training programs could be undertaken. In addition, greater opportunities may exist for companies and/or industries to collaborate more closely with training providers. Working together, they can define skills requirements (such as competencies) needed, and better coordinate technical training and seasonal and production schedules so that apprentices can more easily obtain required training.

The projected capital investment for Northern BC is unprecedented and the existing construction workforce will be unable to meet labour demand. It is clear that the BC natural gas industry and interested parties will need to develop and implement a multi-pronged strategy to address labour requirements to 2020. The strategy will need to consider:

- The development and offering of relevant training for the local labour force - especially in the Cariboo, North Coast and Nechako regions, along with an information program to alert prospective workers in these regions to the opportunities in the natural gas industry.
- Ways of attracting skilled workers from Southern BC, many of whom will likely want to work on a fly-in/fly out basis.
- Increasing interprovincial migration and launching recruitment efforts in Alberta, Nova Scotia and New Brunswick, provinces with potential labour supply or a history of movement to BC.
- Attracting more immigrants through the federal skilled worker and BC Provincial Nominee programs. Given the province is organizing recruitment missions to other countries, companies in the natural gas sector may consider joining missions to address acute labour shortages.
- Increasing Aboriginal participation using a "socio-economic" approach that not only trains Aboriginal people but also addresses systemic barriers to sustainable employment including low education and literacy rates and poverty. The report provides case studies that highlight good practice programs for recruiting Aboriginal people to the trades.
- Implementing a community development strategy in parallel with a workforce strategy to ensure that the housing, infrastructure and services necessary to attract and retain workers are in place.

As for the training and apprenticeship system, a workforce strategy could consider the following:

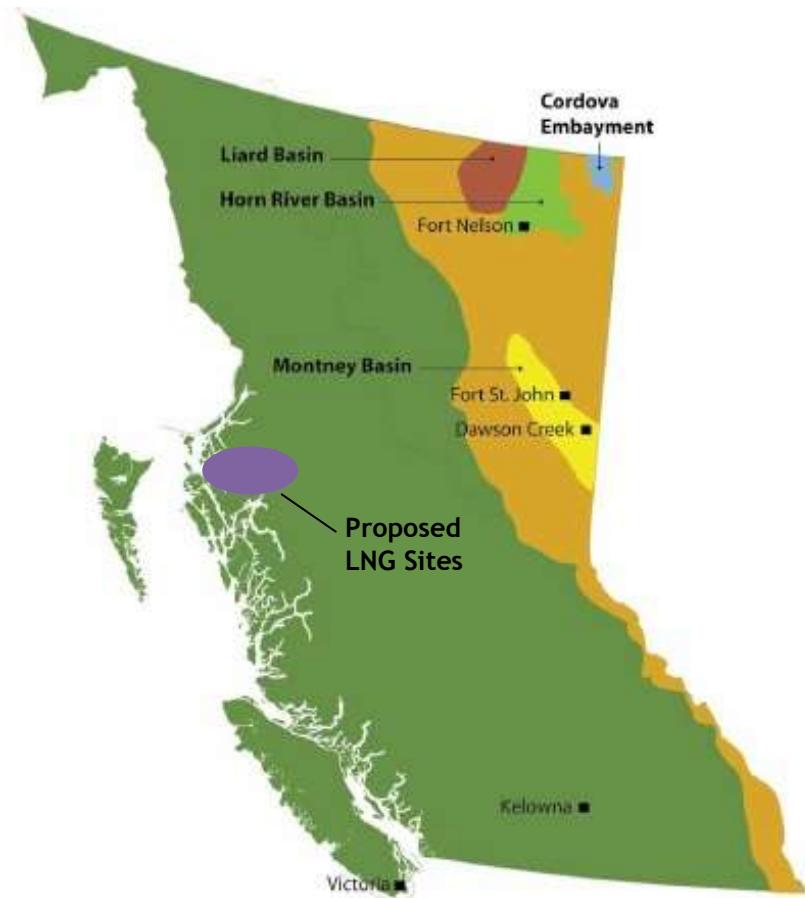
- Building attraction strategies based on the unique value proposition the industry and communities have to offer. A start would be to identify the characteristics and skill profile of the type of person that makes an ideal “northern natural gas worker”. With the profile, companies could then build hiring criteria and assessments to help find individuals matching the profile.
- Enhancing capabilities to identify and recognize people’s skills through competency based assessment and gap training. Such a program provides the basis for creating career paths within companies and across industries.
- Supporting occupational training with opportunities for individuals to upgrade.
- Ensuring better coordination between companies and training providers.

2 > Introduction

The BC Natural Gas Industry in 2012

The BC Natural Gas industry is a major source of employment and revenue for the BC government. Currently, the majority of natural gas industry activity, including exploration and production and natural gas processing, takes place in the Northeast region of BC. Activity is focused on four basins including three north of Fort Nelson (Liard, Horn River and Cordova Embayment) and one situated near Fort St. John and Dawson Creek (Montney).

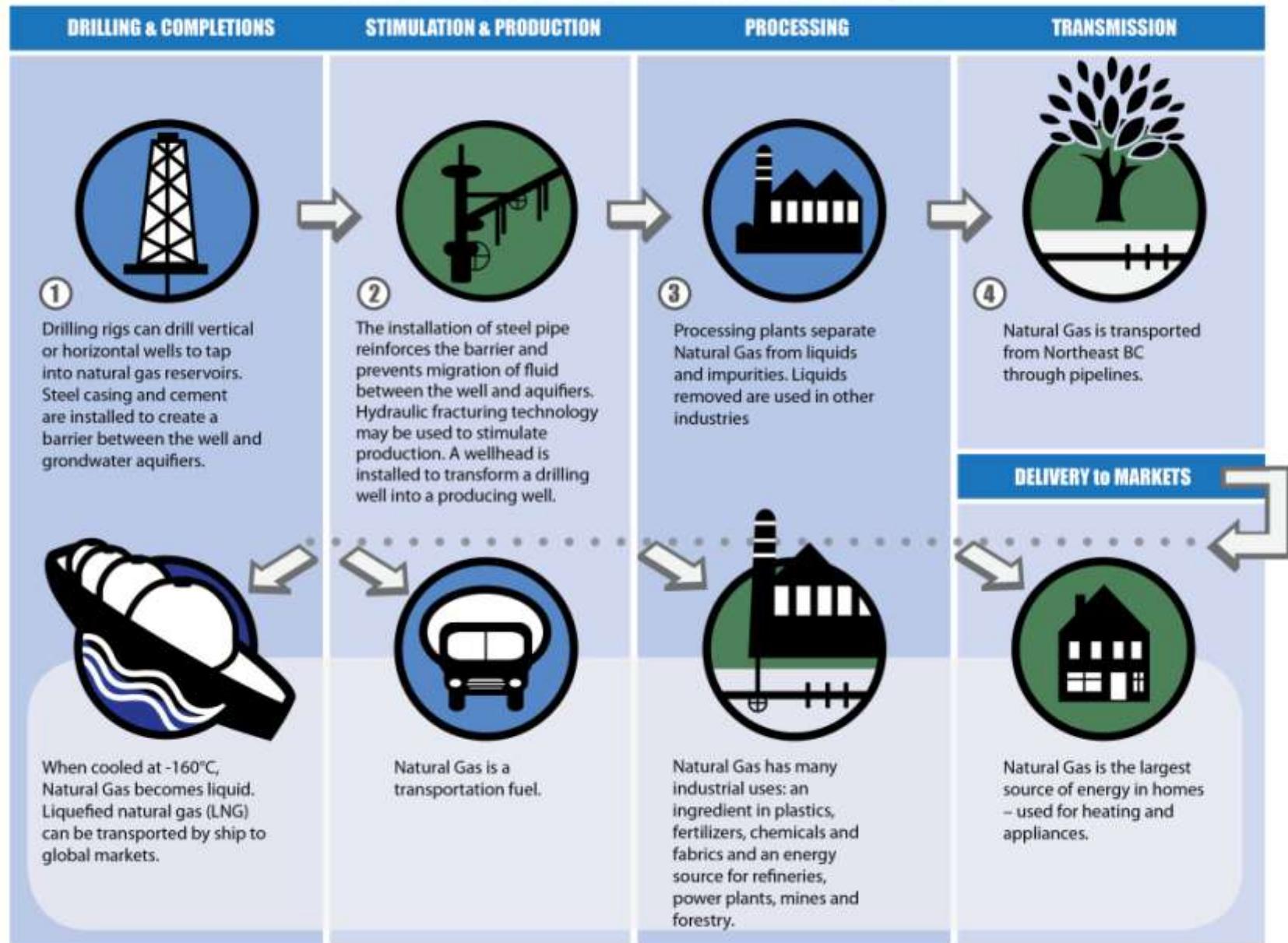
Figure 1 - BC Natural Gas Activity Basins Map



Source: BC Oil and Gas Commission 2011 Annual Report p.5

Once the gas is processed, pipelines that begin in the Northeast transport it through the Cariboo and North Coast regions to Southern BC and into the United States. The graphic on the next page provides a basic overview of the process to produce and distribute natural gas and liquefied natural gas (LNG).

OVERVIEW OF THE BC NATURAL GAS INDUSTRY



LNG: New Markets and more jobs

In recent years, with the introduction of new methods of releasing gas from shale, the US has decreased its import requirements. As a result, prices for natural gas in the United States have been dropping steadily since 2009. BC producers are being forced to find new customers in other countries.

To develop new markets, since 2010, companies have been putting forward proposals to build liquefied natural gas (LNG) plants on the coast of Northwest BC. The concept is to drill for gas in the Northeast, then, via new pipelines, transport it to the North Coast. There, companies would build LNG export plants, which liquefy natural gas by cooling it. The companies then pump the gas into specialized tankers and ship it to offshore markets such as Japan and China.

Constructing these plants will enable BC to diversify its export market and take advantage of the rapidly expanding Asian market. The BC Government has targeted to have three LNG facilities in operation by 2020 (the first by 2015) that could create 9000 new construction jobs, 800 operations jobs and thousands of indirect jobs¹. Direct employment in BC's natural gas industry is projected to grow from a current 12,000 workers to over 40,000 workers by 2035, largely as a result of LNG related activity.

Purpose of this Report

To address the opportunity the LNG plants could create, in 2012, the Province of British Columbia established the Natural Gas Workforce Committee. Made up of representatives from government, labour, companies and associations, the Committee has commissioned two reports: one examining labour demand and this one, which considers labour supply. These two reports will form the basis for the development of a natural gas workforce strategy.

An objective for the natural gas industry and by implication, the Province of British Columbia, is to ensure that enough trained workers are available to drill for, produce and process the natural gas, construct and operate the pipelines and construct and operate the LNG plants. To achieve these goals, the province and the industry must address some key questions:

- What are the potential sources of labor supply?
- What are the challenges related to securing the supply of workers from these sources?
- What implications do these challenges have for developing a workforce strategy for the natural gas sector?

To answer these questions, this document begins by analyzing statistics and issues related to three possible sources of labour:

- **Local labor supply** - First, companies may wish to use local labor; certainly this group can be the most cost effective source. Section 4 examines BC's four northern economic development regions to determine the availability of trained local people.
- **Migrants from elsewhere in BC and Canada** - Section 5 analyzes the possibility of securing needed workers by attracting them from other regions of BC or from other jurisdictions in Canada.

¹ As outlined in the Province of British Columbia's natural gas and LNG strategies released February 2012. www.gov.bc.ca/ener/natural_gas_strategy.html

- **Under-represented groups** - Section 6 explores the opportunities to recruit from two groups; Aboriginal people, who make up a large portion of the population in the northern regions of BC and workers from other countries.

The report then turns to an examination of the BC training system and its current capacity to meet the high demand occupations. The document concludes with conclusions and key recommendations for strategy development.

Approach and Timeline

This project commenced in June 2012. The consultants first reviewed the demand report for the industry, prepared as the first phase of the development of a natural gas workforce strategy.

The next phase of the research was gathering data from BC Statistics to prepare economic profiles of four regions in the north and four in southern BC. The consultants also requested special data runs from the Industry Training Authority to prepare an analysis of apprenticeship trends over time.

Preliminary findings were presented and discussed at the project Steering Committee meeting of July 25, 2012.

The consultants then conducted an extensive literature search to identify potential case studies in Aboriginal recruitment to the trades and interviewed individuals familiar with the programs. They also spoke with Steering Committee members, industry and training provider representatives throughout BC, seeking their assessment of the ability of the training system to meet demand. A total of twenty-five interviews were completed for the study.

3 > The Demand for Labour to 2020

Below are highlights from the Demand Report prepared for the Natural Gas Committee. They discuss the need for labour in the natural gas and heavy construction industries.

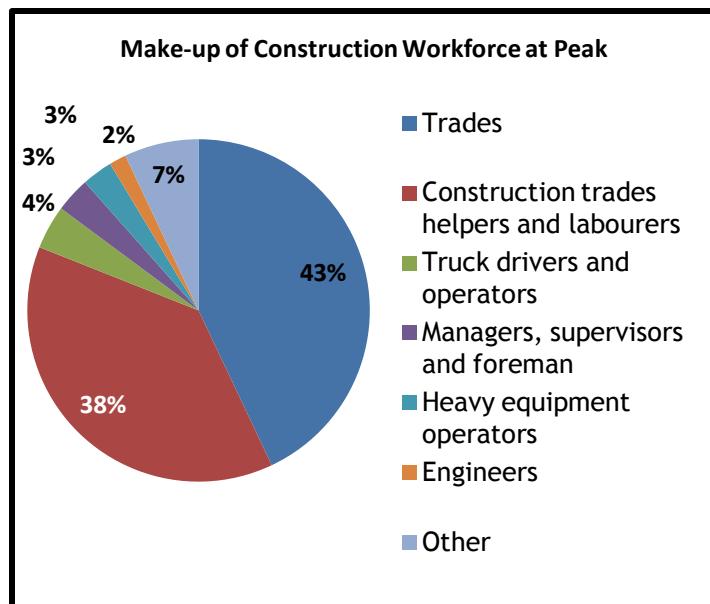
Natural Gas Related Construction Labour Demand

The Government of BC looks to have three LNG export facilities operational by 2020. This is an aggressive goal that will require thousands of workers to construct LNG facilities, transfer stations, jetties and pipelines.

Natural gas related construction workforce is expected to **peak at about 10,000 workers in 2016/17**. As shown in the pie chart below, skilled trades² workers will make up the greatest portion of the onsite construction workforce, followed by trades helpers and labourers.³

The following construction-related occupations will have the greatest demand at peak construction (around 2016-2017):

1. Construction trades helpers and labourers (including riggers) (3,505)
2. Steamfitters and pipefitters (1,270)
3. Welders (820)
4. Gas fitter (400)
5. Truck drivers (385)
6. Carpenters (including scaffolders) (355)
7. Concrete finishers (310)
8. Heavy equipment operators (270)
9. Crane operators (250)
10. Electricians/instrumentation technicians (120)



Source: Labour Demand Outlook for BC Natural Gas Industry. November 2012

Natural Gas Operations Labour Demand

Growth within BC's natural gas operations employment is dependent upon LNG development. In the short-term, while LNG facilities and pipeline infrastructure are under-construction, natural gas operations employment will plateau at around 13,000 to 13,500 employees. Once LNG export facilities are operational, employment will **grow steadily between 2015 and 2020 and peak to approximately 20,000 workers**.

² Trades refer to apprenticeable occupations.

³ Construction trades helpers and labourers assist skilled tradespersons and perform labouring activities at construction sites.

Projected employment growth is 6,500 to 2020 and is broken down by sector as follows:

- Oil and gas services adds 5,620 jobs
- Exploration and production (E&P) adds 800 jobs
- Pipelines adds 100 jobs

An additional 2,000 workers for natural gas operations are required due to age-related attrition. Occupations expected to experience the greatest number of job openings due to increased employment and age-related attrition include:

1. Oil and gas field workers, labourers and operators (2,070)
2. Plant/process operators (730)
3. Supervisors, oil and gas drilling and services (725)
4. Truck drivers (530)
5. Heavy equipment operators (480)
6. Primary production managers/drilling coordinators (400)
7. Millwrights and machinists (335)
8. Welders (235)
9. Industrial electricians (190)
10. Petroleum engineers (170)

Key considerations for meeting natural gas operations labour demand include:

- The labour force is already working at capacity in Northeast BC. The projected growth of the natural gas industry will further tighten the labour market.
- LNG facility operations require a highly skilled, technical workforce.
- The oil and gas services sector, the largest employer in BC's natural gas industry, will generate the most jobs over the next decade. Finding and keeping skilled workers will be a key challenge.
- Employee poaching is increasing labour costs at a time when cost management is a priority.

4 > Meeting the Demand: Local labor supply in Northern BC

Given that most of the current and proposed activity related to natural gas is taking place in BC's North, the region itself could potentially supply workers to the sector. The purpose of this section is to examine the availability and education level of the local supply.

The section begins with a brief snapshot of the four development regions that make up northern BC. It then reviews data on population, age demographics, education, employment and other statistics related to the labour market, seeking to identify trends and issues that may affect the supply of workers. The section ends with a summary of these issues and their implications for the natural gas industry. **The Appendices contain a summary table with the various statistics cited throughout this section.**

4.1 The Four northern development regions: A Snapshot

Northern British Columbia encompasses four development regions: Cariboo, North Coast, Nchako and Northeast. As mentioned in the Introduction, companies drill for natural gas in the Northeast region. The proposed LNG plants would be in Kitimat and Prince Rupert, which are in the North Coast region. Pipelines to carry the natural gas would cross the Cariboo and Nchako regions. Below are brief economic portraits of each of the four regions.⁴

4.1.1 Northeast

The Northeast region is British Columbia's current hub for natural gas exploration, development and processing activity. Companies in the region have pioneered the use of new technologies to unlock shale gas. The widespread success of horizontal drilling and hydraulic fracturing techniques in the basins in the region (Liard, Horn River, Cordova Embayment and Montney) has attracted domestic and foreign investment. Mining and utility projects are also planned for the region.

Within the Northeast, some natural gas basins have seen increased activity, while others have decreased. Due to low natural gas prices, exploration and production activity has slowed in the Liard, Horn River and Cordova Embayment basins around Fort Nelson. Activity will likely remain slow while natural gas companies wait for higher natural gas prices driven by demand. These new customers will include industry, the transportation sector and, through the development of an LNG export capacity in British Columbia, global markets. The natural gas in the Montney basin contains other liquids and is worth not only the price of natural gas but also the price of the liquids, making it more profitable - even in a low natural gas price environment.

On the gas processing side, companies have built two new gas plants - one recently commissioned and one still under construction - north of Fort Nelson to accommodate production increases that will be required to address demand from LNG. Another firm has also recently constructed a new plant in Dawson Creek to address the increased production of liquids-rich gas in the Montney Basin.

⁴ Economic and demographic information presented is based on the latest available through BC Stats and/or Statistics Canada 2011 Census. In some cases, information for North Coast and Nchako regions are combined due to small samples available in the individual regions.

With increased capital investment in the natural gas industry and mining activity, the Northeast region has experienced chronic labour shortages for certain occupations for some years. Northeast BC consistently records the province's lowest unemployment rate (3.9 percent in May 2012) and has the highest average annual income. Employers have increased the use of fly-in/fly-out work arrangements to bring in workers from other parts of BC and Canada to meet labour demand.

Like all of BC's northern regions, the Northeast is sparsely populated, with about 66,000 residents in 2011. Major population centers include Fort St. John, Dawson Creek, Fort Nelson, Chetwynd and Tumbler Ridge.(Interestingly, 2011 census data indicates that Fort Nelson - a community in the middle of natural gas exploration, production and processing activity - actually lost 13.6 percent of its residents between 2006 and 2011.) Slightly over a third of the population, 36 percent, lives outside of incorporated communities.

4.1.2 Cariboo

The Cariboo's traditional economic base has been forestry and related wood and paper manufacturing, ranching and mining. Likely because of job losses in forestry-related manufacturing (related to the pine beetle infestation and other factors), unemployment rates in the Cariboo have been increasing. In May 2012, for example, regional unemployment was 7.9 percent, when the provincial average was 6.9 percent.

As for future economic development, natural gas firms are planning to build pipelines that will traverse the Cariboo region. The majority of projected industrial activity in the region, however, is expected to be the building and expansion of mines and utility projects, including several biomass projects aimed at increasing the sustainability of the forestry sector.

With almost 155,000 people in 2011, the Cariboo continues to be Northern BC's most populated region, despite losing 0.1 percent of its population between 2006 and 2011. Its major communities include Prince George, Williams Lake, Quesnel and Mackenzie. Approximately 36 percent of the Cariboo's residents live outside of incorporated communities.

4.1.3 Nchako

In Nchako, mining activities will likely drive the region's future economic and employment activity. In 2012, increased natural gas activity in the Northeast and North Coast will likely have no direct impact on the Nchako region. However, given its high unemployment rate (11.6 percent in May 2012) and younger population, Nchako could be a source of labour for the natural gas industry.

Nchako is the most sparsely populated region of the province, with approximately 40,000 residents in 2011. Aboriginal peoples make up 19.5 percent of the total. The region's population has increased since 2006 - likely because of increased mining activity and the associated employment opportunities it brings. Major population centers in Nchako include Smithers, Vanderhoof, Houston, Burns Lake and Fort St. James. The region is largely rural, however, with 52 percent of residents living outside of incorporated communities.

4.1.4 North Coast

Traditionally, the North Coast regional economy has been based on forestry and associated manufacturing (wood and paper), mining and mineral processing and fishing. With the decline of the forestry and fishing sectors, at 11.6 percent (May 2012), North Coast and Nechako regions had unemployment rates that were the highest in BC.

The region, though, is poised for significant economic expansion. The Northwest Transmission Line, begun in 2011, will bring power to some of the more remote areas of the region. It will also serve as a catalyst for increased mining projects, such as the Red Chris mine under construction in 2012. The modernization of the Rio Tinto Alcan smelter in Kitimat has created new jobs for local residents, at least during the construction phase. The port of Prince Rupert is also expanding, again creating employment opportunities in the region.

The proposed LNG plants would be located in Kitimat and Prince Rupert. Kitimat - after losing two major employers in recent years (Methanex and Eurocan) - is poised to experience significant growth, since the community has been chosen as the location for at least three liquefied natural gas (LNG) plants and associated pipelines. Prince Rupert has also been cited as a potential site for two LNG export plants.

With job losses in the North Coast's traditional economic base, the region's population declined by 3.4 percent between 2006 and 2011 to about 57,000 people. Major population centers include: Prince Rupert, Terrace and Kitimat. The North Coast also encompasses the Haida Gwaii, with its main communities of Queen Charlotte City and Masset. In the region generally, 35 percent of the population lives outside of incorporated communities. The North Coast has the highest percentage of Aboriginal people in the four northern development regions of BC, at 35.5 percent of the population.

4.2 Issues arising from a review of population and labour market data

Part of the research for this report included analyzing statistics related to the northern regions. The sub-section below highlights some of the trends and related issues that may affect the supply of labour to the natural gas sector. The analysis assumes that a well-trained, local labor force would be beneficial to the natural gas industry. At least three options are available to meet this goal:

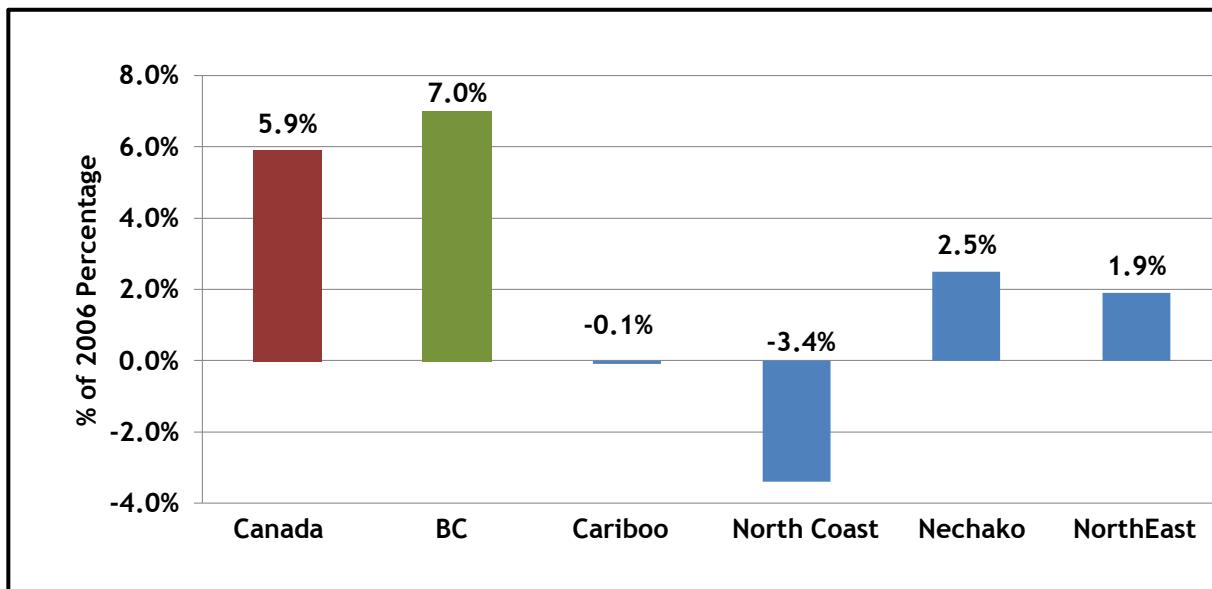
1. Increasing local labour force participation in the natural gas industry in general and especially in high-demand occupations.
2. Enhancing the skills and qualifications of local workers so that they better meet labour market requirements.
3. Attracting more workers to the region(s).

4.2.1 Population: Trends and Issues

The first set of statistics relate to population growth, migration patterns and the composition of the population in the four regions.

Trend: Population growth in Northern BC was less than the province as a whole.

Figure 2 - Population Growth for Canada, BC and Northern Regions 2006-2011



Source: Census 2011

As Figure 2 shows, the Canadian population as a whole grew almost six percent between 2006 and 2011. BC's population growth between 2006 and 2011, at seven percent, exceeded the national rate.

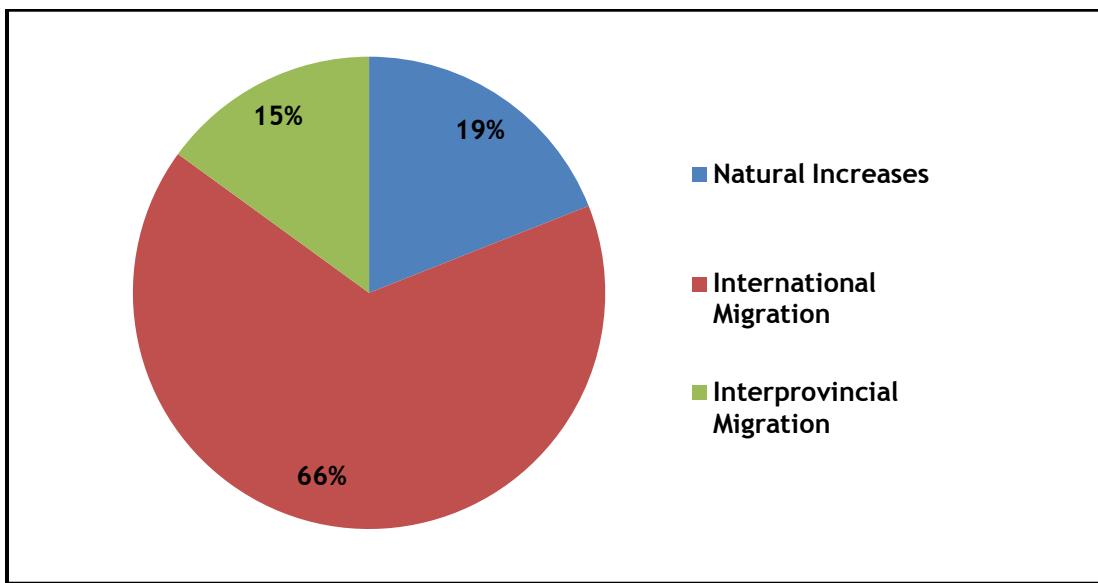
In Northern BC population growth and losses varied across the four development regions, with the North Coast losing people and the Nchako and Northeast regions recording a slight gain. Overall, the population of Northern BC declined by one percent over the five year period, and in 2011, residents there represented just seven percent of BC's total population. In numerical terms, in 2011, the entire population of the four regions was approximately 316,000 people.

Issue: Even with natural increases, Northern BC's local population will be unable to meet the labour needs associated with projected economic growth from various industry sectors.

Trend: Northern BC attracted less than its proportionate share of immigrants

From 2006 to 2011, 66 percent of BC's population growth came from immigration, 19 percent from births and 15 percent from interprovincial migration (Figure 3). Northern BC has seven percent of BC's population, but less than 1.5 percent of the immigrants who arrived in the province between 2007 and 2011 settled there.

Figure 3 - Drivers of Population Growth in BC 2006 - 2011



Source: Census 2011

Issue: If the natural gas sector wishes to draw upon an immigrant labor force, it will have to find ways to attract and retain immigrants in the northern regions.

Trend: More people leave Northern BC than enter from other regions of BC and other provinces in Canada.

Research into the migration patterns of Northern BC residents consistently show that many leave the region.⁵ Between the 2001 and 2006 Census, approximately two-thirds more residents left for southern BC than there were southern residents moving north. Quarterly migration reviews from BC Stats in 2009 shows this pattern of out-migration from Northern BC continues, despite solid economic growth in some Northern regions.

Issue: Northern BC's population growth is likely to continue to lag behind the rest of the province. It will likely face challenges providing local labor to projects unless it can attract more immigrants and migrants from elsewhere in BC and Canada.

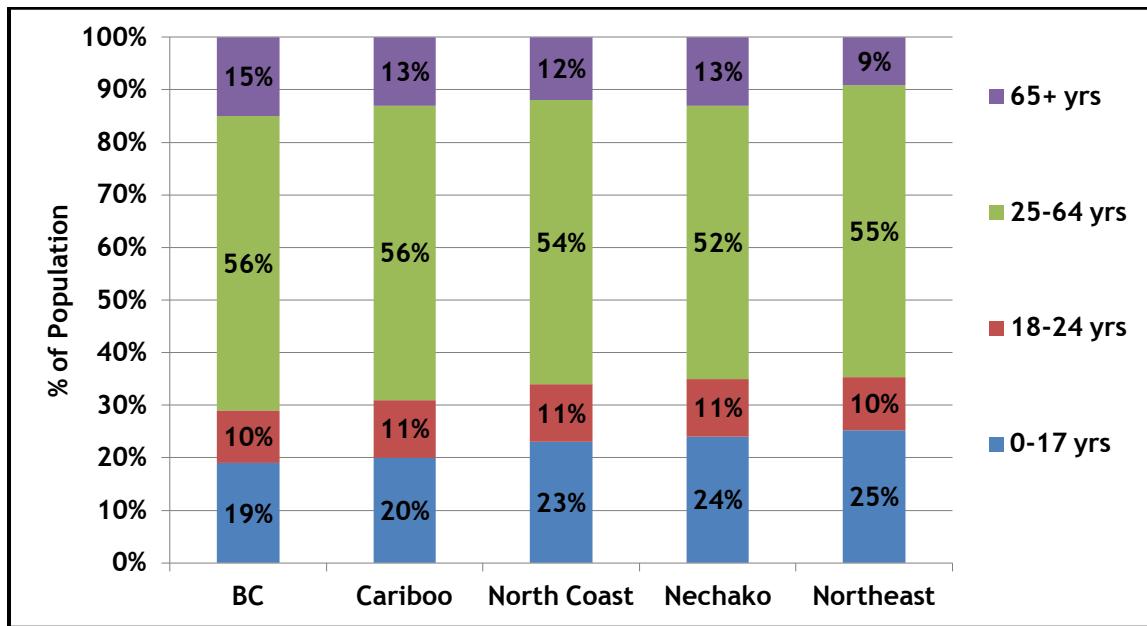
⁵ Migration Patterns in Northern and Southern British Columbia. BC Stats. 2006 and Migration Highlights, 1st Quarter 2009. BC Stats.

4.2.2 Age Demographics: Trends and Issues

Trend: Northern BC has a youthful population.

As shown in Figure 4 below, Northern BC has a significant youth population. Young people could be a potential supply of labour to the natural gas industry.

Figure 4 - Age Demographics for BC and Northern BC Regions (2011)



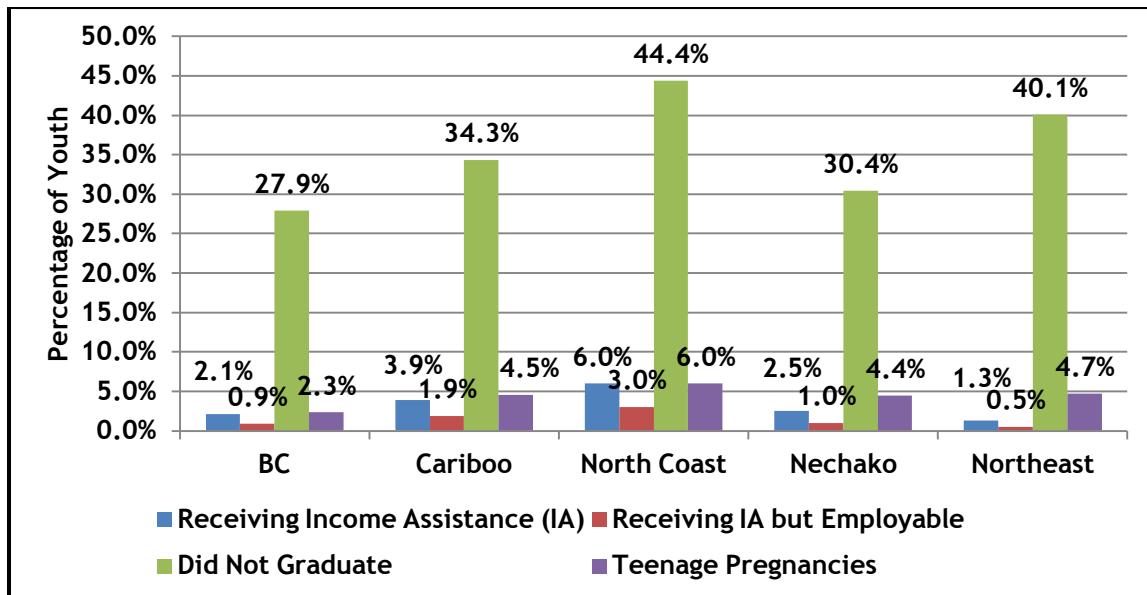
Source: Census 2011

Trend: Multiple barriers for some youth

When compared to the rest of BC Figure 5 (below) demonstrates that with the exception of the Northeast, youth in the northern development regions have:

- Higher incidents of teenage pregnancy
- Higher levels of people receiving Income Assistance within younger age groups
- Lower rates of high school graduation
- Lower rates of post-secondary participation

Figure 5 - Potential Barriers to Youth Participation in Employment Opportunities



Source: Compiled by BC Stats from Vital Statistics Agency, Ministry of Health, Ministry of Social Development and Ministry of Education. Employment Insurance Statistics, Statistics Canada

Issue: The northern regions have a significant youth population, but many young people may have to overcome multiple barriers to participate in the workforce.

4.2.3 Education and Labour Force Participation: Trends and Issues

Employing the local workforce in natural gas projects also depends on their education levels and their current labour force participation rates.

Table 1 - Summary of Education Characteristics for Four Northern Regions

Characteristic	BC	Cariboo	North Coast	Nechako	Northeast
Population 24 - 54 years without High School Complete	11.1%	18.0%	23.0%	20.3%	21.0%
Population 24 - 54 years with Certificate or Diploma	31.5%	34.2%	33.1%	31.1%	35.9%
Population 24 - 54 years with University Degree	24.1%	12.9%	11.8%	12.1%	10.1%
Population 24 - 54 years with Trades Skills	15.5%	20.8%	18.7%	21.4%	25.2%

Source: BC Stats - Census 2006

Trend: Low levels of education

As shown in the Table 1 above, compared to the BC population, the northern BC regions have more people without a high school diploma (averaging 20 percent compared to the provincial average of 11 percent) and far fewer residents with university degrees. They do, however, have a higher percentage of people with trades skills than the provincial average.

Issue: An educated workforce generally has more of the skills needed in the labour force, or is more able to adapt to industry needs. To work in trades and technical occupations the natural gas sector requires, workers in the region may require significant upgrading.

4.2.4 Labour Force Participation: Issues

Table 2 - Labour Force Participation

Characteristic	BC	Cariboo	North Coast/Nechako	Northeast
Labour Force in 2011	2,458,000	87,900	47,400	39,100
Participation Rate ⁶	65 %	69 %	71.1 %	76.1 %
Male (2010)	70.1 %	74.9 %	74.3 %	81.6 %
Female (2010)	61.1 %	61.9 %	59.9 %	72 %
Employment Rate ⁷	60.2 %	63.7 %	64.9 %	72.4 %
Average Unemployment Rate ⁸ in 2011	7.5 %	7.6 %	8.6 %	4.9 %
Unemployment Rate in May 2012	6.9 %	7.9 %	11.6 %	3.9 %

Source: Statistics Canada Labour Force Survey and Statistics Canada Labour Force Survey, Annual Averages Prepared by BC Stats

Issue: Lower rates of participation of women in the labour force

As can be seen in the above table, female participation in the labour force is far less than males across all Northern development regions - on average about 10 percent lower.

Opportunity: Women may be an underused source of labor. With appropriate training and supports, they might enter the workforce and fill some of the projected new jobs.

⁶ The participation rate is the number of labour force participants expressed as a percentage of the population 15 years of age and over.

⁷ The employment rate (formerly the employment/population ratio) is the number of persons employed expressed as a percentage of the population 15 years of age and over.

⁸ The unemployment rate is the number of unemployed persons expressed as a percentage of the labour force.

4.2.5 Major Capital Projects in BC: Trends and Issues

The natural gas industry will also need to consider the number of other major projects underway or planned, for which it must compete for workers. A review of the BC capital projects list in March 2012 showed that new or expansion projects in mining, forestry, oil and gas and utilities had 22 underway, with another 87 expansions or new projects proposed.

Table 3 - Capital Projects (new and or expansions)

Industry	Stage	Cariboo	North Coast	Nechako	Northeast	Total
Forestry:	Under Construction	2				
	Proposed	1				
Mining	Under Construction	3	1	1	1	
	Proposed	5	10	8	10	
Oil & Gas	Under Construction	1			1	
	Proposed	2	8		2	
Utilities:	Under Construction	2	5		5	
	Proposed	7	15	4	15	
Total	Under Construction	8	6	1	7	22
	Proposed	15	33	12	27	87

Source: BC Inventory of Major Projects: March 2012

Trend: Many major projects are planned for northern BC

Natural gas is one of several industries expected to experience significant growth over the next decade. Capital investment in mining and utilities will result in other firms needing workers for construction and operations.⁹

Issue: The natural gas industry will have to deal with significant competition for skilled workers, especially for heavy equipment operators, trades, plant/process operators and supervisors.

Table 4 - Employment by Industry

Industry	BC	Cariboo	North Coast & Nechako	Northeast
Percentage of Employment in Goods-producing Sectors	19.7%	26.0%	26.1%	28.5%
Construction	9.0%	8.1%	7.9%	9.4%
Manufacturing	7.2%	10.8%	11.1%	5.6%
Mining, Oil & Gas, Forestry & Fishing	1.8%	5.2%	5.5%	10.8%
Agriculture	1.0%	n/a	n/a	n/a
Utilities	.5%	n/a	n/a	n/a
Percentage of Employment in Service Sectors	80.3%	74.0%	73.9%	71.2%
Estimated Employment Growth (2010 - 2015) (BC Labour Market Scenario Model, 2010-2020)	1.8%	1.1%	3.9%	2.7%

Source: Statistics Canada Labour Force Survey, Annual Averages Prepared by BC Stats unless otherwise stated.

⁹ Northern Resource Sector Labour Market Demand

Trend: Low numbers of northern residents in the construction industry

As indicated in the previous table, the three of the four northern regions have fewer people working in construction than provincial average. Only the Northeast, at 9.4 percent, is higher than the provincial average of 9 percent.

Issue: The local/regional labour market for construction workers including trades and heavy equipment operators will be tight. Construction companies will need to look to all potential labour supply solutions to fill supply/demand gaps.

Trend: Natural gas activity has been occurring only in one region, to date

Northeast BC is the only region in Northern BC that has a history of natural gas activity.

Issue: Workers in other regions of Northern BC (and Southern BC as well) will be less familiar with the natural gas industry and its career opportunities. They will probably know more about other growth industries including mining and mineral processing and utilities. The natural gas industry will need to educate new graduates and people in other industries about the opportunities it has available.

4.3 Summary

For the natural gas industry, the Northern regions of BC could be a limited source of labour for new projects. The Northeast is almost at full employment, but unemployment is higher in other regions, particularly in the North Coast and Nchako. Nchako also offers a more youthful population to potentially train for various occupations. What must be kept in mind, though, is that the combined population of the four regions is slightly over 300,000 and the labour force slightly under 175,000.

If the industry is to use the local workers, many will require educational upgrading if they are to move beyond entry level labouring jobs. Competition for skilled trades and technical occupations and construction related workers will be tremendous, given the large number of capital projects underway or proposed in other industries. The natural gas sector will need to develop strategies to become better known to local residents as a career option and also provide attractive pay and work conditions.

5 > Can Internal Migration Meet the Demand?

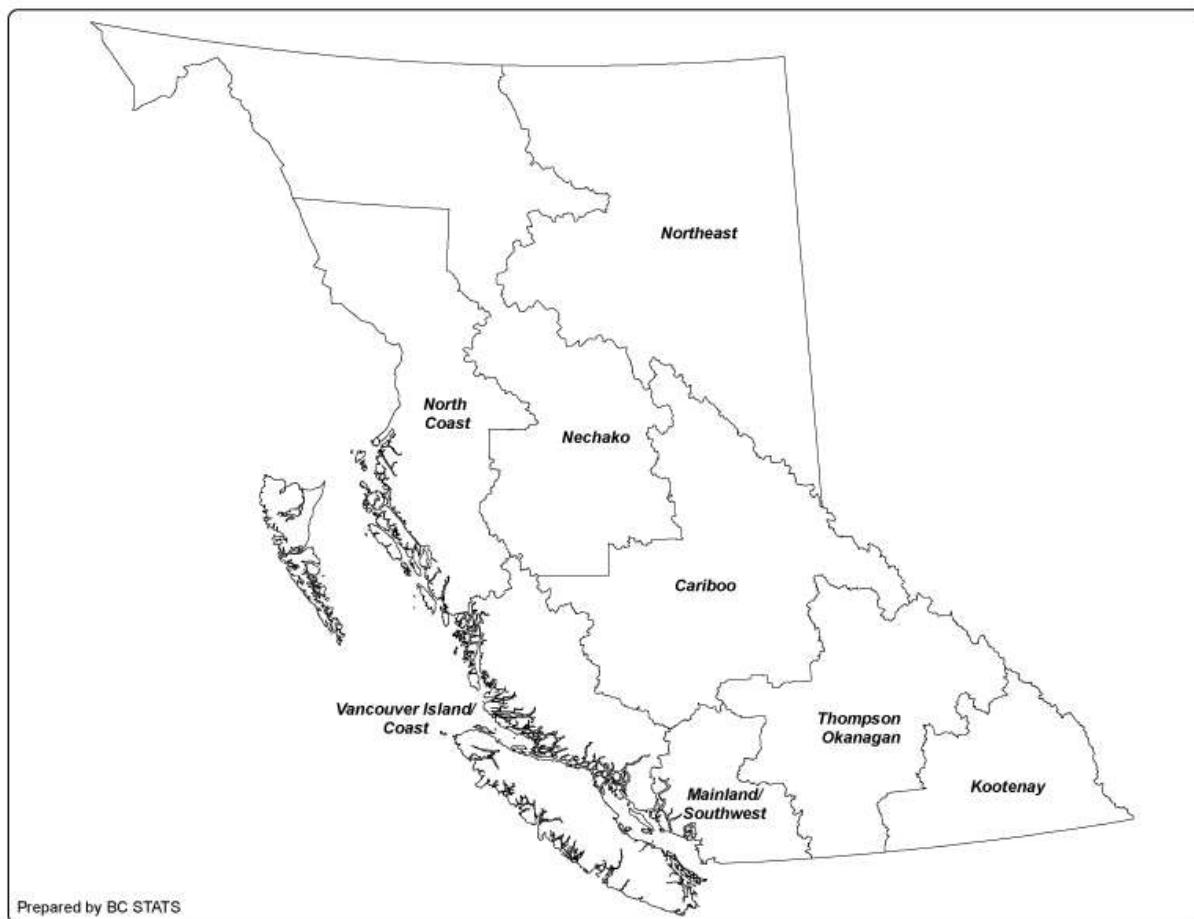
Another potential source of labor for the natural gas industry is workers from other regions of British Columbia (intra provincial) or migrants from other provinces in Canada (interprovincial). This section includes:

- An assessment of intra provincial Workforce Migration, including demographic profiles for the four southern regions of British Columbia
- A review of the impact of labour surpluses and demand in other regions, especially Alberta, Saskatchewan and Newfoundland, provinces that will likely directly compete for BC workers.

5.1 Population, Labour Market and Economic Indicators for BC's Southern Regions

The Southern part of BC encompasses four development regions: Vancouver Island/Coast, Mainland/Southwest, Thompson/Okanagan and Kootenay. The map below shows their locations within British Columbia.

Figure 6 - Map of British Columbia showing development regions



Source: BC Stats

Unique Regional Characteristics

5.1.1 Vancouver Island/Coast

Vancouver Island/Coast has a limited portion of BC's planned major capital project investment. The vast majority of the labour force is involved in service-producing industries (83 percent). The region employs 18 percent of BC's labour force in goods-producing industries - higher than the regions' overall proportion of the labour force. Almost 40 percent of the province's paper manufacturing (pulp and paper) industry is employed on the Island - a sector that is still tentative economically. Another 19 percent are employed within the forestry sector and could face lay-offs if the pulp and paper sector faltered.

Unemployment in Vancouver Island/Coast was a relatively low 5.8 percent in 2012, likely reflective of the increase in tourism-related employment on the Island. Individual towns, however, may have higher unemployment rates. For example, in 2011, Nanaimo had an unemployment rate of 12.1 percent and Duncan, 11.1 percent.

The region had modest population growth of 4.4 percent between 2006 and 2011, still well below the seven percent growth of the province over the same period. The Island attracts a good portion of immigrants in comparison to the other regions outside of the Mainland/Southwest. The region was second to the Mainland/Southwest, attracting 5.6 percent of the immigrants to BC between 2007 and 2011. The largest metropolitan centres in the region are Nanaimo and Victoria.

Some data seem to indicate that Vancouver Island/Coast is home to a mobile workforce. For example, 19 percent of BC's construction workers live in the region - again higher than its overall proportion of labour force. While difficult to assess, it is likely that the region's construction workforce is mobile and works across other regions and provinces. Similarly, approximately eight percent of the provincial oil and gas workforce resides in Vancouver Island/Coast. Given no industry activity takes place there it is fair to assume that these workers live on the Island and work elsewhere.

5.1.2 Mainland/Southwest

While only 18.3 percent of the Mainland's labour force is employed in the goods-producing industries (and those most transferable to the natural gas industry), over 50 percent of the industry total provincial employment is located in the region including:

- Utilities: 66 percent
- Construction: 73 percent
- Mineral product manufacturing (refineries): 58 percent

The Mainland/Southwest is home to 62 percent of BC's labour force - a slightly higher proportion than its percentage of the population. The region appears to be recovering from the economic downturn with a downward trending unemployment rate. In May 2012, the unemployment rate was 6.6 percent. Given the Mainland's diverse economy and its ability to attract labour supply - mainly from international markets - the region is unlikely to experience many labour shortages in the foreseeable future.

With a population of over 2.6 million, the Mainland/Southwest region is home to 60 percent of BC residents. Its population grew by astounding 9.1 percent between 2006 and 2011 - mainly as a result of the large number of immigrants the City of Vancouver attracts each year. For example, in 2010, BC attracted 38,155 international migrants; 89 percent of them arrived in the Mainland/Southwest region. The strong growth of the region has increased housing prices and the general cost of living, which may motivate workers to consider moving elsewhere for employment.

In terms of the oil and gas workforce, 26 percent of the provincial work force resides in the Mainland/Southwest region. Some people are likely employed within company headquarters or regional offices in Vancouver (for example Spectra, the Northern Gateway Pipeline project office). A proportion, however, likely travels to their worksite in Northeast BC, Alberta or other energy-producing locations.

5.1.3 Thompson/Okanagan

Employment in Thompson/Okanagan is mainly within the forest products sector, including forestry and wood products manufacturing. The region also employs 24 percent of BC's mining workforce and 14 percent of employees in mine services, along with 15 percent of the province's good-producing workers. Fourteen percent of the province's construction workforce resides in the region.

Thompson/Okanagan has been hit with a trend of high unemployment; in 2011 the average unemployment rate was 7.9 percent and remained at that level in May 2012. Even though job growth is expected for the area, its existing workforce is yet to be fully absorbed.

At 520,803 residents, the region has 12 percent of the population but only 11 percent of the labour force (276,400). The major urban areas include Kelowna, Kamloops and Vernon. These numbers indicate that Thompson/Okanagan is a popular retirement destination and so has a proportion of residents who will remain outside the labour force.

Between 2006 and 2011, the population of Thompson/Okanagan grew by six percent; in Kelowna, the growth rate was 10.8 percent. Part of this growth came from immigration, with the region attracting 3.1 percent of BC's immigrants between 2007 and 2011.

Statistics indicate that an estimated 12 percent of the oil and gas industry workforce reside in Thompson/Okanagan region. As with the analysis for the other regions, it is likely that the majority of these people travel to energy-producing regions to work.

5.1.4 Kootenay

The mining industry dominates in the Kootenay region. Twenty five percent of BC's mining workforce and 12 percent of its mineral processing workers reside in this region - significant given the overall size of the labour force. The forest products sector is also a major employer with 10 percent of the province's forestry workforce and 12 percent of BC's wood manufacturing industry. Although goods-producing employment only accounts for 19.7 percent of the province's total, 29.4 percent of Kootenay's employment is in goods-producing industries.

In 2011, Kootenay had a below average employment rate at 56.7 percent and above average unemployment rate of 8.2 percent. Employment seems somewhat volatile. For instance, the regional unemployment rate fell to 6.6 percent in June 2012 but in February 2012, the rate was 5.7 percent.

At 146,264, Kootenay has the smallest population and labour force (78,500) of the southern development regions. Between 2006 and 2011, the population grew by 2.9 percent. Major urban centres include Cranbrook, Trail and Fernie. The largest population centers in the region are still relatively small in comparison to the other southern regions. Almost half of the population lives outside of major centres. Kootenay is similar to the Northern BC regions in that it attracts only a small percentage (0.8 percent) of BC's immigrants to its communities.

An estimated six percent of the oil and gas industry workforce reside in Kootenay region. As is the case with other southern regions, these workers likely live in the region and travel to employment in the oil and gas regions of BC and Alberta.

5.2 Potential labour supply from southern BC and other provinces

Another potential source of labour for the natural gas industry could be migrants from southern British Columbia or other provinces. This sub-section considers some of the factors that influence the probability of such movement occurring. It first describes historical migration patterns within BC. Then, for each of the four southern regions, it analyzes the possibility of workers moving to take heavy construction or natural gas jobs in northern BC.

5.2.1 North - South Migration Patterns in BC

In BC, more migrants move within the province than between provinces. While some people move from the south to the north, more northern people move south. Southern residents tend to move between southern regional districts, rather than moving north.

Historically the Mainland/Southwest region has seen far more residents leave than enter from other parts of the BC. While the region expanded by over nine percent between 2006 and 2011, international migration accounts for the largest portion of that growth. The exception to this trend is people aged 18-24, who tend to move into the Greater Vancouver area for education and career opportunities.

5.2.2 Factors that influence migration

Several factors could potentially influence workers in southern BC to migrate to natural gas and heavy industrial construction jobs in the north. They include:

- **Similarity of industries in the regions** - As an example, do both regions have industries where trades are in high demand?
- **Transferability of occupations between regions** - A region may have a high number of trades or other occupations that are in demand in another region.
- **Projected regional employment growth** - If a region has limited prospects for jobs, workers may be more motivated to move to a region where labour demand is higher.
- **Historical migration trends** - If workers from one region have a history of moving to another, this pattern may indicate their willingness to migrate in the future.

- **Knowledge of the natural gas industry** - If people in a region are familiar with the sector and its career opportunities, they may be more likely to move to pursue a job opportunity.
- **Cost of living** - As mentioned in a previous section, workers may move so as to obtain lower cost housing and raise their standard of living.
- **Lifestyle and cultural differences** - Some workers may be attracted to a rural lifestyle, while others might prefer to remain in a large urban area. Immigrants may hesitate to move to a region where few other immigrants are living.

Taking these factors into account, Table 5 on the following page summarizes the potential associated for workers from southern BC regions to move to opportunities with the heavy construction and natural gas industries in the north.

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Table 5 - Factors influencing migration to northern natural gas and/or heavy construction industries

Southern BC Region	Factors that Enhance Migration	Factors that Detract from Migration
Vancouver Island/Coast	<ul style="list-style-type: none"> ▪ Employment growth in the region expected to be slower than other parts of BC. Some areas continue to experience volatile employment prospects and high unemployment rates. ▪ This region has industries with workers who have skills that would transfer to the natural gas/construction sector. ▪ The region has a significant portion of the province's forestry and pulp and paper employment. The pulp and paper sector has struggled for sustainability since before the 2008/09 economic downturn. History of displaced pulp mill workers moving into oil and gas. ▪ Potential pockets of construction workers with few major projects on the horizon. ▪ Below average income rates and so workers may move north for higher-paying jobs. 	<ul style="list-style-type: none"> ▪ The region has a slightly older demographic and a greater than average percentage of Aboriginal Peoples. Both populations have historically been less mobile. ▪ Competition from other sectors for workers with industrial and/or construction skills and experience.
Mainland/Southwest	<ul style="list-style-type: none"> ▪ Workers in several occupations needed in the natural gas and industrial construction industries reside in the Mainland/Southwest. ▪ Population growth outpaces employment growth so a surplus labour supply may exist. ▪ The region has a high cost of living. Historically, residents have left for lower cost housing and/or better work opportunities. 	<ul style="list-style-type: none"> ▪ Less potential for industrial transferability - much greater portion of employed work in service-producing industries. ▪ The region has a smaller proportion of oil and gas and construction employment than its total share of provincial employment. Regional residents may be unfamiliar with the industries and/or its employment opportunities. ▪ Vast majority of residents (85 percent) live in large metropolitan centres. ▪ High proportion of population is immigrant, while Northern regions have far fewer immigrants in their populations.

Southern BC Region	Factors that Enhance Migration	Factors that Detract from Migration
Thompson/Okanagan	<ul style="list-style-type: none"> ▪ Industrial and occupational transferability exists between employment in the Thompson/Okanagan region and the natural gas and industrial construction employment. A higher than average percentage of residents have trades certification. ▪ The region is projected to continue to have slow employment growth and so may have a surplus labour supply. ▪ Income rates are below the provincial average so workers may be interested in higher paying jobs outside the region. ▪ Solid proportion of workers already engaged in the oil and gas and construction industries. 	<ul style="list-style-type: none"> ▪ The Thompson/Okanagan region is a destination of choice given its significant population growth between 2006 and 2011. ▪ Likely other natural resource sectors will compete for workers from this region - especially for trades.
Kootenay	<ul style="list-style-type: none"> ▪ Industrial and occupational transferability exists between employment in the Kootenay region and the natural gas and industrial construction industries. A significantly higher than average percentage of residents have trades certification - likely because many work in the mining industry. ▪ The region has below average income rates, so workers may be interested in better paying jobs elsewhere. ▪ Solid proportion of workers already engaged in the oil and gas industry which may indicate a familiarity with the industry and its employment opportunities. ▪ Approximately 48 percent of residents live outside major population centres - similar to the Northern regions so northern lifestyle may be suitable. ▪ In the short-term, employment in the region continues to be volatile. 	<ul style="list-style-type: none"> ▪ Despite a history of higher unemployment rates, in the medium and long term, regional employment is projected to increase at a rate greater than the provincial average. This increase is likely driven by resource industries, including mining. ▪ Likely mining sector will compete for workers from this region - especially for trades workers.

Overall Assessment of the Potential for Intra-Provincial Migration

Vancouver Island/Coast, Thompson/Okanagan and Kootenay regions have an industrial and occupational base that is transferable to the natural gas and heavy industrial construction industry. In fact, many workers previously downsized from pulp and paper and forestry have successfully transitioned into oil and gas. While the historical trend has been north to south migration, the chance to get new or better jobs, higher incomes and lower cost housing may entice workers north.

Some movement has already occurred. In each region a portion of workers already work within the oil and gas industry - likely in a fly-in/fly-out work arrangement - since their regions have little local activity to support the reported employment rates.

The natural gas industry can attract workers, remembering that experienced, skilled industrial workers looking for employment are likely to have choices. Companies that can offer a variety of work arrangements including relocation, fly-in/fly-out or supported drive-in/drive-out will likely be most successful in attracting workers to northern job sites.

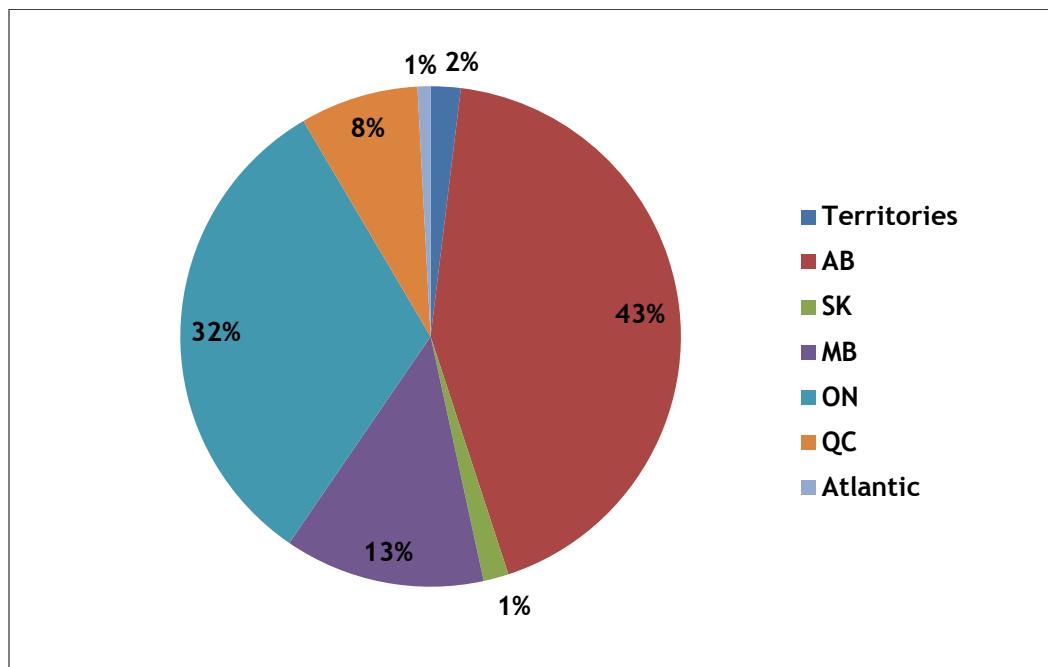
5.3 The potential for migration from other provinces

Another source of workers for the northern natural gas and heavy industrial construction industries are migrants from other provinces. This sub-section assesses the likelihood of such movement.

5.3.1 Interprovincial Migration

Historically, the majority of migrants to BC have been international. Some movement between provinces does occur, however. Figure 7 below illustrates net migration patterns from other Canadian provinces to BC between 2007 and 2010.

Figure 7 - Net Migration: Percentage from Other Canadian Provinces 2007-2010



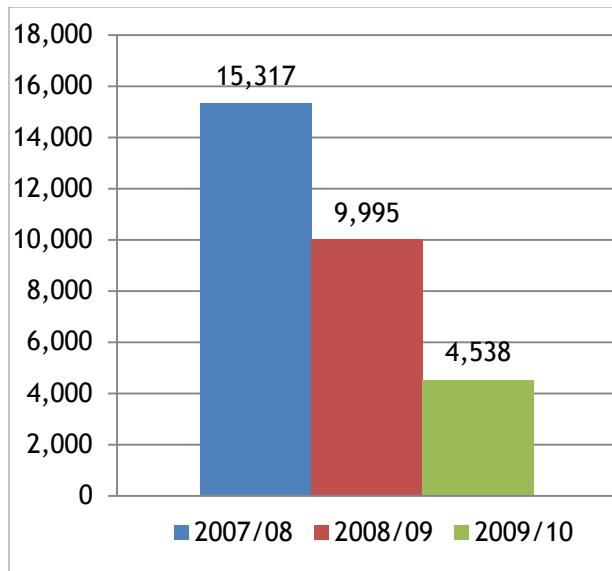
Source: BC Stats and Ministry of Finance Financial and Economic Review, July 2011

As the figure shows, almost three quarters of interprovincial migrants to BC came from Alberta (43 percent) and Ontario (32 percent), with Manitoba and Quebec also contributing in a smaller way.

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

While people continue to move into BC, migration has been trending downward since 2007. In 2007-2008, the province received about 15,000 more people then left, but by 2009-2010, that number had declined to about 4500.

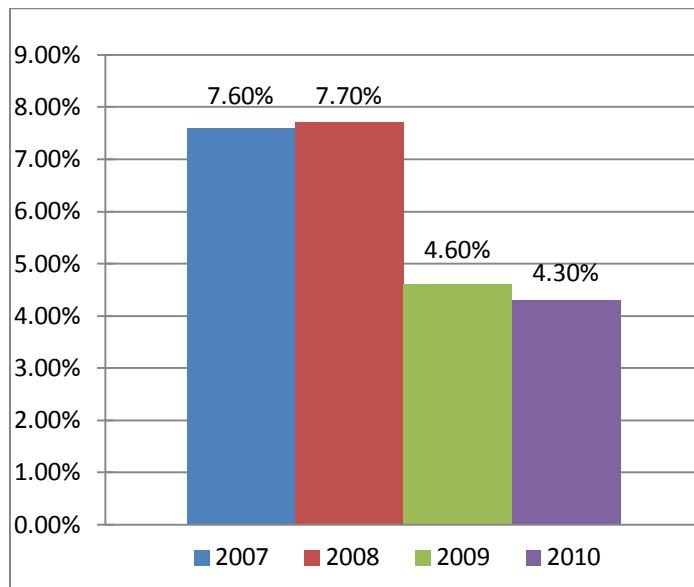
Figure 8 - Net Interprovincial Migration into BC 2007 - 2010



Source: Statistics Canada compiled by BC Stats

Migration trends seem to follow economic/employment trends. When BC had low unemployment rates, more people moved into the province. Jobs attract workers.

Figure 9 - BC Average Unemployment Rates 2007 - 2010



Source: Labour Force Survey Annual Averages Report

Interprovincial migration trends indicate that the majority of interprovincial migrants relocate to southern BC as opposed to northern BC. The greatest share of interprovincial migrants relocate to Central Okanagan, Greater Vancouver, Victoria/Capital region and Nanaimo.

5.3.2 Assessment of Migration Potential from Other Provinces

Another aspect of the research was to consider the potential for inter-provincial migration; what was the probability that workers from outside of BC would move to fill jobs in the natural gas/heavy construction sector here? At least three factors can influence this type of movement. They include:

- Historical migration trends from that province
- Projected employment growth in the other province
- The transferability of skills from industries and occupations prevalent in the other province.

Table 6 on the following pages assesses the likelihood of migration from other parts of Canada, using the criteria listed above.

To summarize Table 6, the most likely sources of migrants to BC include Alberta, Nova Scotia, New Brunswick and the Northwest Territories. These regions have either a history of movement to BC (Alberta, NWT) or higher unemployment rates (Nova Scotia, New Brunswick). Some possibility exists for former military workers in Ontario to migrate as well. If Quebec's economy fails to pick up, workers from there might also considering migrating to BC.

To increase the numbers of interprovincial migrants, in September 2012 the BC government announced that it would work with industry to address needs in high unemployment areas by recruiting workers from other provinces. It stated that it would work to develop up to six industry led recruitment missions and offer improved marketing efforts. Depending on the stage of their project, these recruitment missions may be of interest to natural gas/construction sector companies.

Table 6 - Assessment of Migration Potential from Other Provinces

Province	Key Considerations	Migration Potential:	Labor Source for BC?
Alberta	<ul style="list-style-type: none"> ▪ Solid history of movement between Alberta and BC. ▪ Strong transferability exists for workers for natural gas and heavy industries ▪ Alberta already has a tight labour market with strong employment growth projections. 	<ul style="list-style-type: none"> ▪ Will likely continue to see migration of workers between the two provinces - either on their own or with companies with operations in both provinces. ▪ Alberta will also be a strong competitor to BC for skilled workers. 	Likely
Saskatchewan	<ul style="list-style-type: none"> ▪ Despite transferability of labour force for natural gas and heavy industries, no strong tradition exists for net migration between Saskatchewan and BC. ▪ Province already has a tight labour market with projections of continuing employment growth. 	<ul style="list-style-type: none"> ▪ Given growth of employment opportunities in Saskatchewan, it is unlikely the province will be a significant source of labour for BC. 	Low
Manitoba	<ul style="list-style-type: none"> ▪ The Manitoba labour force has workers in the natural resource sectors that could transfer into the natural gas and heavy industrial industries. ▪ Fairly solid history of net-migration from Manitoba to BC over the last few years. ▪ Manitoba already has a tight labour market with strong employment growth projections - including within the province's oil and gas sector. ▪ The province has established policies and programming to increase immigration to address projected labour supply/demand gaps. ▪ High proportion of the Manitoba population is Aboriginal. Anecdotally, this population is less mobile. 	<ul style="list-style-type: none"> ▪ Limited potential to attract labour supply from Manitoba. 	Low

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Province	Key Considerations	Migration Potential:	Labor Source for BC?
Ontario	<ul style="list-style-type: none"> ▪ Ontario has a huge labour force. Many economic regions in Ontario such as Sarnia-Windsor or Kitchener-Waterloo have labour forces greater than the four northern BC regions combined. ▪ There have been significant shifts in Ontario's employment due to the downturn in the manufacturing sector. Employment is still somewhat volatile given the province's reliance on the US economy and markets. ▪ Ontario is also being hit hard by federal government austerity programs and layoffs. ▪ The trend following a downturn is for industries to come back with increased technology and a need for higher skilled workers. This is true for some of the manufacturing industries in Ontario like pulp and paper and steel manufacturing. ▪ The majority of Ontario's population lives in large metropolitan centres. Those that are used to the more rural lifestyle are also situated in regions of Ontario expected to experience growth in the mining sector. 	<ul style="list-style-type: none"> ▪ Despite a history of attracting residents from Ontario, it is likely that the majority of migrants from this province will relocate to Southern Ontario. ▪ Likely less of an opportunity to attract workers to northern BC given the projected growth in the Ontario's natural resource sector - specifically mining. ▪ Military personnel in the province may be a potential labour supply for northern BC and the natural gas and industrial construction sectors. Many veterans have the skill sets required and experience with mobility and working in more remote areas in all kinds of weather and terrain. 	Low, with possible exceptions for military
Quebec	<ul style="list-style-type: none"> ▪ Quebec has struggled to recover from the economic downturn. Demand for labour is likely to increase in 2013, but Quebec has a significant unemployed labour force that needs to be absorbed, meaning unemployment may remain high. ▪ Mining and pulp and paper industries offer transferable skills and are also struggling to recover and offer long term employment. ▪ Federal government layoffs are hitting the province hard. ▪ The vast majority of residents in Montreal and the Eastern Townships are bilingual and therefore language should pose no barrier to moving to BC. 	<ul style="list-style-type: none"> ▪ Eight percent of the net inter-provincial migration to BC has come from Quebec. Opportunities may exist to attract workers to Northern BC if Quebec's natural resource sectors - mining and pulp and paper in particular- fail to produce ongoing employment in the short and medium-term. 	Possible

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Province	Key Considerations	Migration Potential:	Labor Source for BC?
New Brunswick	<ul style="list-style-type: none"> ▪ The retrofit project at New Brunswick Power's nuclear plant is about to wrap-up, military layoffs are occurring and concerns exist related to employment in mining and power generation. Workers from these sectors have skill sets that would be transferable to Northern BC's natural gas and industrial construction sectors. ▪ The western part of the province is primarily French-speaking; language may present a barrier. 	<ul style="list-style-type: none"> ▪ Some opportunity may exist to attract workers from New Brunswick's natural resource, industrial construction and military labour force if employment growth fails to offset the layoffs projected for these industries. 	Possible
Nova Scotia	<ul style="list-style-type: none"> ▪ Nova Scotia has a mining, pulp and paper and forestry labour force that could transition into Northern BC's natural gas and industrial construction sectors. ▪ Some of the areas hardest hit by economic downturn such as Cape Breton have geography similar to that of Northern BC. ▪ Tentative economic recovery in the province is marked by continued layoffs including RIM, CP Rail and pulp and paper mills. These job losses may motivate workers to look for work outside of the province. 	<ul style="list-style-type: none"> ▪ Nova Scotia may be a labour supply opportunity for Northern BC's natural gas and industrial construction sectors. However, given the relative low rate of migration from this region, promotion and education about the opportunities would be key. ▪ Nova Scotia workers have traditionally moved to wherever work is available-though some may prefer to stay in the province to work on federally funded shipbuilding contracts 	Possible
Newfoundland and Labrador	<ul style="list-style-type: none"> ▪ Transferability exists between the industries and occupations within Newfoundland's labour force and the needs of the BC natural gas and industrial construction industry. The province's natural resource sectors, however, are expected to grow and will need workers for the construction of mines, offshore platforms and hydro-electric projects. 	<ul style="list-style-type: none"> ▪ Given the growth of employment opportunities in Newfoundland and the relatively low rate of migration to BC, the province is unlikely to be a significant source of labour. Traditionally Newfoundlanders have moved throughout Canada, but less migration may occur in the future. 	Low

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Province	Key Considerations	Migration Potential:	Labor Source for BC?
Northern Territories		<ul style="list-style-type: none"> ▪ Given the tradition of movement between the territories - especially the Yukon and BC, there is likely to continue to be labour supply from Northern Canada. However, the increased natural resource opportunities closer to home may be a competing factor. 	Likely

6 > Tapping Underrepresented Sources of Labour?

This section first explores whether Aboriginal people could fulfill some of the workforce needs of the natural gas sector. In the second half, it reviews Canada and BC's programs for immigrants and temporary foreign workers and the potential for these groups as a labour supply for the natural gas sector.

6.1 Aboriginal people

First Nations are already planning a major role in natural gas projects in northern BC. In the Northeast, the Fort Nelson First Nation has 50 percent ownership of an Ensign drilling rig, a gravel pit and a new partnership with Black Diamond Dene, Northwestel, TransCanada Pipeline and Spectra. In the Northwest, the Haisla First Nation has ratified an agreement with Apache Canada, and EOG Resources Canada to proceed with the Kitimat LNG project on Haisla reserve land on the Douglas Channel. The Haisla have also partnered with Douglas Channel Gas Services and LNG Partners, LLC on the Douglas Channel LNG project.

Both First Nations are also active in education and training related to the industry. The Fort Nelson First Nation owns and operates the Chalo School. The school maintains Independent School status in the province of British Columbia and enrolls 190 students in preschool through grade 12. In 2003/2004, Chalo School was honoured as one of ten exemplary schools for Aboriginal education in Western Canada and the Yukon. Most recently, Chalo School was recognized in the House of Commons in Ottawa for its academic success and for being a model school for First Nation education in Canada. The Haisla are on the government body of the Kitimat Valley Institute (KVI), an accredited non-profit post-secondary educational institute located in Kitimat, BC. It provides training to develop people from Northern B.C. for industrial related projects and jobs, and to meet specific local industry and institutional training needs. KVI offers courses of specific interest to the energy industry.

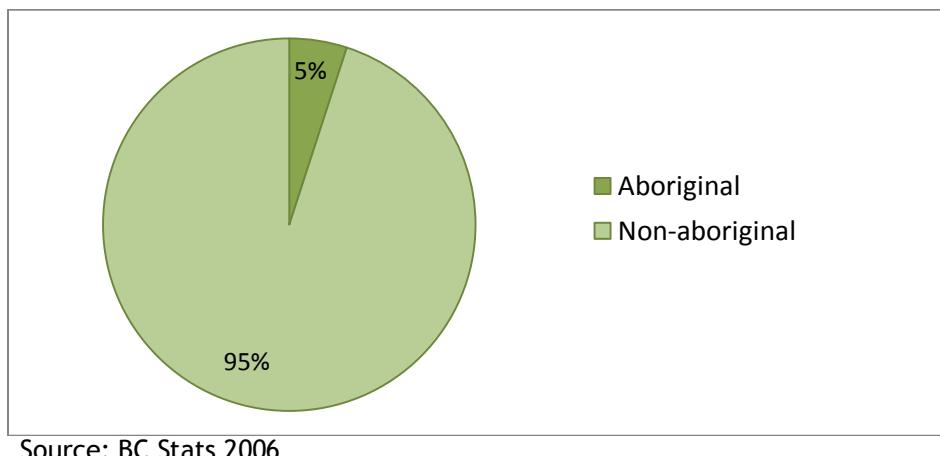
6.1.1 Statistics on Aboriginal¹⁰ People in BC Population

According to the Aboriginal Labour Market Bulletin (2012), in January 2012, the Aboriginal population represented about three percent of BC's population, or 112,600 people. Note however, that this estimate includes only the on-reserve population. According to the 2006 Census, in BC, 62 percent of First Nations people lived off reserve. Taking this group into account, the Industry Training Authority (ITA) estimates that BC has approximately 200,000 Aboriginal people (4.8 percent of the total population.) In Northern BC, First Nations people made up a considerable share of the population in several smaller urban areas. For example, they represented 32 percent of the population in Prince Rupert and 16 percent in Terrace.

The Aboriginal population is significantly younger and growing faster than the general population of BC and so could be a potential future labour supply to the natural gas and construction industries. In 2006, the median age of the Aboriginal population in B.C. was 28 years, compared with a median age of 41 years for the non-Aboriginal population. As seen in the figure below, Aboriginal people make up five percent of the prime working age group.

¹⁰ The term "Aboriginal people" is commonly used in B.C. to refer to people who identify themselves as First Nation, Métis or Inuit.

Figure 10 - BC Population - Percentage of Prime Working Age (15 - 64 years)

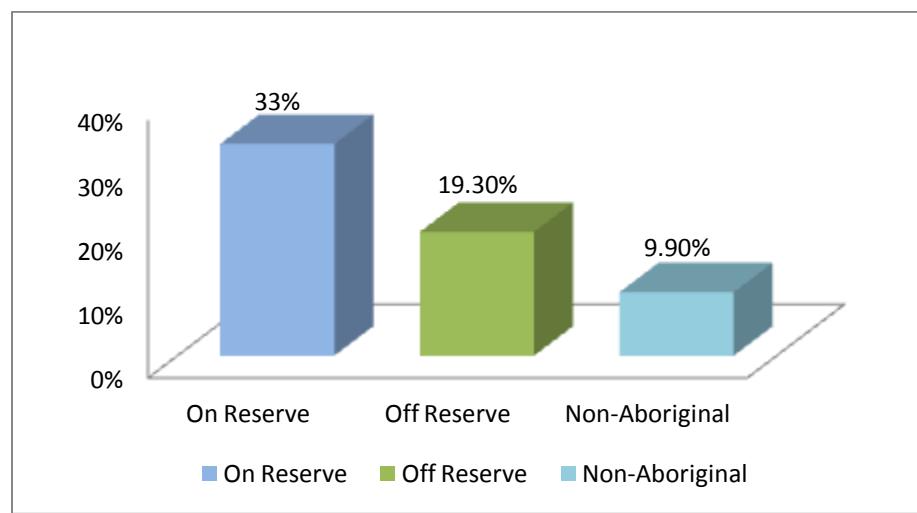


In 2006, of the Aboriginal population, over 25 percent was under 15 years of age, compared with only 16 percent of the non-Aboriginal population.

Unemployment

Unemployment is a problem for many Aboriginal people. Officially, the unemployment rate among the Aboriginal population in British Columbia was 14.8 percent in January 2012. Based on the 2006 Census, BC Stats reports 33 percent unemployment on reserve for those with less than high school education, compared to 19.3 percent for off reserve Aboriginal people and 9.9 percent for non-Aboriginal.

Figure 11 - Unemployment Levels, 2006



Many of British Columbia's First Nations communities are rural, northern and economically underdeveloped. These communities have much higher unemployment rates than the non-Aboriginal population. Anecdotal information from communities suggests they often have far greater real unemployment levels than reported formally. In some cases it may be as high as 80 percent.

Educational Attainment

In 2012, Aboriginal people were under-represented in the BC workforce. One reason may be that many lack formal education credentials, starting with a high school diploma. In 2006, 50 percent of First Nations people aged 25 to 64 living on reserve reported their highest level of schooling as less than high school graduation. About 30 percent of First Nations people living off reserve had this level of education.

High school completion rates continue to be low at the provincial level. For example, the six-year High School Completion Rate (defined as those who graduate within six years of starting Grade 8) in 2007/08 was 47 percent for Aboriginal students as compared to 79 percent of non-Aboriginal students.

Aboriginal students also had lower enrollment in Math 12 and English 12, courses that are often a recommended pre-requisite for trades training. The percentage of Grade 12 Aboriginal students who took English 12 in 2006/07 was 42 percent compared to 76 percent for non-Aboriginal students. For Principles of Math 10, 30 percent of Aboriginal students took the course in 2006/07 compared to 71 percent for non-Aboriginal.

At the post-secondary level, 45 percent of Aboriginal people have completed some form of post-secondary education, compared to 62.5 percent of non-Aboriginal people.

A changing education scenario

In recent years, however, Aboriginal student completion rates have changed.

- From 2006-07 to 2010-11, the six-year completion rate for Aboriginal students rose to 53.7 percent compared to 84 percent for non-Aboriginal students.
- 2,908 Aboriginal students graduated from public schools in 2010-11, an increase of 131 percent increase since 2000-2001.

The B.C. Ministry of Advanced Education reports a 25-percent surge in post-secondary enrolment among Aboriginal youth since 2008. Statistics from some BC colleges and universities also show that Aboriginal students are starting certificate and degree programs in a broader range of fields.

Completion rates are also in an upturn. At the British Columbia Institute of Technology (BCIT), for example, program completion rates among Aboriginal students have increased by 22 percent since 2006. Enrolment went up by 25 percent in the same period, making BCIT the school with the largest number of enrolled Aboriginal learners in the Lower Mainland in 2012. On a provincial basis, around 2,500 certificates, degrees, and diplomas were awarded in 2010 to Aboriginal students, as compared to 2,100 in 2007.

After a year of consultations with Aboriginal people, in June 2012 the BC Ministry of Advanced Education unveiled a new educational framework called the *Aboriginal Post-Secondary Education and Training Policy Framework and Action Plan, 2020 Vision for the Future*. The program provides more than \$16 million in programs and financial assistance to help Métis, Inuit, and First Nations students meet their higher education goals.

6.1.2 Aboriginal people and the trades

While it would be helpful to know the numbers of Aboriginal people in the trades, the ITA does not track such information. We do know, however, that the number of Aboriginal people in apprenticeship technical training in the public post-secondary education system has grown considerably - from 609 people in 2006/07 to 1,236 people in 2010/11, an increase of 103 percent.

In 2012, the BC government announced a \$4 million investment to provide Aboriginal learners with opportunities for skills training and employment. The Aboriginal Training for Employment Program (ATEP) will provide funding for studies in occupations including health-care assistants, chefs, construction workers, entrepreneurs, and tourism operators.

In 2012/13, the Industry Training Authority's (ITA) Aboriginal Initiatives is providing \$3 million towards 450 Aboriginal people in community-based partnerships funded through the financial contributions of the Canada-British Columbia Labour Market Agreement (LMA). ITA seeks to increase Aboriginal participation in the trades and released a study in June 2012 addressing this issue, *Barriers and Successful Approaches to Preparing and Employing Aboriginal Trades People*¹¹. According to the report, the six most common barriers for Aboriginal people taking up the trades are:

1. Insufficient educational pre-requisites
2. Lack of readiness at the community, family and individual level
3. Lack of access to transportation
4. Lack of funding for trainees and training organizations
5. Employer willingness/capacity to sponsor apprentices
6. Aboriginal awareness in employer organizations

The report identifies successful approaches that include holistic training and client support, working with and in Aboriginal communities and partnerships.

¹¹ Industry Training Authority, June 2012.

6.1.3 Case Studies: Programs for Aboriginal people and the trades

Part of the research for this report involved profiling organizations that have developed specific programs to encourage Aboriginal participation in the trades. Below are short overviews of some of these initiatives. Greater detail on these programs is available in the Appendices.

1) GDI Aboriginal Apprenticeship Program (Saskatchewan)

The goals of the GDI Apprenticeship Initiative are to promote Aboriginal participation in apprenticeship and trade skills training and related employment and initiate and develop partnerships with industry. The initiative provides apprentices with a salary while they train in a skilled trade

2) Bridging to Trades, Nicola Valley Institute of Technology's (NVIT) Trade Routes program

NVIT provides a mobile trades training classroom that travels to First Nations communities across the province. The program offers an introduction to trades, providing sixty hours of each trade - welding, millwright, electrical and plumbing-pipefitting. Academic upgrading in math and English is also included, as well as a cultural component.

3) PTP ASEP (Aboriginal pipeline training program)

This program was a partnership between the First Nations Communities and the Pacific Trail Pipelines and Kitimat LNG (Liquid Natural Gas). They planned to increase employment opportunities from the construction and operations of the natural gas pipeline.

4) Northern Opportunities Program

Northern Opportunities (NOpp's) is an innovative northeastern British Columbia partnership. Its goal is to provide students with a seamless learning pathway that starts in secondary school, continues into post-secondary trades, vocational and academic training and culminates in a career. The partnership is comprised of the Fort Nelson, Peace River North, and Peace River South School Districts, Northern Lights College, area Aboriginal organizations, Chalo School, local industry and communities.

The NOpp's advantage is found in its collaborative delivery of Dual Credit training programs. These programs combine secondary school, college studies and work-based training enabling youth to simultaneously earn a secondary school diploma and advanced credit training in post-secondary and/or industry certification.

5) Power Engineers Program

Northern Lights College (NLC), in partnership with Encana, Spectra and the North East Native Advancing Society (NENAS)-led Northeast Aboriginal Skills Employment Project (NEASEP) was able to offer power engineering and gas processing training at their Fort Nelson Campus.

The program provided Fort Nelson area residents the opportunity to train locally for highly skilled, high paying natural gas industry careers. It focused on providing entry-level qualifications for power engineering and gas process operations. Graduates also have the necessary background to progress to more advanced levels of certification. Funding agencies and industry encouraged First Nation participation in the program, which resulted in a student body that was approximately 75 percent Aboriginal.

6) Kitimat Valley Institute

Kitimat Valley Institute (KVI) is an accredited non-profit post-secondary educational institute located in Kitimat, BC. KVI is focused on regional and Aboriginal employment and designs programs to meet the specific needs of industry. It also offers adult upgrading.

7) Construction Careers Development Project- Career Centres

The Saskatchewan Indian Institute of Technologies (SIIT) partnered with a number of organizations to create the Construction Careers Development Project. This evolved into a number of Career Centres across Saskatchewan. The Centres work to match industry's requirements for skilled workers with the availability of an unemployed/under-employed labour force, focusing particularly on First Nations/Aboriginal people.

8) Skilled Trades Employment Program (STEP), Aboriginal in Trades Training (AITT)

The Skilled Trades Employment Program (STEP) is a no-fee development program operated by the B.C. Construction Association (BCCA). STEP is driven by the demand-side of the employment equation, focusing on industry employers' needs in order to match the right job seekers with the trades positions required.

6.2 Workers from Other Countries

Workers from other countries are becoming crucial in all industries in BC. They will likely play an important role in the natural gas industry, particularly during the heavy construction phase of the various proposed LNG projects. Companies and governments have long relied on immigrants and foreign workers to ensure a good supply of talent is available during boom times.

6.2.1 Facts and statistics related to immigration to BC

Quick Facts on Immigration from the Immigrant Employer Council of BC (2012)

- BC's global competitiveness depends on its success in integrating immigrants to address skilled labour shortages.
- As of 2011, 100 percent of BC's net labour market growth comes from immigration.
- By 2020 the province expects over one million job openings, two-thirds of which will be replacement jobs as people leave the workforce (death, retiring).
- Recent immigrants to Canada struggle in the labour market. Their unemployment rates compared to similarly-aged non-immigrants are almost twice as high. Median wages of recent immigrant workers are also about 49 percent lower compared to native-born workers.
- The province of BC has made immigrant workforce integration a top economic priority and a key component of the BC Jobs Plan

Since 2006, about 42,000 new immigrants have moved to BC each year. In the first quarter of 2011, there were 7,220 international immigrant landings—5,252 arriving from Asia (BC Stats, June 2011). Immigration accounted for 65 percent of the province's population gain between 2006 and 2011.

Statistics from 2010 show that immigrants from 170 countries migrated to BC. Mainland China has continued to be the top source country and has been so since 1998. The Philippines was the second largest source of immigrants and India third. Rounding out the top five in 2010 were United Kingdom and South Korea. The top three source countries accounted for nearly half (49.4%) of all immigrant arrivals to BC.

Table 7 - Immigrants to BC (aged 25-64) with Skill Level Stated, 2008-2010

Skill Level	2008	2009	2010
0 - Managerial	29.5%	29.0%	29.7%
A - Professional	37.7%	34.5%	36.3%
B - Skilled and Technical	20.4%	23.9%	20.8%
C - Intermediate and Clerical	12.1%	11.8%	11.1%
D - Elemental and Labourer	0.4%	0.7%	2.1%
Total	100.0%	100.0%	100.0%
Absolute Number	11,706	10,895	12,266

Source: Citizenship and Immigration Canada

In 2010, 54.4 percent (15,916) of new immigrants to B.C. aged 25 plus arrived with a university degree. An additional 21.6 percent (6,332) came with other forms of post-secondary education or training. Another 19.7 percent (5,732) came with secondary school or less, while those with no formal education accounted for 4.3 percent (1,257) of total.

According to data from 2009, the North Coast, Nchako and Northeast Development Regions received 508, 268 and 557 new immigrants, respectively. Together these three regions received less than one percent of all BC immigrants arriving.

- Immigrants who arrived with either a university degree, college certificate/diploma or trade qualification represented about 70 percent of immigrants to all three regions.
- Nchako had the highest proportion (86 percent) of all BC development regions of immigrants who came with English skills. The North Coast and Northeast had 83 percent arriving with English skills
- The primary source countries of immigrants to the North Coast region were the United States, the Philippines, and the United Kingdom. For Nchako these were the United States, South Africa and the Philippines. For Northeast these were the Philippines, South Africa and the United States.

6.2.2 Immigrant programs at a glance

This section provides an overview of major provincial and federal immigration programs, of interest to the natural gas sector.

Provincial Nominee Program (PNP)

The federal and BC governments co-manage the PNP program. The PNP allows BC employers to attract and retain qualified foreign workers to meet labour needs by providing an expedited pathway to permanent residency. It also helps attract business investment and facilitate job creation across the province. Nominees must either have a job offer of indeterminate length from a BC employer, have a master's or doctorate degree from a BC post-secondary institution in select fields or be experienced entrepreneurs who are willing to invest in and actively manage a business in BC.

The BC PNP is made up of two main components:

1. Strategic Occupations - applications are considered in five categories, including Skilled Workers, Designated Health Professionals, recent international graduates from eligible Canadian post-secondary institutions, recent master's and doctorate graduates from a BC post-secondary institution in the natural, applied or health sciences, and entry-level or semi-skilled workers in select occupations; and,
2. Business - applications are considered in three categories, including Business Skills, Regional Business and Strategic Projects.

Under the PNP, BC establishes the selection criteria and evaluates applications to nominate immigrants for expedited permanent residence. The federal government retains final selection authority and determines admissibility of applicants on the basis of health, criminality and security grounds. Prospective immigrants apply first to the BC PNP for nomination and then to the federal government to become Permanent Residents, along with their immediate family members.

Between 2004 and 2008, the number of immigrants becoming residents of BC through the PNP increased more than six-fold, from 598 in 2004 to 3,629 in 2008. The top source countries of PNP immigrants were the United Kingdom, Mainland China and the United States.

As shown in the table below, between 2004 and 2008, 77.7 percent of PNP immigrants to B.C. intended to settle in the Greater Vancouver area. This is lower than all immigrants arriving in B.C., 86.5 percent of whom listed Greater Vancouver as their destination.

Table 8 - Provincial Nominee Program Immigrant Destinations

BC Development Region	PNP Immigrants	Percent
Lower Mainland - Southwest	7,311	77.3 %
Vancouver Island and Coast	799	8.4 %
Thompson - Okanagan	721	7.6 %
Cariboo	230	2.4 %
Kootenay	175	1.8 %
North Coast and Nechako	86	1 %
Northeast	89	0.9 %
No destination listed	51	0.5 %
Total PNP immigrants	9,462	100.0 %

Source: BC Immigration Trends 2010 Highlights

Levels of education and official language ability are particularly strong among PNP Principal Applicants and adult spouses and dependants (those 25 years and older). Over 60 percent of Principal Applicants had a university degree or higher. A further 28.8 percent had a college education or trade certificate.

The federal government released a national evaluation of the PNP program in January 2012, which found the program to be highly effective. Similarly, a comprehensive evaluation of the BC PNP in 2011 showed strong economic outcomes for BC nominees and the provincial economy.

With such positive results, the BC government in 2012 is seeking to increase the number of immigrants it can sponsor under the PNP program. In the *BC Skills and Training Plan* released in September 2012, the government noted that:

Currently, the federal government controls immigrant levels and has placed an annual cap of 3,500 on economic immigrants under the Provincial Nominee Program. The number of economic immigrants to British Columbia is trending down, and immigrants selected by the federal government do not come with the skills that are urgently required by employers across the province. The number of international students in the trades and technical training should be higher to help meet our labour market needs....

To improve our recruitment of trades and technical workers from other countries, we are committing to three international recruitment missions for 2012/13 for high-demand occupations and to engage employers in retaining international workers with key skills through our Provincial Nominee Program. And to attract more international students to our trades and technical programs, we are targeting 500 new students by 2015.¹²

¹² *BC Skills and Training Plan* P. 14

To March 2013, the BC government is embarking on international skilled worker attraction activities in the following markets:

- UK - November 10 and 11 / November 17 and 18, 2012
- France - November 13 to 15, 2012
- Philippines - January 2013 (to be confirmed)
- US - March 2013 (to be confirmed)

New Provincial Pilot program

Due to the acute labour market shortages in the Northeast region, in 2012 the provincial government introduced a two-year pilot project that expands the entry level and semi-skilled occupations that are eligible under the PNP. This approach is particularly important in towns like Dawson Creek, for example, where many retail shops and restaurants need to fill entry-level positions.

The BC government is making it easier for foreign workers to apply for permanent residence through the PNP. Part of the process is increasing the jobs that can be considered by hundreds of categories of positions. The change is meant to facilitate more applications for permanent residents.

Federal Immigration Programs

The federal government manages the Federal Skilled Worker Program (FSWP). It established the FSWP to attract immigrants who possess skills and capabilities that enable them to integrate and contribute successfully to the Canadian labour market and economy. The government assesses applicants to the FSWP on their education, work experience, age, English and/or French abilities, adaptability, and other criteria shown to result in better employment prospects in Canada. The FSWP remains the largest source of economic immigrants for Canada and BC.

Between 2006 and 2010, the FSWP made up 50 percent of economic immigration to Canada and about one third of overall immigration. In 2010, 16,653 Federal Skilled Worker class immigrants arrived in BC, an increase of 37.8 percent over 2009 and 3.8 percent over 2008. FSWP admissions to BC have fluctuated significantly over the past decade from a high of 21,810 in 2005 to a low of 10,028 in 2011.

Federal programs, however, have been undergoing major changes in 2012. For many years, the number of applications to the FSWP far exceeded annual processing and admissions targets. So, as a first step, in early 2012 the federal government announced a moratorium on new applications under the Federal Skilled Worker program until 2013. It also refunded 280,000 visa applications, reducing the backlog to 110,000.

In the interim, the federal government intends to build a “just-in-time” immigration system, modelled after those of New Zealand and Australia. In the words of the federal Minister of Immigration:

The new system, in part, will be based on what's called an expression of interest system. Newcomers from around the world will make an application online if they want to come to Canada. They'll fill out a basic form. And eventually, with that form, they'll have to attach a pre-assessment of their credentials that we will run by the national bodies representing the professional licensing organizations. Once they've done those pre-assessments, they'll go into a pool of applicants to share their applications with employers and with provinces that have Provincial Nominee Programs.

In a practical sense, what does this mean? Employers will go online, register with (the immigration department), and do a search in that pool of pre-qualified applicants, to look for the people who have the skills that he needs and have expressed an interest in coming to Canada. He can then contact them, do his due diligence, interview them on Skype, hire an overseas recruitment agency, do what he needs to do. And if he's satisfied with their skills, he can offer them the position. We verify the person's application, and then bring them here in two-to-three months.¹³

Skilled Trades Stream

Another important new program will be the Skilled Trades Stream for federal economic immigration. The federal government unveiled this program as part of plans for a modernized Federal Skilled Worker Program (FSWP) in July 2012.

Currently, FSW applicants are assessed against a 100-point grid, with a pass mark of 67. The grid takes into account the candidate's official language ability, education, work experience, age, whether they have a job offer in Canada, and their overall adaptability (which awards points for previous work or study in Canada, spouse's education, relatives in Canada and so forth).

Some criteria in the FSW grid, such as years of education, have traditionally favoured professionals and managers more than skilled trades. As a result, in 2012, skilled tradespersons only make up three percent of all FSWs entering Canada. The proposed FSWP Skilled Trades program would create a means for skilled tradespersons to be assessed on criteria geared towards their occupation, putting more emphasis on practical training and work experience rather than formal education. Under the new program, immigrants will be assessed based on their ability to meet four requirements:

1. Hold a qualified job offer from at least two Canadian employers of at least one year in duration or a Certificate of Qualification from a province or territory.
2. Be proficient in one of Canada's official languages. (Note that as of November 1, 2012, language requirements in general will become more stringent.)
3. Have at least twenty-four months of work experience in the trade.
4. Meet the qualifications that satisfy the employment requirements as described by the NOC.

¹³ Speaking notes for The Honourable Jason Kenney, P.C., M.P. Minister of Citizenship, Immigration and Multiculturalism on “Moving Towards a Targeted, Fast and Efficient Immigration System focusing on Jobs, Growth and Prosperity” to the Surrey Board of Trade Surrey, British Columbia June 26, 2012

The new class will be open to occupations, including Industrial, Electrical and Construction Trades; Maintenance and Equipment Operations Trades; Supervisors and Technical Occupations in Natural Resources, Agriculture and Related Production; Processing, Manufacturing and Utility Supervisors and Central Control Operators, as well as Chefs, Bakers and Butchers.

Temporary Foreign Worker Program

The Temporary Foreign Worker Program allows employers to hire foreign workers to fill temporary labour and skill shortages. Employers may be able to hire eligible foreign workers to work temporarily if they can prove that:

- They cannot find suitable Canadians or permanent residents to fill the jobs
- Bringing the workers to Canada will have no negative impact on the Canadian labour market, and
- They meet all other requirements and conditions.

Employers can hire workers abroad or already in Canada. Examples of qualified foreign workers already in Canada include those who are about to complete a job contract with another employer or those holding an open work permit that allows them to work for any employer in Canada.

Businesses have taken advantage of the federal temporary foreign worker program to meet their labour needs. For example those brought in under the Federal Skilled Worker Program remained relatively steady at around 110,000 per year over the last decade. In contrast, the number of provincial nominees entering Canada increased fifteen-fold, while the number of temporary foreign workers increased from 120,000 to 180,000 annually.

In 2012, the federal government introduced new rules to prevent businesses from abusing the TFW program. It limited the number of years a TFW can remain in Canada cumulatively and tightened hiring regulations for them. Employers will be able to use the program to hire foreign workers for up to four years. The changes include stiffer penalties for illegitimate job offers. As well, the government will prohibit employers known to abuse the program from using it again.

In 2009, 69,000 temporary foreign workers were in BC, more than double the 31,000 in 2005. Almost two-thirds chose to work in Mainland-Southwest and one-third did not state the region where they would work. Of the remaining eight percent, most chose Thompson - Okanagan and Vancouver Island - Coast. Northeast, Thompson - Okanagan and Kootenay had the largest percentage increases from 2005 to 2009.

In the spring of 2012, the federal government announced changes to the Temporary Foreign Worker Program to speed up the process. With the TFW program, employers must obtain a Labor Market Opinion (LMO) from Human Resources and Skills Development Canada (HRSDC) and Service Canada. This LMO assesses how the offer of employment would affect the labor market and whether hiring a foreign worker is necessary to ensure the company can fill the position. Employers have complained that this process is long and laborious. With the changes, employers with a positive track record in accessing the program will be eligible to receive an accelerated Labour Market Opinion (LMO) within 10 business days, with a focus on employers seeking foreign workers for highly skilled occupations. The government will also try to weed-out employers who intend to abuse the process by implementing risk-based and random in-depth compliance reviews of employers after LMOs are issued.

Alberta Pilot

The federal government is evaluating other possible changes to the TFW program, through various pilot projects. One of the pilots allowed Citizenship and Immigration Canada (CIC) to issue an occupation-specific work permit to TFWs working in Alberta in the steamfitter-pipefitter trade. Six new occupations have been added to the pilot: carpenter, estimator, heavy-duty equipment mechanic, ironworker, millwright and industrial mechanic and welder. The pilot will operate from July 16, 2012 until July 31, 2016.

Under the pilot, TFWs with the appropriate certification or a letter of approval from Apprenticeship and Industry Training (AIT) can come to Alberta to work temporarily in a specific occupation without requiring the employer to have a Labour Market Opinion (LMO) from Human Resources and Skills Development Canada (HRSDC) and Service Canada. Certified workers can move freely between employers provided they continue to work in the same occupation. To ensure the protection of the Canadian labour market, TFWs taking part in these new occupations (including steamfitter/pipefitter) will be required to have a job offer from an Alberta employer or recognized Group of Employers.

Certified and uncertified workers are eligible to apply to the pilot. The government will issue a one-year employer-specific/occupation-specific work permit to an uncertified worker with an approval letter from AIT for the Alberta Qualification Certificate Program. Once certified, the foreign worker can apply for a two-year open work permit, allowing movement between employers. TFWs working in Canada or applying from abroad who hold an Alberta Qualification Certificate or trade certificate recognized in Alberta can apply for the two-year occupation-specific/open work permit, where they will be able to move freely between employers.

6.2.3 Challenges with immigrant and temporary foreign workers

Immigration can be a source of labour for the natural gas sector, but it also brings challenges. Some are related to the workplace, others to settlement in the community. They include:

- **Language** - To demonstrate language capacity, companies are using academic tests or generic tests which generally fail to measure communication capacity for the workplace. Problems then arise when immigrants arrive at the firm because their communication skills are lacking. Many workplaces use industry-specific jargon, acronyms, idioms, and professional slang that can be difficult for immigrants to master if their first language is neither English nor French, even when they have met the language requirements. In fact, language can be a problem even with people coming from Britain and Ireland because differences exist in the use of technical terms. Language comprehension has huge implications in relation to safety, so language training can be crucial, particularly for semi-skilled migrants who may arrive with weaker language skills.
- **Orientation to the community** - Initial settlement assistance and orientation is one of the most immediate needs of immigrants arriving in a new community. Faced with a completely new environment, immigrants often need help finding housing, navigating the banking system and becoming oriented within the town and the local schools. Beyond these initial requirements, many require other kinds of support in the medium-to long-term. Access to culturally-appropriate food is a second major need, especially for those with particular dietary needs such as halal food.
- **Rental housing** - Having an appropriate, affordable place to live is crucial for immigrants because it is one of the most important components of integration: appropriate housing that provides stability so that newcomers can pursue training, employment, and making connections. New immigrants generally require rental units at least until they can become more financially stable. In addition, economic immigrants often arrive without their family, and then sponsor them to come at a later date, so they require small units in the interim. Even in times of housing surplus, small communities tend to lack small-unit rental housing, and this can ultimately prevent immigrants from moving to the community.
- **Transportation** - Most small communities lack public transit, and car ownership is economically and logically out of reach, at least initially, for many immigrants. In communities with a shortage of housing, access to transportation can alleviate the problem by allowing workers to live elsewhere and commute to their place of work. Moreover, in most rural areas, services tend to be spread out or located in far off urban centres. Having transportation allows immigrants to access settlement support, training opportunities and health care and enables them to address cultural needs.

Temporary Foreign Workers

Unions strongly oppose the TFW program, arguing that it depresses wages and leaves workers vulnerable to exploitation. In their view, workers come to Canada, are given virtually no information about their rights, enforcement mechanisms or organizations that can help them in the event of abuse. Further, workers are brought in on tied work permits and so can only work for the one employer named on these documents.

Many recruiters also charge migrant workers to place them in jobs. The Vancouver Sun, for example, reported in October 2012 that a reporter, posing as a Chinese miner, contacted Chinese recruiters using a Chinese version of MSN Messenger. He was told by one recruiter, that he would have to pay an initial \$4,700 when signing a job contract and \$7,800 over 20 months after arrival in Canada.¹⁴ In other cases, workers may arrive in Canada to find the job they came for is nonexistent or is different from what they thought they were being brought in to do.

For some TFWs, language barriers may generate workplace health and safety issues, prevent them from understanding their rights and limit comprehension of information required for optimal productivity. In non-metropolitan areas TFWs may also have challenges in connecting with the broader community to help alleviate isolation and vulnerability. As a result, employers have been expected to play a large role in supporting TFWs in the workplace. However, TFWs have immediate needs, separate from their work environment, such as accommodation, banking, shopping and transportation.

TFWs can have an impact on the local community, particularly in rural areas. Their temporary status often results in a lack of continuity and investment at the community level. Communities have to respond to the constant uprooting of people and live with highly transient workplaces and neighbourhoods. While many TFWs participate in the community, an evaluation report from Alberta in 2010 showed in some cases their temporary employment and immigration status means they send their income back to their home country. This limits their net economic contribution to the host community in Canada.

A larger challenge is preparing the small communities for a quick influx of people. Increasing the numbers of TFWs in smaller communities can add pressure to all programs and services as well as a community's housing, schools and health care services. Companies need to provide information to community agencies, school boards, health authorities, and municipal officials in advance of TFWs arriving in their jurisdictions to assist with planning. Communities are sometimes unprepared for larger numbers of TFWs, especially when they receive no information from employers or government on the numbers, countries of origin and languages spoken. Some communities have found success in sharing information and preparing for the arrival of TFWs by establishing community councils, with representation from all stakeholders.

¹⁴ "Chinese company slams worker recruitment tactics". Retrieved October 18, 2012 from <http://www.vancouversun.com/business/Chinese+company+slams+worker+recruitment+tactics/7412519/story.html>

6.3 Summary

Aboriginal people and immigrants could be valuable sources of labour for the natural gas sector.

Amongst Aboriginal people, improvements in secondary and post-secondary education completion rates over the past five years mean they are increasingly acquiring the skills to be successful in the labour market. The population is young and large and has the potential to contribute many workers over a long period of time.

A strategy that includes Aboriginal people as a potential source of labour supply needs to leverage existing best practice models and features including:

- systemic connections between secondary education and post-secondary education/training and employers to encourage and support the successful transition of Aboriginal people from school to work e.g., dual credit programming;
- holistic support programs such as pre-apprenticeship training and employment readiness training that increase success rates in post-secondary training and employment;
- mechanisms to remove barriers to accessing training or obtaining employment, like driver's licence training, safety training, etc.;
- coaching and mentoring to provide support for making successful transitions and integrating into the workplace; and
- cultural awareness programs for employers and training providers.

With immigrants, the government programs used to bring foreign workers into Canada are changing significantly and rapidly. This group also needs key supports to ensure successful integration into the labour force. A strategy that looks to immigrants as a potential source of labour needs to consider:

- mechanisms for keeping employers abreast of available provincial and federal immigration programs and their requirements. They might also allow employers to collaborate on preparing and managing applications;
- a communication effort that keeps government informed of the priority occupations for the natural gas sector and employers linked to government attraction activities for international workers and students. For example, the industry might ask for additional pilot programs for Temporary Foreign workers with changes of benefit to natural gas employers;
- collaboration with relevant immigrant settlement organizations to ensure challenges with regard to language, housing, and transportation are addressed; and,
- a communication strategy that informs and addresses issues and challenges related to integrating immigrants and TFWs into northern communities.

7 > Capacity of the BC Training System

Another goal of the supply-side environmental scan is to determine the capacity of BC educational institutions to provide training for high demand occupations. This section explores issues related to capacity and apprenticeships.

7.1 Training capacity

In British Columbia, training for trade occupations is delivered to a standardized capacity of 16 seats per intake. Training providers determine the mix of programs and number of intakes they offer during a given year in response to industry and community needs.

It is difficult to distil trades training capacity per year for all trades into a single number. Planning and implementation of trades training involves a large number of organizations and a complex process balancing industry and community needs with available facilities, equipment, and instructors.

In British Columbia, the Industry Training Authority (ITA) governs the trades training system and provides funding to over 40 ITA approved training providers delivering trades training throughout the province. Individual training providers first submit training plans assuming a standard 16 seats per intake; they determine the number of intakes in a given year by taking into account industry and community needs and available facilities, equipment, and instructors. They then submit their plans to the ITA, which works with all training providers to ensure programming and funding is allocated efficiently across the province.

Training providers may modify their offerings to respond to new or changing needs. The ITA must approve any changes, however, after assessing the impact on overall provincial plans. As a result, the number of intakes per program and the range of programs a training provider offers each year varies. The training capacity estimates provided in this section represent informal estimates by training providers. They assume that existing facilities, equipment, number of instructors, and funding levels remain constant.

Discussions with training providers across Northern BC confirmed that as a whole, training providers are willing to be flexible and responsive to industry needs. However, given the process of obtaining funding for and configuring program offerings is highly complex, they need significant lead time for planning, usually a minimum of 12 months. To the extent possible, colleges prefer that industry (and/or companies) be as specific as possible about the number of people they require for a given occupation and the timeframe they are needed by.

Training providers also said that with a little creativity (for example, training at night), they might be able to increase capacity beyond the standard 16 seats per intake, potentially by 20-25 percent. (Note that these are “best guesses” only.) In part, this potential increase in capacity would also depend on securing instructors. Instructors for high demand trades can be extremely challenging to find, since people with skills can earn much higher salaries in industry than colleges can afford to pay.

Of interest to the natural gas industry, in 2012, Northern Lights College began a strategic four year plan, building on the premise that high demand from the oil and gas sector will continue. The plan includes capital investment for a new trades centre in Dawson Creek that will double capacity for existing programs (millwright, power engineering, plumbing, carpentry, welding, etc.). This investment would result in a building designed for instructional purposes, replacing the College's existing facility that was a re-purposed manufacturing building. In September 2012, the College was seeking approval for funding from the BC government for this expansion.

Finally, between 2004 and 2006, the ITA initiated a suite of programs (ACE IT and YES2IT) in high schools, to increase the number of young people entering into the trades. ACE IT enables students to begin an apprenticeship while still in high school; YES2IT provides hands-on opportunities for grade 6 and 7 students to learn about the trades. In 2012, almost all of the 60 school districts in BC offer the ACE IT program, with some 4,000 youth participating. These programs represent an opportunity not only to engage and increase the number of apprentices training in the system, but also to potentially harness training facilities and equipment.

Interviews with college officials also highlighted the following additional issues:

- **Indenturing apprentices** - In the view of the colleges, a major barrier to expanding trades training is getting students indentured to employers as apprentices. From their perspective a "catch 22" situation has arise with industry - when the economy is down companies take no apprentices. When the economy is up, they have no time to train apprentices and want full journey persons (electrical and millwright trades are the exception). Some college think incentives and enforcement must be increased to better coordinate training supply and demand.
- **Need for more coordination** - Some colleges believe the apprenticeship system could be optimized through greater coordination between the training system and industry, to address issues. An idea would be to create regional planning mechanisms that include all partners.
- **Matching training space with demand** - Currently the BC system has excess demand for trades training and unused training capacity mainly because apprentices/students can choose where they want to take their training. For example, Northern Lights College has the capacity to support a greater student population base; residences in Ft. St. John and Dawson Creek currently running at 80 percent capacity.

According to college officials, apprentices will often schedule their own training based on personal preferences. Many will wait for a spot to open in Kelowna or Vancouver in the summer (rather than start a course in the north in January). Employers are generally unaware that apprentices can obtain classroom training where ever they want and tend to believe what the apprentice tells them. If the firm is busy, employers are happy to keep the apprentice on the job, so delaying the completion of needed classroom training.

- **Work experience for other programs** - For non-trades programs, incorporating on-site work experience and mentorship opportunities is key to successfully preparing students for the workplace.

7.2 Apprenticeship data analysis

This section presents and analyzes British Columbia apprenticeship data related to the high demand trades. The results are based on specially-requested data for this project from the Industry Training Authority, covering the years 2008 to 2012.

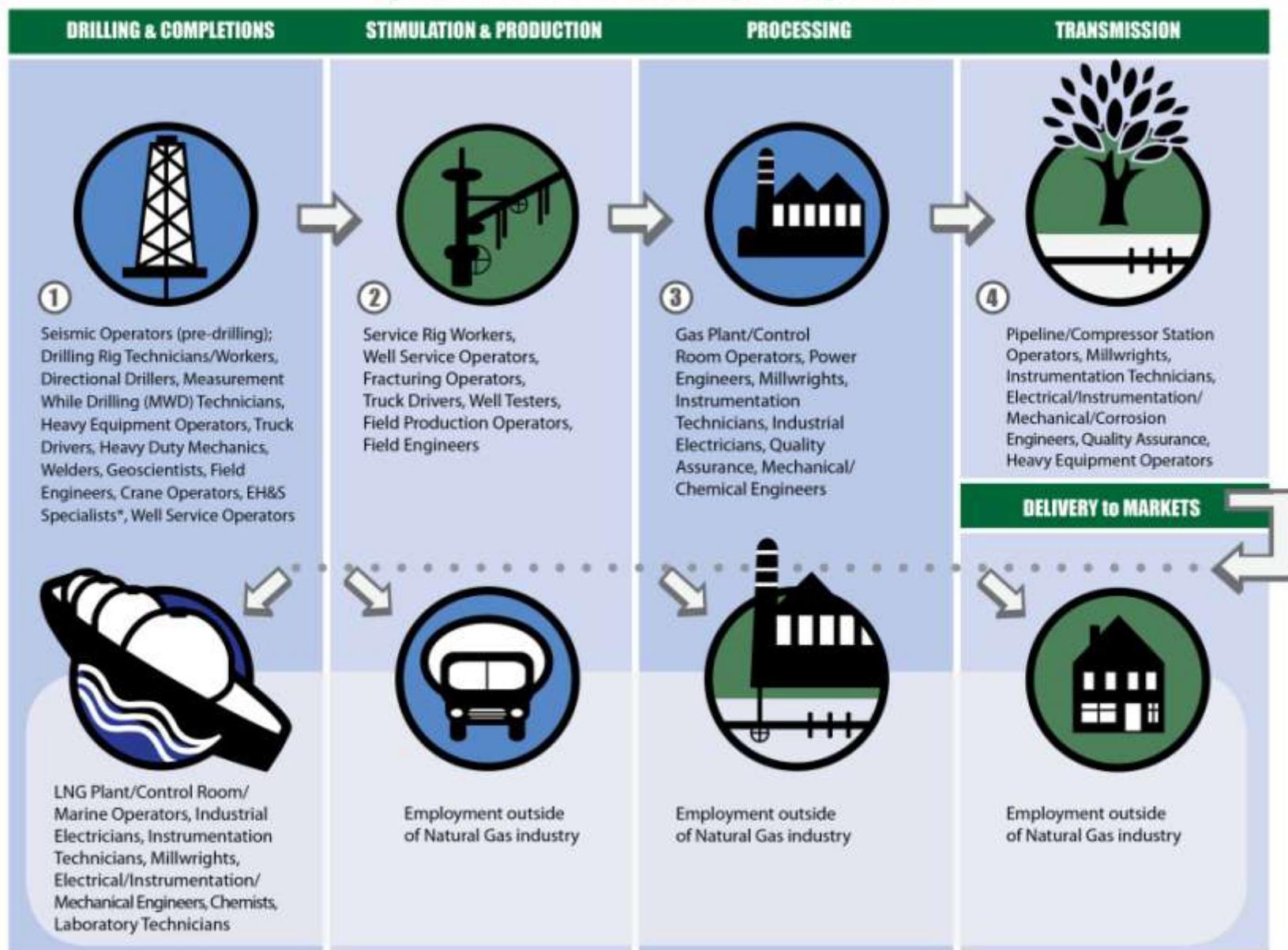
7.2.1 Relevant Trades for the Natural Gas Sector

Based on the material provided in the demand report prepared for this project, the trades listed below will likely be in high demand for the natural gas and heavy construction sectors.

- Carpenter
- Construction Electrician
- Domestic/Commercial Gasfitter (Class A and B)
- Heavy Duty Equipment Technician (HDE Mechanic)
- Industrial Instrumentation Mechanic
- Insulator
- Machinist
- Metal Fabricator (Fitter)
- Millwright
- Mobile Crane Operator (5 programs)
- Plumber
- Steamfitter/Pipefitter
- Welder - (Level "A", "B", "C")

The figure on the following page provides an overview of typical occupations the natural gas sector employs. The appendices include a table listing the institutions that offer training for many of the in-demand occupations.

Key BC Natural Gas Industry Occupations



* These specialists are needed in every phase.

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7.2.2 Apprenticeship Data and Analysis

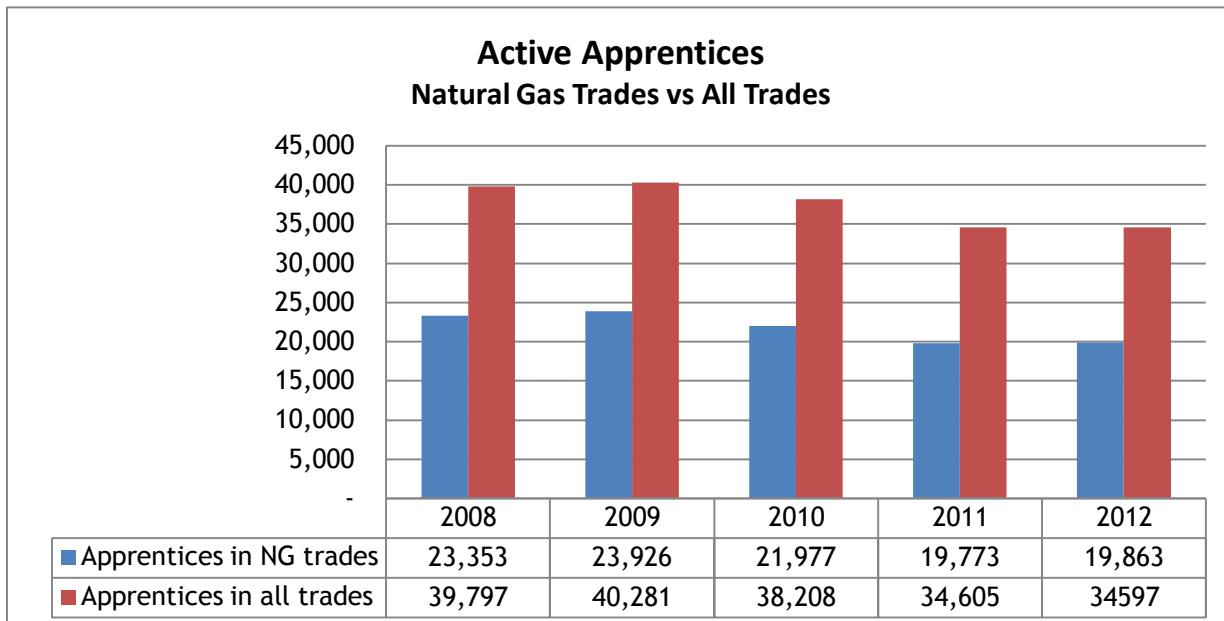
A review of five years of data showed various trends, described below.

An opportunity to increase apprenticeships in Northern BC

The potential demand for skilled trades persons by the natural gas sector is significant. Competition from other sectors will be fierce, particularly for workers in the northwest and northeast regions of BC.

The BC apprenticeship training system will be a key source of labour supply; however, current and past apprentice trends suggest additional effort will be required to increase the number of apprentices entering the system. The total number of active apprentices in all trades has been generally declining, dropping from 39,800 in 2008 to 34,600 in 2012. The number of active apprentices in the natural gas trades has followed the overall trend, with NG trades representing 57 to 59 percent of apprentices in all trades over the same period, as indicated in Figure 12 below.

Figure 12 - Active Apprentices: Natural Gas Trades versus All Trades



Source: Industry Training Authority

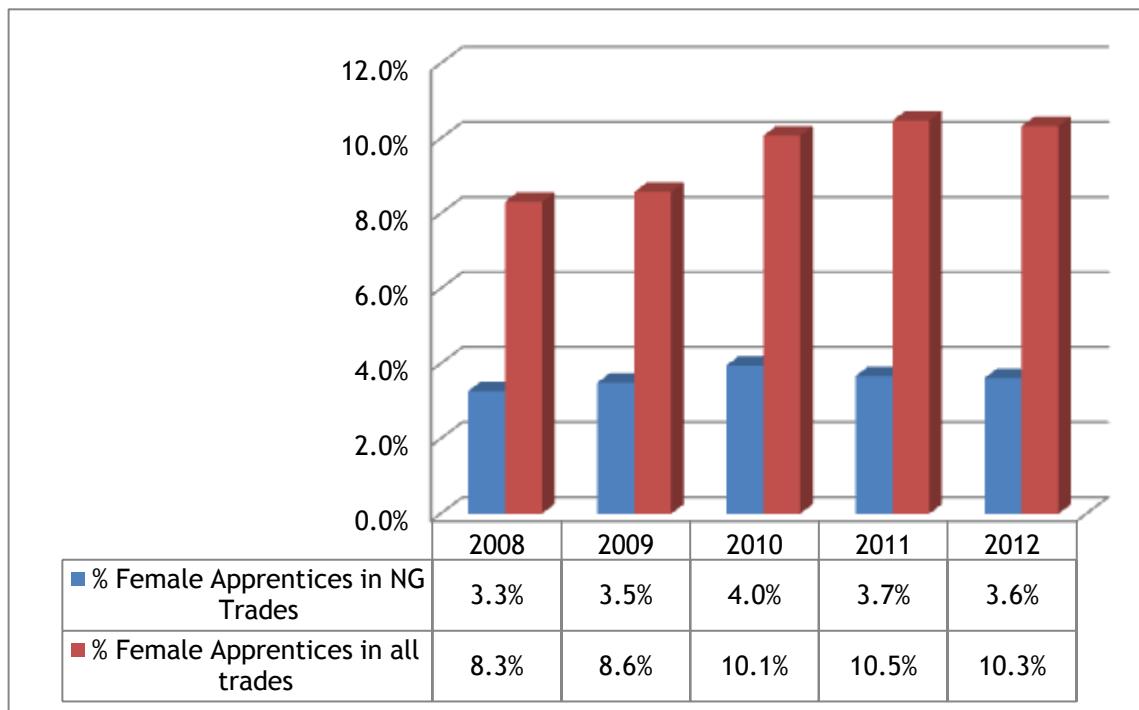
Somewhat in contrast, the number of active apprentices in Northern BC has remained relatively steady between 2008 and 2012. In any given year, approximately 1,100 apprentices are active in the northeast (three percent of total apprentices) and 700 are active in the northwest (two percent of total apprentices). More could be done to stimulate young people in the north to enter trades training.

Female participation rates have room to grow

Only 10 percent of apprentices in all trades are female and their participation rate is growing slowly, up from 8 percent in 2008, as illustrated in the figure below. The numbers are even lower in the natural gas trades, where female participation has consistently remained between three and four percent since 2008 - less than half the rate for all trades combined.

In Northeast BC, the female participation rate in apprenticeship is 11 percent, slightly higher than the 10 percent average in all trades, while the rate in the Northwest is 9 percent. ITA Women in Trades Training (WITT) programs have been working with some success over the past two to three years to increase female participation. Still, the numbers are small and room exists to do significantly more.

Figure 13 - Female Participation in Apprenticeship: Natural Gas Trades versus All Trades



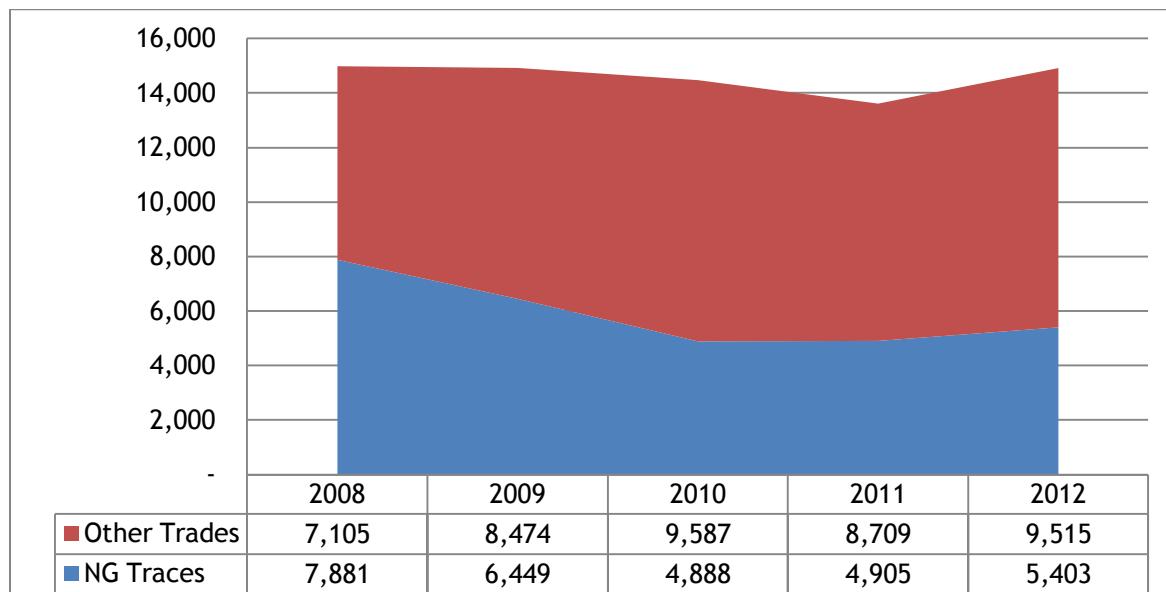
Source: Industry Training Authority

Fewer new apprentices in natural gas trades

In BC, an average of 14,500 people enters into trades training each year as new apprentices. About 40 percent those new apprentices are in trades relevant to the natural gas sector. Fluctuations in the economy and public perceptions about the image of the trades (e.g., as a career or sustainable source of work) influence the number and type of people choosing to enter trades training.

The total number of new apprentices dipped from a high of almost 15,000 in 2008 to 13,000 in 2010 and then recovered to almost 15,000 again in 2012. In the natural gas trades, the drop was deeper and the recovery slower. New apprentices in natural gas trades at the beginning of 2012 sat at 5,400, still well short of the 2008 level of almost 7,900. This figure suggests the need for more effective and/or broader recruitment efforts.

Figure 14 - New Apprentice Registrations: Natural Gas Trades versus Other Trades



Source: Industry Training Authority

Number of employers taking on apprentices trending down

Employers are a key ingredient to increasing the number of apprentices training in the system and ultimately the number of certified tradespersons. Each apprentice must be sponsored by an employer. An examination of sponsor numbers and trends suggests that employers are somewhat ambivalent about hiring apprentices.

On the positive side, the number of sponsors in the natural gas trades increased 32 percent in between 2011 and 2012, compared to an almost five percent decrease in the number of sponsors for all trades.

Completion rates are low for some trades and vary from year to year

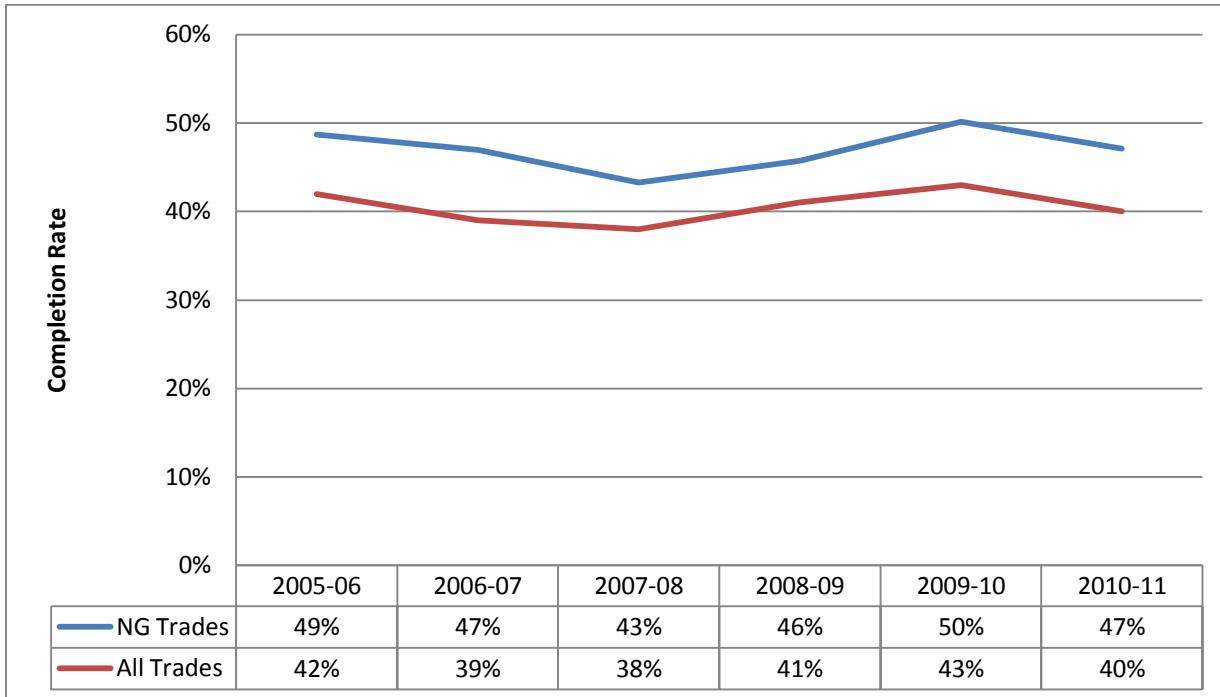
Amongst provinces, variation exists in how authorities calculate completion rates in the trades. In BC, the ITA calculates completion rates based on the number of apprentices issued a credential (i.e. become certified) within six years of registration as an apprentice with the ITA. ITA calculates an average completion rate for all trades; actual completion rates are calculated for the top 15 trades, of which seven are natural gas trades.

The average completion rate for all trades in BC was 40 percent in 2011 (the most current information available). On a year over year basis, the average completion rate has varied only marginally, plus or minus one to three percentage points, since 2008.

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

The completion rate in Natural Gas trades is slightly higher than the average for all trades. Between trades, completion rates can vary significantly, as shown in the figure below. For example, in 2011 the completion rate for Millwrights was 64 percent whereas for Carpenters and Cabinetmakers it was 28 percent.

Figure 15 - Apprentice Completion Rates, 2005-06 to 2011-12

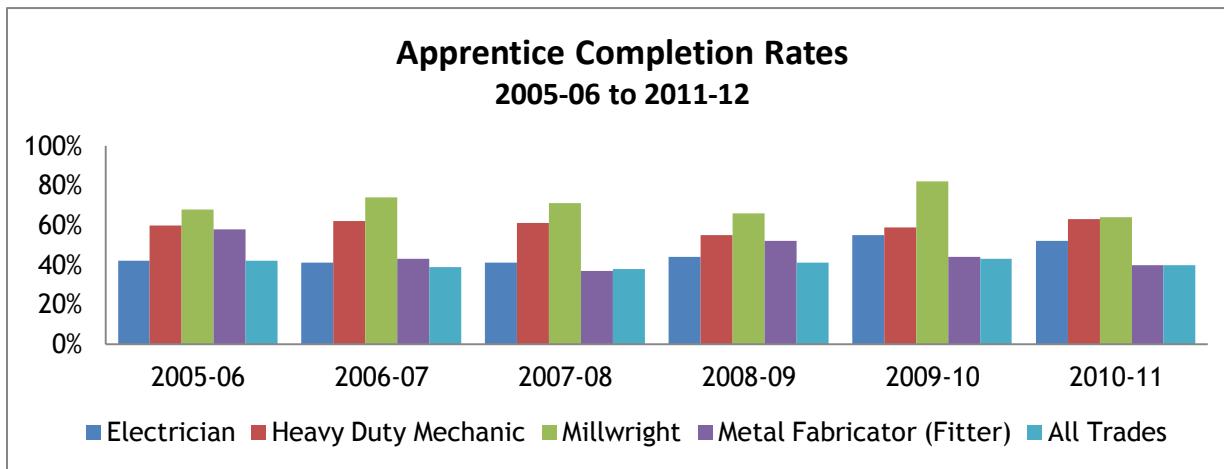


Source: Industry Training Authority

Completion rates also vary between years. Note that the completion rate for 2008 to 2011 for:

- Millwrights climbed up and then slid down, from 66 percent to 82 percent to 64 percent;
- Metal Fabricators declined steadily from 52 percent to 44 percent to 40 percent;
- Heavy Duty Equipment Technician increased steadily from 55 percent to 59 percent to 63 percent; and,
- Electrician climbed up and then slipped down slightly, from 44 percent to 55 percent 52 percent.

Figure 16 - Apprenticeship Completion Rates, 2005-06 to 2011-12



Source: Industry Training Authority

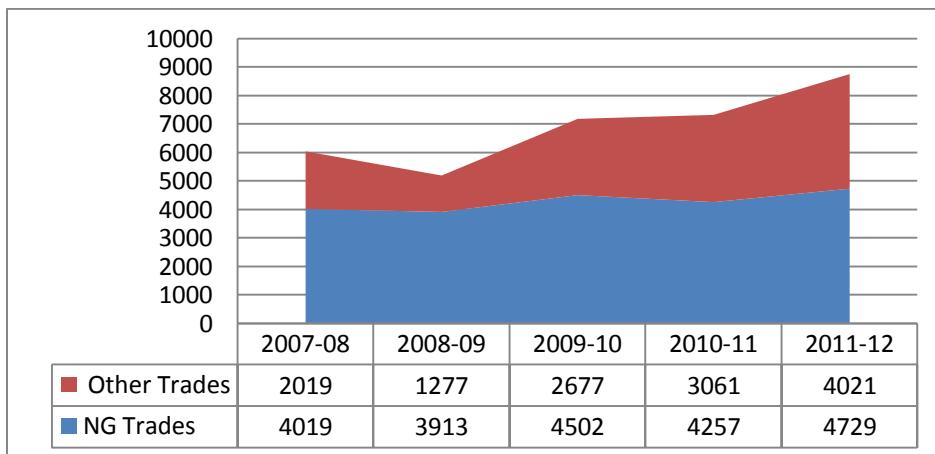
Trade certification pathways

When considering potential sources of labour supply such as immigration, it is helpful to understand the pathways to becoming certified in a trade in BC.

People can obtain trade certification in BC in two ways; they can complete an apprenticeship program or go through a challenge process. The challenge pathway is used by individuals (called challengers) who have obtained their expertise and experience outside of a formal Canadian apprenticeship program, either through on-the-job experience with Canadian employers, or through training programs in other countries.

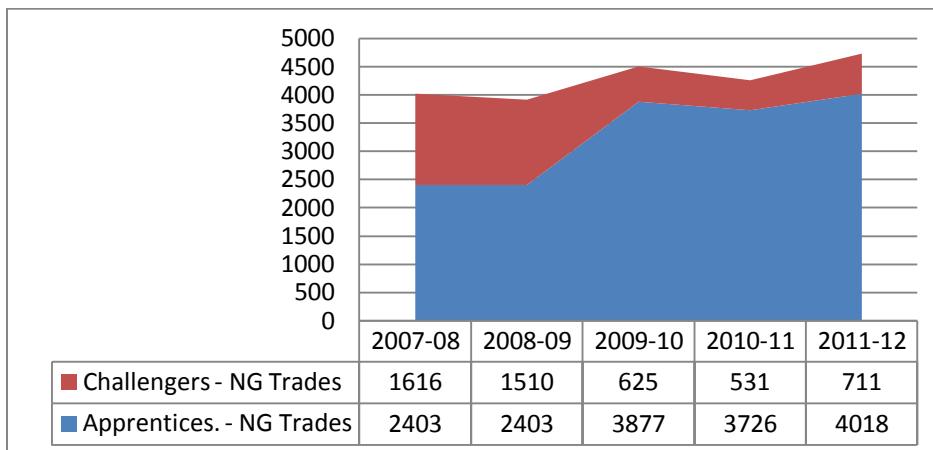
Figure 17 below illustrates that certifications in the natural gas trades comprise a large proportion of all trades certifications annually in BC. Certifications in natural gas trades have been relatively constant since 2007-2008, in the range of 4,000 and 5,000 people per year.

Figure 17 - Total Trades Certifications: Natural Gas Trades vs. Others



Source: Industry Training Authority

Figure 18 - Apprentice versus Challenger Certifications for Natural Gas Trades



Source: Industry Training Authority

Within the natural gas trades, apprentices are the predominant source of trade certifiers. Figure 18 above illustrates that challenger certifications in the natural gas trades have declined significantly since 2007-2008, while apprentice certifications have increased.

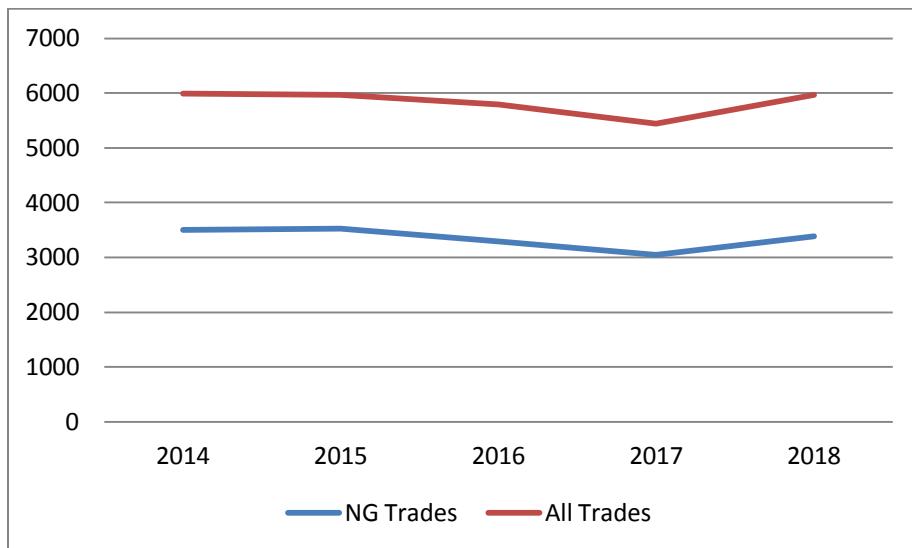
One reason for the decline in challenger certifications may be related to employer preferences. Anecdotal information indicates that many employers dislike the current challenge process. In many instances it has proven to be a less than reliable indicator of competency in the trade. The traditional challenge process involves a candidate providing proof of hours worked in the trade and achieving a score of at least 70 percent on a written multiple choice examination. In some cases, individuals have successfully completed the challenge process and obtained employment. Shortly thereafter, the employer has let them go, since their skills were not at the required level.

What does the future look like for Natural Gas trades?

Figure 19 on the next page presents a forecast for the number of certified tradespersons from 2014 to 2018. The forecast is based on extrapolating the ITA's 2011 completion rate and applying it to new apprentice registrations in 2008 through 2012 to obtain a forecast for 2014 to 2018. Where available, the ITA actual completion rate for a natural gas trade has been used; where unavailable, we used the ITA average completion rate for all trades. Note that this method is one means of generating a forecast; others exist. This forecast is intended to be a *reasonable* versus a precise indicator of apprenticeship trends.

The forecast suggests that the total number of certifications will remain relatively constant at about 6,000 certifications per year. The figures are similar for certifications in natural gas trades, which represent slightly more than 50 percent of all trades; they are forecast to remain relatively constant to 2018. With demand for trades projected to increase rapidly, the natural gas industry needs to act quickly to stave off an even greater shortage of trades people in the years ahead.

Figure 19 - Certified Tradesperson Forecast: 2014-2018



Source: Industry Training Authority

Expanding apprenticeship training

Some capacity exists to expand apprenticeship training, particularly in the northern regions of the province. Discussions with public and private training providers delivering training in the northeast and northwest regions of BC indicate that training seats are sometimes unfilled. Colleges could increase the number of intakes per year, and change the mix of trades they offer.

Training providers in the north indicate they are willing and able to be responsive to demand. Nonetheless, funding decisions for trades training are made at the system level (needs across the province), require advance planning and involve reallocating unused funding (that is, cancelled intakes) to programs and areas with greater need. The more specific industry can be about the timing of, locations and numbers of trades persons it needs, the better able the training system can respond.

Limitations to expansion exist, however, and are related to instructors, equipment and facilities. Colleges interviewed said that an increase in the range of 20 to 25 percent in training seats available may be achievable through creative scheduling and use of equipment and facilities. Notably, in 2012, Northern Lights College and Northwest Community College were seeking funding for new trades related facilities. Finding and securing instructors will still remain a challenge though, particularly given the significantly higher compensation available to trades persons working in industry.

Collaborating for more efficient coordination of apprentice technical training

Employers cite frustration with apprenticeship training because they are unable to send apprentices for technical training on the schedule they want or the institution they prefer. For their part, educators cite frustration with employers when they fail to send apprentices for technical training scheduled in the region; as a result seats often go unfilled due to last minute cancellations or no shows. At one time apprentice technical training was centrally administered; this is no longer the case. In fact, apprentices may attend training at any ITA approved training provider in the province. Consequently, companies and/or industries could collaborate and better coordinate with training providers to schedule technical training at optimal times.

The need for active intervention in recruitment

The preceding examination of current and past apprenticeship numbers and trends clearly shows that the number of new apprentices in natural gas trades will not increase without active intervention. Hence, any strategy aimed at increasing labour supply for the natural gas sector should consider ways to attract more apprentices. For example, it may be worthwhile investigating whether programs such as the ITA's Women, Aboriginal and Immigrant in Trades Training programs could be expanded and/or potentially extended. They could then operate in tandem with the Yes2IT and ACE IT programs in the elementary and secondary school system in the north. As well, another option would be to work with ITA and employers to improve the overall challenge process for acquiring trades certification and to include an assessment of hands-on skills.

8 > Conclusions and Key Areas for Strategy Development

Based on the research conducted on supply side demand, the consultants offer the following thoughts on the development of a natural gas human resources strategy. The BC natural gas industry and interested parties will need to develop and implement a multi-pronged strategy to address labour requirements to 2020. The strategy will need to consider:

Local labor supply

Many people will need training - especially in the Cariboo, North Coast and Nechako regions given the lack of an existing local natural gas industry. The Northeast region already has established industry and training. The labour force in the other three regions will need information about the opportunities that accompany the growth in the natural gas industry. The sector is new to these regions and existing industries such as mining and utilities will compete for workers.

The projected capital investment for Northern BC is unprecedented and the existing construction workforce cannot fulfill labour demand. More people will need to be trained in construction occupations.

A future source of supply for the natural gas and construction sectors could be local high school students and women. Companies could continue to support programs like ACE-IT and Northern Opportunities and look for ways to support their expansion to other regions and additional trades. They might consider other targeted initiatives for young people. Further, since they have lower than average participation rates in the workforce, strategies to attract more Northern women may also be useful. Good practices already exist in Northern BC, focusing on women and youth. These programs could be expanded and/or replicated.

Finally, a strategy for using local labour should consider ways to fully use the services that community businesses and contractors can supply; they also should benefit from economic growth. In fact, in addition to a workforce strategy, local communities need a community development strategy. This community strategy will help ensure that the housing, infrastructure and services needed to attract and retain workers to sustain economic growth are in place.

Migrants from BC and elsewhere in Canada

Skilled workers from southern BC may help fill the labour gap. Many of these workers are likely to be looking for fly-in/fly-out work arrangements - especially for the shorter term construction jobs. An analysis of employment by industry indicates that people who live in southern regions of BC already travel to work in the oil and gas industry.

Increasing interprovincial migration has potential as a labour supply strategy. Oil and gas workers are likely to continue to move between BC and Alberta. Companies may facilitate much of this movement. However, workers are less likely to come from the other energy-producing provinces such as Saskatchewan and Newfoundland and Labrador, given their own projected economic growth and tight labour markets. Instead, many of the migrants will probably come from the non-energy producing regions. These workers may have transferable skills and knowledge, and direct construction experience, but may lack direct oil and gas experience.

Under-represented groups

Attracting more immigrants and temporary foreign workers to Northern BC is also a labour supply opportunity. Bringing these people to the region will require significant efforts, since historically, few have migrated to the North. As well, without proper planning, immigrants and temporary foreign workers can strain small communities that are unprepared for a sudden influx of new residents.

In addition, a strategy that relies on attracting immigrants (or anyone who has not completed a Canadian apprenticeship program) must consider a means to ensure that individuals meet trades certification standards. Alternatively, if the person is already certified, a strategy must still address employers' needs for the person to perform competently on the job site. The current route (with two exceptions) for certification as a Challenger presents a significant barrier for individuals for whom English (or French) is a second language. Further, many employers believe that the challenge route is an unreliable method for determining competency.

Within the apprenticeship system some investigation of alternative assessment processes has occurred, based on best practices elsewhere in the world (Australia, New Zealand, England) but this research is only in the beginning stages. An enhanced assessment process has been piloted in two Red Seal trades to date: Heavy Duty Equipment Technician and Professional Cook. While employers involved in these pilots support the results, the system is slow to change. Expanding the enhanced assessment process would involve national cooperation for Red Seal trades and modification of existing program standards and assessment methodologies.

As for increasing the Aboriginal participation in the natural gas industry, the strategy will require a "socio-economic" approach. Such an approach trains people and also addresses systemic barriers to sustainable employment, including low education and literacy rates and poverty. Aboriginal people and their communities need preparation for employment, which includes developing strategies for others to take over family and community responsibilities while workers are away training and then working.

Training and apprenticeship system

Based on the research into the training and apprenticeship system, a workforce strategy for the natural gas sector should consider the following:

- Building attraction strategies based on the unique value proposition the industry and communities have to offer. To start, the industry could identify the characteristics and skill profiles of an ideal “northern natural gas worker”, then build hiring criteria and assessments to determine if an individual meets the profile.
- Enhancing capabilities to identify and recognize people’s skills through competency based assessment and gap training. Such a program provides the basis for career pathing within companies and across industries.
- Supporting occupational training with opportunities for individuals to upgrade.

- Working more closely with the training system. Training providers are willing to be flexible and responsive but programming is complex and requires 12-24 months lead time; it takes four to five years to train an apprentice. As a result, industry needs to be as specific as possible about the timing and numbers of people required for priority occupations. On-going collaboration is required. Industry might, for example, hire an apprenticeship coordinator to improve training scheduling and ensure seats are filled.

In brief, the natural gas industry needs to take swift action on multiple fronts and work closely with governments, educational institutions and under-represented groups to meet labour demand needs.

9 > Appendices

- Case Studies
- List of Interviews
- Bibliography
- Detailed Northern and Southern Economic Development Region Profiles and Tables
- Employment Opportunities in Canadian Provinces
- Post Secondary Education and Training Programs in Support of Select Occupations

Appendix 1: Case Studies

Aboriginal Workforce Related Programs

Program

GDITE (Gabriel Dumont Institute Training and Employment) Aboriginal Apprenticeship Initiative

The Gabriel Dumont Institute of Native Studies and Applied Research Inc. (GDI) is a Saskatchewan based non-profit corporation serving the educational and cultural needs of Saskatchewan's Métis community.

GDI launched its Aboriginal Apprenticeship Initiative in June of 2011 and expects the program to run until January 2014. Its purpose is to increase Aboriginal participation in apprenticeship and skilled trades in Saskatchewan, and to initiate and develop partnerships with industry.

www.gdins.org/ApprenticeshipOffice

The Workforce Challenge

Saskatchewan's economy is booming. The province is experiencing unprecedented levels of growth due in large part to its rich and diverse natural resource sector. While there has been some significant improvement in the number of Aboriginal journeypersons coming out of the Saskatchewan apprenticeship system in recent years, the number remains very small at about 1200 registrations per year since 2007-2008. The Initiative has been launched "(t)o ensure Aboriginal people in Saskatchewan are able to take full advantage of economic opportunities and ultimately, get good jobs.¹⁵"

Target Audience

Aborigines in Saskatchewan aged 18 and over; grade 12 recommended. (Participation has been approximately 90% male.)

Program Providers

Gabriel Dumont Institute administers the program. A partners' board provides advice and guidance. Members of this board include Dumont Technical Institute Inc., Saskatchewan Ministry of Highways and Infrastructure, Human Resources and Skills Development Canada and the certification body, Saskatchewan Apprenticeship and Trade Certification Commission.

¹⁵ Gabriel Dumont Institute of Native Studies and Applied Research. (2011, June 29). *News Release, Gabriel Dumont Institute to Launch New Aboriginal Apprenticeship Initiative and Sign Métis Health Scholarship Agreement*

Key Features of the Program

The Aboriginal Apprenticeship Initiative is an employment-based program. Its function is to link and support employers and apprentices through to journeyperson certification. GDI recruits and builds relationships with employers and candidates, maintaining a data base of each; it then determines and matches their needs. No fees are charged. The program helps integrate Aboriginal people into careers in trades. Employment counselors are available to provide support to apprentices and employers throughout the training period.

Employers: GDI recruits and partners with employers. The Aboriginal Apprenticeship Initiative “offers wage subsidies to help employees meet the costs of apprentice wages and also provides access to an Aboriginal employment pool.¹⁶” The wage subsidy provided is half of the wage with the Initiative’s portion capped at the current minimum wage. Employer needs are determined and candidates are matched based on their skills and qualifications. The employer is required to agree to indenture the selected trades person. GDI helps the employers provide a high quality learning environment on the job.

Apprentices: GDI screens candidates for the Aboriginal Apprenticeship Initiative for their commitment and ability to work in a trade. Participants need to be workforce ready since the timeframe of the program is too short to allow essential skills or job-readiness training. GDI provides employment assistance, helping Aboriginal candidates find work with an employer willing to take them on as an apprentice. GDI assists the candidate in indenturing to the Saskatchewan Apprenticeship and Trade Certification Commission (SATCC) as an apprentice, and progressing through the apprenticeship program. Support services are provided as required. The Initiative provides apprentices with a salary while training in a skilled trade.

GDI provides the following to qualified candidates

- explains how the Apprenticeship Initiative works - what the apprentice should expect and what will be expected of the apprentice,
- assistance in finding employment
- support throughout the apprenticeship program - providing advice; e.g. how to update apprenticeship record book, how to apply for financial assistance
- assistance in indenturing to the SATCC
- help with any work-related concerns, job coaching and follow-up

Resources Required

The Aboriginal Apprenticeship Initiative is to receive \$2.4 million over two years in an agreement under the federal Skills and Partnership Fund (SPF). Approximately 15 staff are involved with the Initiative. GDI has 11 offices - some of these offices have a person fully dedicated to the Initiative (urban offices), while others have it as part of their roles.

¹⁶ Northern Apprenticeship Committee. (2012, February 13). *Gabriel Dumont Institute Aboriginal Apprenticeship Program*. Retrieved from <http://www.northernapprenticeship.ca/index.php?limitstart=5>

Outcomes/Benefits

The GDI is expected to provide the following outcomes:

- A minimum of 120 Aboriginal Apprentices registered in apprenticeship programs and secure long term employment (a 10% increase in Aboriginal apprentices in the province)
- At least 60 of the clients registered at the second level or higher in apprenticeship programs
- 60 employer partnerships across 17 different trades
- 100% employment maintained throughout the apprenticeship process as required¹⁷”

After one year, the Initiative is close to achieving its targets. Just under 60 people are employed with about half of those indentured. Trades include heavy duty mechanics, carpentry, welding, electrical and plumbing. Minimal mismatches exist between skills taught and skills demanded in the labour market, since GDI matches apprentices to companies. As of July 2012, GDI had wait lists of candidates trying to get into a trade through the program.

Challenges/Areas for Improvement

One year into the program, GDI has seen the following challenges with the Initiative:

- **Training GDI staff:** Before starting the Initiative, GDI had not previously been so heavily involved with apprenticeship. As a result, GDI employment counselors and program coordinators required training to understand the nature of apprenticeship and its processes so that they could instruct their clients.
- **Program additions:** Incorporating job readiness and employability skills into a longer term program would be beneficial.
- **Candidates need more experience:** Candidates may have no related industry experience but employers are likely to select apprentices with prior labour or industry experience over someone with unrelated experience. GDI recommends that a candidate work as a labourer prior to applying to the program.
- **Flexibility of policies:** Original parameters and boundaries had to be loosened as the program progressed. For example, initially, a candidate had to be indentured within 60 days from their initial start date - this requirement was changed to 60-90 days. GDI has changed other rules on a case-by-case basis, taking community location into account, for example, working to accommodate special needs of a community or employer.

¹⁷ Gabriel Dumont Institute. *Aboriginal Apprenticeship Initiative*. Retrieved from <http://www.gdins.org/ApprenticeshipOffice>

- **Increasing employer buy-in:** Although many employers strongly support the Aboriginal Apprenticeship Initiative, others are not participating and appear to be unaware of how apprenticeship training can improve their productivity. Trying to convince employers to partner can be a challenge, even with the wage subsidies the Initiative provides for apprentices they hire. Employers may be reluctant because of the required pay scale increases. As an apprentice levels up from first year to second year, the employer is supposed to pay him or her more. Some companies are also concerned that after committing expenses and time to training, the apprentice will leave once they reach third year and are more marketable.

In general, employers tend to want to hire third year or later apprentices, who already have little difficulty finding a job, whereas the Initiative's goal is to find positions for newer apprentices. For example, for electrical apprentices, third year are most in demand. Many employers speak of the difficulties in finding skilled workers but have resisted taking on lower level apprentices.

- **Journeyperson ratios:** Some trades have low ratios for the number of apprentices a journeyperson can supervise. For example, compulsory trades such as plumbing, electrical and sheet metal may have a ratio of only two apprentices allowed to be trained by one journeyperson. Such ratios can restrict the numbers of apprentices a company can hire.
- **Jobs in remote communities:** Isolated communities may have few employers and job opportunities. Finding work elsewhere for a candidate may lead to housing and relocation issues. In boom areas, it can be difficult to find housing.

Keys to Success in Aboriginal Workforce Programs

Some of the keys to success include:

- **Employment readiness training:** Education completion and skills and job readiness type of coursework would be beneficial. Examples include a driver's license course, high school completion, GED, job readiness and essential skills training.
- **Aboriginal awareness and good communication:** Employers need to be open to having an Aboriginal awareness type of program so that the employer understands considerations required when employing Aboriginal people. It is important to understand some of the barriers that Aboriginals face to increase cultural awareness and minimize misunderstanding. Good communication is required to improve understanding between employers and Aboriginal employees. In the words of a GDI staff person:

The employer may have an Aboriginal employee with something going on in their life that's impeding them in their job. For example, their family may be dealing with some social problems. They may be juggling a lot of aspects in their life with work. Often the employer and the apprentice are not on the same socioeconomic level, and do not have a similar history or background, making it more difficult for the employer to relate to where the employee is coming from. The employer needs to understand where that person is coming from so they can communicate - to overcome any difficulties.

Aboriginal Workforce Related Programs

Program

Nicola Valley Institute of Technology's (NVIT) Trade Routes

NVIT's Trade Routes offers a mobile classroom that travels to Aboriginal communities across British Columbia. The program offers an introduction to trades, providing training and hands-on experience in four trades; welder, millwright, electrician and plumber/pipefitter. Academic upgrading in math and English is also included, as well as a cultural component and employment readiness training.

Overview/Synopsis of Case Study

The Workforce Challenge

Many smaller communities lack access to trades training. Trade Routes was created to reach learners in remote areas, and bring trades training to communities. The current program offers Aboriginal people the opportunity to sample trades to determine a trade of interest, as a first step towards a new career path.

Target Audience

The mobile classroom is available to travel to Aboriginal communities across British Columbia. Although Trade Routes targets Aboriginal youth, the bands select the candidates. Participants age in range from 18 to 60 years old, although many are 25-30. Both men and women participate. According to program instructor Mike Hassell, the communities "try to get some of those people who struggled in school and want to give it a shot and try trades."

Program Providers

Trade Routes is part of the curriculum of Nicola Valley Institute of Technology (NVIT). NVIT is located in Merritt, BC.

Key Features of the Program

In 2009, NVIT purchased the Industry Training Authority's mobile training unit and took on the role of providing trades training to remote communities, specifically servicing Aboriginal peoples. The program offers students the chance to try four in-demand trades.

As well as holding sessions in Merritt, the mobile unit is available to any community whose band submits a \$15,000 show of interest and provides 20-24 students. NVIT looks after all other aspects of the program. Trade Routes has been in communities from Tofino to Fort St. John.

NVIT often runs this program in Merritt where the continuing education department is responsible for enrolling students and handling arrangements. When the program is run in other communities, the bands take on this role.

Program content:

Two weeks (60 hours) introductory training in each of trades - welding, millwrighting, electrical and plumbing/pipefitting; two weeks each of academic upgrading - math, English and employment-readiness including computer skills.

Note: this is not a foundation or credit program.

Facilities:

Two mobile trailers containing all the required tools and equipment which Trade Routes hauls from site to site.

Bands often provide a spare room to use for the academic upgrading. The shop work takes place in the trailer. The trailers themselves contain approximately \$400,000 worth of tools.

Instructors:

Two trades instructors, one math instructor, one English instructor, one employment readiness instructor

Capacity:

Student capacity - 24

Capacity of trailer - 12 students (they run morning and afternoon sessions)

Format:

Three month program.

The students alternate between trades training and academic upgrading. Students spend two weeks on one trade. The next week is spent on math, English or employment readiness, followed by another two weeks in a trade and so on.

Bookwork in the trades training is kept to a minimum since the focus is on hands on training.

Resources Required

NVIT funds the program.

Five instructors provide the training and a contract driver moves the trailer. The math teacher works out of NVIT's Burnaby campus. One of the trades instructors is responsible for the upkeep of the trailers and managing the program.

Outcomes/Benefits

About sixty students go through the program each year, through the three sessions Trade Routes holds annually. So far NVIT has completed around 12 to 14 sessions.

From a review conducted in 2011, NVIT determined that approximately 25-30 percent of students who have completed the Trade Routes program are now employed in the trades. There tends to be more success in communities that have potential trades jobs within their community. Past students are working in the oil and gas sector, mines and sawmills.

The program offers Aboriginal people the opportunity to try out a trade to determine whether it is right for them before committing time and resources to a full program.

The Trade Routes program has become a flagship of the NVIT, which has committed three more years of funding for the program. NVIT has also submitted a proposal for another set of trailers so that one can be kept in the south and another in the north.

Challenges/Barriers

Local employment opportunities

The post-training employment rate of students from communities without local employment opportunities is lower; success in the program improves when a student can see possibilities at the end of it. Many students are reluctant to leave their communities to pursue opportunities elsewhere.

Attendance

Many participants have difficulty achieving regular attendance or punctuality. NVIT stresses safety and attendance because, as instructor Mike Hassel notes, "without those you're not employable - if you're not there today, you won't be there next week and if you don't work safe and by the rules you won't be there either."

Math skills

For many of the students coming into the program measurement and math can be a struggle. All trades, however, need to measure accurately. The Trade Routes program helps to bridge the gap. When instructors gave a measuring test to students at the beginning of the program, most failed. When they repeated the test at the end of the program, all passed.

Travel

Instructors are required to travel often.

Keys to Success in Aboriginal Workforce Programs

Provide upgrading where needed

Academic upgrading in math and English and employment readiness is crucial to the success of the students.

Connect with students

Participants come with a variety of personalities and past histories. Learning is easier if the instructor can connect to individuals and make the training fun.

Individualize

The training unit has higher-level equipment available - students who are excelling can be advanced to more difficult projects.

Replicate a real shop

The trailer replicates all the equipment found in a working shop.

Connect with the community

In one community, a big potluck dinner was held for the graduates. Drilling and gas companies were also invited and the students were advised to bring their resumes. Several gained work from that event. The community sponsoring agency was a great help in recruiting industry to the event.

One community obtained funding and paid students to go to take the Trades Routes program. This funding encouraged many of the students to treat the training like a job.

Enthusiasm

An instructor's enthusiasm for the program improves its level of success. *"I love what I do - I've been lucky enough to be a tradesman all my life. It's easy to try to sell that."*

Aboriginal Workforce Related Programs

PTP ASEP Training Society

Overview/Synopsis

The PTP ASEP Training Society (PTP ASEP) is a not-for-profit aboriginal organization registered under the Society Act on December 10, 2009. www.ptpasep.ca The Society was formed in response to the training and employment needs of 15 First Nations impacted by the \$1 Billion Pacific Trails Pipeline (PTP) Project and associated \$3.5 Billion Kitimat Liquefied Natural Gas (LNG) Export Terminal project.

The Workforce Challenge

In collaboration with PTP and Kitimat LNG, a key focus for PTP ASEP has been to match client training and skills development to the precise occupational profile and labour force needs of the LNG export facility and pipeline projects.

The Society's Mission developed in collaboration with its clients, board of directors and employees includes:

1. To implement skills assessments, training to employment programs and supports that lead to measurable improvements in the Human Resource Capacity of the First Nations communities that we serve.
2. To achieve the commitments that have been made to our Government, First Nations and Industry Partners.
3. To provide culturally relevant and comprehensive job coaching to our target clientele.

It is the PTP ASEP Training Society's Vision:

To develop options through partnerships and by other means to allow the PTP ASEP Training Society to continue operations aimed at achieving increased First Nations capacity in Northern British Columbia.

To realize PTP ASEP's goals, programming needs to focus on diminishing the barriers that currently prevent First Nations from fully participating in the labour force and future economic growth. This means understanding the social fabric within First Nations communities and being prepared to address issues related to poverty. It also requires educating First Nations about the industries and employment opportunities coming to Northern BC and building the confidence that the economic development really is happening and there are opportunities to participate.

"By instilling a sense of pride gained by working towards a career and providing the tools necessary to succeed, the PTP ASEP is moving towards breaking the cycle of First Nations Poverty, and creating a healthier, happier and more prosperous future." - PTP ASEP 2010-2011 Annual Report

Target Audience

The Society's clients and activities encompass a vast region that follows the Highway 16 corridor from Prince George, B.C. to Kitimat and Prince Rupert, BC. Two other first Nations communities are further to the North along Highway 97 and include the McLeod Lake and West Moberly First Nations.

In total the PTP ASEP services and activities target 15 First Nation communities in the North representing approximately 12,000 members:

- Haisla First Nation (Kitimat, BC)
- Lax Kw'alaams First Nation (Port Simpson, BC)
- Metlakatla First Nation (Prince Rupert, BC)
- Kitselas First Nation (Terrace, BC)
- Skin Tyee First Nation (Burns Lake, BC)
- Nee-Tahi-Buhn First Nation (Burns Lake, BC)
- Wet'suwet'en First Nation (Burns Lake, BC)
- Ts'il Kaz Koh First Nation (Burns Lake First Nation)
- Stellat'en First Nation (Fraser Lake, BC)
- Nadleh Whut'en First Nation (Fort Fraser, BC)
- Saik'uz First Nation (Vanderhoof, BC)
- Nak'azdli First Nation (Fort St. James, BC)
- Lheidli T'enneh First Nation (Prince George, BC)
- McLeod Lake First Nation (McLeod Lake, BC)
- West Moberly First Nation (Moberly Lake, BC)

Program Providers

Training activities have taken place directly in the communities as circumstances permit although a substantial amount of the training has occurred in Prince George, BC and in the BC Lower Mainland at institutions where training facilities and infrastructure are available.

PTP ASEP provides job coaching and assessment. Training has been implemented through partnerships with a variety of training providers:

- Piping Industry Apprenticeship Board (PIAB)
- Heavy Equipment Training (HEO)
- Prince George Nechako Aboriginal & Employment Training Association
- Kitimat Valley Institute
- BC/Yukon Building Trades
- BC Union of Operating Engineers

Key Features of the Program

The Aboriginal Skills and Employment Partnership (ASEP) program was a national program established in recognition of the need to help First Nations who face unique challenges and who have been traditionally under-represented in the workforce. Key features of the program included:

- Targeted funding for First Nations training;
- Partnerships between Industry and First Nations backed by major commercial projects;
- Employment of First Nations in major projects; and
- First Nations control of program delivery.

Assessment

Typically, the first interaction PTP ASEP has with clients is to assess their aptitudes, education, skill level, training needs, and occupation or career interests. From these assessments job coaches are able to identify opportunities and challenges in providing assistance to clients. A detailed assessment of a client's capacity and interests provides job coaches with valuable information on which to base decisions around training and career plans.

Job Search

PTP ASEP provides professional guidance to clients in a broad manner when it comes to employment including guidance on skills development, job opportunities, resume writing, interviews, job performance expectations, compliance certification requirements, preparing applications, employability skills, and career development.

Job coaches are instrumental to assisting trainees address issues/concerns during their training and job search and are key contributors to overall retention and success of trainees.

- Recruit and interview clients on an individual basis to assess existing skills, capacities and interests.
- Provide individual coaching and support to ensure effective and accurate placement of clients into appropriate training programs.
- Meet with instructors and trainers to enroll client in training programs and to track client progress.
- Assist in connecting clients with appropriate job placements.
- Meet with employers and clients to assess performance and expectations and assist clients and employer where appropriate.

The Society also offers a job placement and retention service through a process of matching client skills to job opportunities, monitoring, communications, support, and training. PTP ASEP works directly with industry in advance to identify employment opportunities that will occur in the construction phase of projects and provides training to candidates to fill the positions.

Database

The PTP ASEP database presently maintains profiles on over 1,000 PTP ASEP clients including information on their education, skills, training and career objectives. Job coaches will be able to use this information to further the training and development of former PTP ASEP clients.

The database will also allow job coaches' ready access to individual profiles that link clients to employment. With the presence PTP ASEP has established over the past few years many employers are expected to continue to look to PTP ASEP as a place to source skilled workers.

Training

Partnerships are key to PTP ASEP's approach to training. The following outlines key training investments made in partnership with private and public training institutions.

Heavy Equipment training offered through O'Brien Training Ltd. located in Prince George, BC. O'Brien Training is registered with the Private Career Training Institutions Agency (PCTIA) and the Industry Training Authority (ITA). The training provided students with over 100 hours of instruction and was designed to meet the theory and competency standards designed by industry in conjunction with the ITA. Upon completion students were eligible to complete an ITA Examination that would provide them with a Certificate of Qualification and an opportunity to pursue an apprenticeship as a Heavy Equipment Operator.

Road Building and Heavy Equipment course with the International Union of Operating Engineers Local 115 Training Association (IOUE) at the Maple Ridge, BC Training Facility. The Training Institute is accredited with Private Career Training Institutions and delivers programs in accordance with BC's Industry Training Authority.

PTP ASEP clients were enrolled in a 12-week course comprised of three programs running consecutively:

- Road Building Foundation: a three-week course that provides students with an introduction to the road-building industry. It provides a valuable overview of career opportunities, safety practices, and an orientation to job site operations, equipment, tools, operations and maintenance as well as providing a fundamental introduction to civil engineering.
- Heavy Equipment Operator Technician program is an apprenticeship program designated by the Industry Training Authority (ITA). The program consists of four weeks of in-class theory instruction and practical equipment lab training covering the following four pieces of heavy equipment: articulating rock truck, dozer, excavator and loader.
- Specialized Equipment: The final five weeks of the program focus on increasing students' practical skills and seat time on equipment. Apprentices are given the opportunity to specialize their practical training on one or more machines.

Upon completion of the training students were invited to become members of the International Union of Operating Engineers and to be included on the call list for work as Heavy Equipment operators or in related occupations. Upon completion and through the IOUE several students were offered job opportunities and are now working with or on heavy equipment

PTP ASEP partnered with the UA Piping Industry College of British Columbia (PIC) on a variety of training programs. PIC is an organization that offers trades training programs with a particular emphasis on the Sprinkler-fitting, Steam-fitting, Plumbing and Welding trades. PIC is affiliated with the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States and Canada or "UA" as it is commonly known. PIC is a multi-craft union whose members are engaged in the fabrication, installation and servicing of piping systems. Through its union affiliation many PTP ASEP clients have been able to access good paying apprenticeship and work opportunities.

Discovery Trades Training designed to expose people with low skills to the skilled trades and a formal apprenticeship. Students receive 10 weeks of theoretical and practical experience with electrical, carpentry, painting, plumbing, steam fitting, sprinkler fitting, and welding. The intention is to provide a basic introduction to the trades, equipping the individual with the knowledge of what the trades entail, allowing him or her to make an informed decision on which career path he or she wishes to pursue.

As part of the training students also achieved the following certifications: Fork Lift, Occupational First Aid - Level 1, WHMIS, Fall Protection Safety, Respirator Use, and Ladder Safety/Scaffolding.

Introduction to Construction and Welding Trades is a 10-week course aimed at those considering a career in construction industry. Through this course students were exposed to some of the basic tasks and nature of the work involved in various construction trades, including: Carpentry, Brick layer (masonry), Floor layer/tile setter, Concrete finisher, Glazier, Heat & frost (insulator), Dry walling, Plasterer, Roofing and cladding, Scaffolding, Metal trades, Electrical and Piping trades.

Students were required to prepare a career action plan as part of the course and also received the following certifications: WHIMS, Occupational First Aid- Level 1, Fall Protection, Confined Space, Rigging and Slinging, Fork Lift, Lock-out procedures.

Welding Level C and B training through PIC. Becoming a C level welder permits you to weld in the construction and metal working industries. The C designation is the entry level in this trade. Welder Level "B" means a person who has training in and is capable of welding ferrous and non-ferrous metals in all positions, on both plate and/or pipe, using SMAW, STAW, and FCAW processes. These welders qualify to test for Portable Pressure Welding Procedure (PPW) tests in British Columbia. Level B welding apprentices are required to successfully pass level C welding.

Essential Skills and Aboriginal Trades Initiative Program

Essential Skills provide people with a foundation to learn other skills; and enhance people's ability to adapt to change. The nine essential skills widely recognized in the field of training and employment include:

- | | | |
|-----------------|------------------------|------------------------|
| 1. Reading text | 4. Numeracy | 7. Working with others |
| 2. Document use | 5. Oral communications | 8. Computer use |
| 3. Writing | 6. Thinking skills | 9. Continuous learning |

Essential Skills Training was incorporated into many of the courses that PIC delivered for PTP ASEP and its clients. In addition, PIC delivered two dedicated Essential Skills Training programs to PTP ASEP clients throughout the year.

Aboriginal Trades Initiative Program (ATIP). With the experience PIC accumulated working with PTP ASEP clients they were able to identify academic challenges to learning that exist amongst a substantial number of aboriginal students wishing to pursue a career in the trades. In response to these challenges and with the support of educational experts in the Lower Mainland such as Dr. Rahal Jalan from Simon Fraser University, PIC was able to develop the ATIP. The program developed was specifically designed to address aboriginal learning styles and customs to enhance the success of clients entering the trades or apprenticeship programs. Part of the tailored approach included a more visual deliver method and smaller class sizes to facilitate improved teacher-client interaction.

ATIP delivered its first 10-week class to 16 PTP ASEP clients in January of 2012 in Kitimat, BC with Dr. Rahal Jalan instructing the math component to the students. The results of the first class were very favorable with several clients moving onto trades and other technical training programs.

Throughout the year PTP ASEP successfully placed over 100 aboriginal clients in some form of trades or trades-related training with the PIC.

In partnership with Vancouver Island University (VIU) PTP ASEP offered a five-week **Environmental Technician Certification Program (ETCP).** The ETCP training provided students with the technical skills necessary to qualify for employment as an Environmental Monitor ("EM").

Students were introduced to a comprehensive curriculum of environmental topics with a hands-on approach to training. Topics included:

- Essential Environmental Skills: An applied review of key or 'core' environmental employment skills including such things as navigation using standard navigation tools, mapping, use of standard field equipment (i.e. clinometers, laser range finder, etc.) and setting up a photo point monitoring station.
- Fish and Fish Habitat Monitoring Skills: An applied review of standard fisheries field monitoring skills, including electrofishing, fish habitat assessment, water quality sampling, fish inventory methods, and fish population monitoring
- Water Monitoring Skills: An applied review of standard stream habitat measurement and assessment, water quality surveying, sediment and invertebrate sampling field procedures.
- Land Monitoring Skills: An applied review of standard vegetation, soil, and wildlife sampling and monitoring field skills.
- Construction Site Monitoring Skills: An applied review of standard environmental monitoring field skills, including site planning, erosion control, in-water construction and environmental project field skills.

Resources Required

The PTP ASEP Board of Directors is responsible for overall direction and management of the Society with a view to maximizing value to its clients and stakeholders while in the process of carrying out the Vision, Mission and Strategic Goals.

The PTP ASEP main office is located in Prince George, B.C. with a sub-office in Kitimat, BC. Management of the Society is conducted through the Prince George office. The PTP ASEP team is comprised of an Executive Director, Finance Manager, 2 program coordinators, 7 job coaches and 4 administrative support positions.

On March 31, 2012 PTP ASEP successfully concluded \$9 Million in funding under the Aboriginal Skills and Employment Partnership program (ASEP) - funded under the Federal Governments Department of Human Resources and Skills Development Canada. However, as a result of PTP ASEP's partnership approach, there was a direct investment of approximately \$13.5 million into training for First Nations.

The ASEP program has expired. Therefore, PTP ASEP has developed and initiated plans to establish renewed funding to support the ongoing operations and purpose of the Society.

Outcomes/Benefits

Access to Training

Originally targets established with Human Resources and Skills Development Canada stated that for the 27-month period ending on March 31, 2012 PTP ASEP would complete assessments on 600 individuals. This target was greatly exceeded with 1080 client assessments completed. This number also represents a measure of the momentum and demand for training and employment services in the communities served by PTP ASEP during its two years of operations.

Of the 1080 assessments 918 clients participated in at least one of the training programs offered by PTP ASEP. Of the 918 trained, 68 were enrolled in skilled trades apprenticeship training.

Employment

Meeting employment targets originally established with HRSDC has always been a top priority for PTP ASEP. For the 27-month period ending March 31, 2012 it was projected that 400 persons would be placed into employment with the assistance of PTP ASEP. As depicted in the above graph 533 people were employed with PTP ASEP's assistance exceeding original targets by approximately 33%. A significant number of these jobs came from major industrial projects such as Rio Tinto Alcan's modernization project, smaller construction projects and a host of mining projects occurring in Northern BC.

Challenges/Areas for Improvement

PTP ASEP's current challenge is to secure funding for sustainability. PTP ASEP's timing for delivery of a trained Aboriginal workforce was linked to the commencement of the construction of the Pacific Trails Pipeline (PTP) and Kitimat liquefied natural gas plant (KLNG). When the construction of those projects was delayed, the Society needed to develop a transition strategy that includes:

- a. Seeking out other industry and sector partners that could potentially offer employment opportunities to our clients on a more immediate basis.
- b. A continued focus on providing training, job placements and skills development in areas that will allow clients to transfer to the natural gas projects when they proceed.
- c. Adjustments to planned job coach staffing levels and the timing and nature of training investments.

Keys to Success in Aboriginal Workforce Programs

A key success factor has been PTP ASEP's ability to establish strong partnerships. PTP ASEP's investment into client training has from the outset been based on a partnership approach. That is, for every dollar invested in client training PTP ASEP has sought to leverage additional contributions from various partners towards the costs of training. In addition to leveraging training dollars this partnership approach ensures that more than one organization has a vested interest in the client's success, providing support, ongoing assistance and follow up.

Diminishing barriers to employment within First Nations communities goes beyond training. A socio-economic approach to training and securing employment that not only provides trainees with the training and certification required to secure employment but also ensures that basic needs are taken care of within the home and community. Job coaches that are mobile and can travel to First Nations communities are critical to a socio-economic approach.

Training a workforce for broad range of employment opportunities and/or industries is key. There are risks associated with linking training to a specific capital project as learned by PTP ASEP. Any changes to the project's scope or timeline have a direct impact on the training program. Luckily for PTP ASEP, there are other significant capital projects in Northwest BC that provide more immediate employment opportunities.

Aboriginal Workforce Related Programs

Program

Northern Opportunities

Overview/Synopsis of Case Study

Northern Opportunities' byline is "Trained in the North, to Stay in the North."

Northern Opportunities (NOpp's) is an innovative northeastern British Columbia partnership with a goal of providing students a seamless learning pathway that starts in secondary school, continues into post-secondary trades, vocational and academic training, and culminates in a career. The partnership is comprised of the Fort Nelson, Peace River North, and Peace River South School Districts, Northern Lights College, area Aboriginal organizations, Chalo School, local Industry and Communities. The NOpp's advantage is found in its collaborative delivery of Dual Credit training programs.

Dual Credit programs combine secondary school, college studies and work-based training enabling youth to simultaneously earn a secondary school diploma and advanced credit training in post-secondary and/or industry certification.

www.northernopportunities.bc.ca

The Workforce Challenge

Northern Opportunities was initiated in 2002 to address the looming labour shortage in the energy sector by increasing awareness of and participation in trades and technical training amongst youth in the region.

To effectively increase participation in trades and technical training, Northern Opportunities had to address awareness, educational and funding barriers. Therefore, the goals of the program include:

- Promoting "stay in school", post secondary laddering, and career options.
- Enabling youth to remain in their communities by providing more local, relevant educational options.
- Creating new avenues to increase the success of aboriginal and non-traditional learners.
- Merging post-secondary education with career options.
- Establishing a Regional Community Learning Centre which provides a continuum of resources and services.

Target Audience

Northeast BC youth including First Nations and Aboriginal.

Program Providers

Partnership between industry, educators, First Nations and government in Northeast BC including:

- BC Hydro
- BC Institute of Technology (BCIT)
- Canadian Natural Resources Ltd. (CNRL)
- Canfor (Canadian Forest Products)
- Chalo School (Fort Nelson First Nation)
- Encana Corporation
- North East Native Advancing Society (NENAS)
- Northern Development Initiative Trust (NDIT)
- Northern Lights College (NLC)
- Shell Canada Energy
- Spectra Energy
- School District 59 (Peace River South)
- School District 60 (Peace River North)
- School District 81(Fort Nelson)
- T.R.A.D.E.S.

Key Features of the Program

The Northeast BC Community Learning Council (CLC) was formed in 2002 as a result of a meeting spearheaded by Duke Energy (now Spectra Energy). The meeting focused on projected labour shortages for Northeast BC and barriers to successful participation of youth in the local energy workforce. Northern Opportunities was an initiative of the CLC created to address impending labour shortage in the energy sector.

The program is built around 4 Pillars:

1. Community Mobilization and Partnerships - Mobilize the community around the idea of enhancing student achievement and success in trades and technology, literacy and lifelong learning.
2. Learner Services - Identify and implement a variety of methods for supporting students including financial incentives, parental engagement, peer mentoring, counseling and other services designed in a manner that recognizes diversity of students and their needs.
3. Educational Offerings - Develop a number of educational offerings for the trades/technology pathway that are relevant and flexible. Student will be able to plan a program that includes:
 - secondary education and graduation with a BC high school diploma;
 - post-secondary training and diploma, with options for pursuit of further education; and
 - work experience and related skills development.
4. Information and Marketing - develop a range of media and promotion techniques to build a positive image of trades and technology career choices for young people and their families.

How it Works:

There are two career pathways for students:

1. University Arts and Science

2. Trades and Technology

In the trades and technology pathway, students normally enter a Northern Opportunities program at the beginning of Grade 11 or 12, spend one to two years and graduate with:

- A high school diploma
- Up to Level 2 trades technical training
- Work experience
- Enhanced employability skills
- Articulation agreements between the program partners enable students to receive “dual credits” - both high school and college credits - and begin college programs while still in high school
- Credits can be accumulated through courses taken at the high school, college campus or in some cases even on industry training sites
- Students participating in Northern Opportunities will have their courses and grades recorded in the college student record system and at their high school
- Students who continue with their college program after graduation will have courses credited towards their chosen program of study as appropriate
- Most programs require one to two semesters at Northern Lights College or BCIT.

Getting Started:

To access the Northern Opportunities program, students:

- Meet with their secondary school counsellor.
- Ensure required prerequisites are completed before the program starts.
- Design a timetable to accommodate the Dual Credit program.
- Student, parent (or guardian) sign the Letter of Understanding.
- Complete an NLC Application form. School counsellor will forward it to the College with all paperwork completed.

Cost:

Each participating School District has reached an agreement with Northern Lights College regarding the payment of tuition fees for Dual Credit programs.

Resources Required

Northern Opportunities has multiple funders:

- Northern Development Initiative Trust Fund NDIT provides funding for a project coordinator, development of trades training initiatives, trades pathways, project marketing and support services for learners
- Duke Energy established a \$1,000,000 endowment fund for scholarships and bursaries (learner services). To date \$260,000 has been distributed.
- Ministry of Energy Mines and Petroleum Resources has provided funding for education and training Initiatives such as Intro to Trades, safety courses etc.
- Office of Learning Technologies assisted with funding for website development and support (information and marketing).
- Industry continues to contribute \$20,000+ in kind annually
- Education partners combined contribute over \$1,000,000 annually in instructor costs, career coordinators, tuition etc.
- Space for readability

In addition, partners are involved in a variety of ways including:

- Governance and direction of the umbrella partnership organization, through the Community Learning Council (CLC) and the Working Group (WG)
- Feedback from local community business and industry in order to identify local needs
- Work experience opportunities from businesses, agencies and industry
- Student bursaries
- On-the-job mentoring
- Special projects/events
- Apprenticeship placements
- Event sponsorship (Career Fairs, Experience NLC)
- Signature sponsorship
- Dual Credit bursaries
- Job placements

Outcomes/Benefits

Students:

- Students are linked to industry through training programs and local employment opportunities
- Students receive information on available training and employment opportunities, locations and schedules, and get assistance in understanding and completing the prerequisites
- A new and innovative education model of “hands-on learning” leading to higher graduation rates

Parents:

- Cost-effective education model (closer to home, costs largely covered by the School Districts)
- Non-traditional education options offered that meet provincial graduation requirements
- Understandable information package outlining training options for their children, costs, training locations and schedules

Communities (including Aboriginal communities):

- Local education and job opportunities for youth
- Local talent to strengthen and diversify the economic and social fabric
- A highly qualified skill-force in trades, academics and vocations
- Growth and strengthening in services, industries and revenue generation

Industry:

- Preferred access to workforce-ready graduates - trades, academic, or vocational
- Increased community profile regarding company's interest and partnership in education and training in northeastern British Columbia
- Media exposure recognizing company's support of Northern Opportunities
- The opportunity to enable economic growth through helping develop sustainable, rewarding careers

Overall program success:

- NOpp has contributed to the delivery of more than 25 different dual credit programs (both trades and non-trades) to high school students including assistance with tuitions.
- Between 2006 and 2010, approximately 1,000 students gained experience in career pathways through work experience facilitated by the schools and their community partners.
 - Numbers of aboriginal students participating is consistent. Continuing efforts to engage these students (i.e.: Aboriginal Career Fairs in all communities) and other specific programs.
- Positive impact on high school graduation rates are evidenced by the chart below comparing Traditional and Dual Credit Programs (Four Year Grad Rate with three (3) school districts combined)

4-Year stats	All Traditional Graduation Rate	All Dual Credit Graduation Rate	Aboriginal Traditional Graduation Rate	Aboriginal Dual Credit Graduation Rate	% of total graduates taking dual credit courses
2006-2010	68.0%	86.3%	53.4%	75.8%	27.1%

Overcoming the Challenges

Challenges	Strategies
Scheduling	<ul style="list-style-type: none"> Northern Lights College had to adjust its calendar to align with School District semesters.
Engaging non-traditional groups	<ul style="list-style-type: none"> Special events, small group activities One to one conversations Role models presenting to target group Aboriginal Career Fairs Presentations to Aboriginal communities/ advisory councils
Students not meeting pre-requisites	<ul style="list-style-type: none"> Academic assessments Trades prep programs Academic upgrading
Need for Safety courses	<ul style="list-style-type: none"> Safety courses included in programs - some funded separately
Financial Barriers	<ul style="list-style-type: none"> Industry bursaries and scholarships
Apprenticeship Opportunities	<ul style="list-style-type: none"> Apprenticeship work opportunities are limited in small communities many businesses don't have certified trades persons. SSA Coordinators work with them to obtain equivalency status so they can sponsor apprentices. SSA Coordinators, NLC Trades and Apprenticeship Coordinator

Keys to Success

Collaboration: School districts, post secondary partners and industry working together to promote career pathways.

- Strong commitment to the vision, mission and goals of the program.
- Role clarity and accountability.
- Information sharing.
- Governance and partnership building.
- Regular meetings and conferences (CLC - meets quarterly, Working Group at least bi-monthly).
- SSA Advisory committees
- College industry advisory groups
- CES / ITA SSA grants
- Partnering with Aboriginal groups

Effective marketing and awareness strategies

- Website
- Fact sheets
- presentations (parents, Aboriginal leaders and groups)
- posters
- events (Trade shows, career fairs, employer recognition)
- speakers
- field trips (Experience NLC)
- videos

In-school Awareness

- 3 School Districts in synchrony
- ITA Marketing of ACE-IT
- NLC Marketing - Experience NLC, dual credit booklet
- Industry partnerships:
- Work experience partners (practicums)
- Apprenticeship partners (SSA)
- Employer / Apprentice Recognition events
- Industry Scholarships: Spectra Energy, Shell Canada, Encana Corp.

Aboriginal Workforce Related Programs

Program

Northern Lights College Power Engineering and Gas Processing, Fort Nelson Campus

Overview/Synopsis of Case Study

Northern Lights College (NLC), in partnership with Encana, Spectra and the North East Native Advancing Society (NENAS)-led Northeast Aboriginal Skills Employment Project (NEASEP) was able to offer power engineering and gas processing training at their Fort Nelson Campus.

The program provided Fort Nelson area residents the opportunity to train locally for highly skilled, high paying natural gas industry careers. The program focused on providing entry-level qualifications for power engineering and gas process operations. Graduates also have the necessary background to progress to more advanced levels of certification. Power engineers are also employed in pulp and paper, mining, and chemical manufacturing. Therefore, the program enhanced graduates' employment across a variety of industries.

Funding agencies and industry encouraged First Nation participation in the program, which resulted in a student body that was approximately 75 per cent aboriginal.

The Workforce Challenge

Power engineering and gas processing occupations are integral components of the natural gas industry in Northeast BC. Increased industry activity in the Horn River Basin shale gas play in the Northern Rockies Region was going to drive increased need for these highly skilled, high paying occupations, yet training was not available locally in Fort Nelson.

There also was a keen interest from the partner companies, Encana and Spectra, to hire locally and from the local Aboriginal community. Often the retention rates of local hires is greater than employees that relocate from elsewhere - especially in more remote, rural areas like Fort Nelson. Community engagements with First Nations and the Municipality have expressed interest in getting more training locally and of higher levels so that they can engage/be employed at meaningful levels with industry.

The lack of local training was a barrier for Fort Nelson area residents to successfully enter into the industry in power engineering/gas processing roles. The Power Engineering and Gas Processing training program addressed that barrier.

Target Audience

Priority was given to residents of the Northern Rockies Regional Municipality. The program was successful in meeting its goal of 75 per cent Aboriginal participants.

Applicants were required to fit one of three specific groups:

1. High school dual credit students - Grade 11 level completion;
2. Adults - Submission of a high school transcript indicating Grade 11 level completion; or
3. Adults - Completion of assessment.

Program Providers

Northern Lights College (NLC) provided the training with funding from Human Resources and Skills Development Canada through Northeast Aboriginal Skills Employment Project (NEASEP) and industry partners: Encana Corporation and Spectra Energy.

NEASEP bridges the skills gap between local Aboriginal peoples and large-scale industrial sectors - including oil and gas, forestry, mining and trades - by providing essential skills training, education, Apprenticeship opportunities, retention and employment support to participants.

Encana (www.encana.com) and Spectra (www.spectraenergy.com) are major industry employers in the Fort Nelson area. Of note, Enbridge (www.enbridge.com) purchased the Encana Cabin gas plant late in the program and have graciously taken or plan to take four Aboriginal 4th Class power engineering graduates.

Key Features of the Program

The Power Engineering and Gas Processing Program was a 10-month program - with a 3 month mandatory upgrading component was also offered at the Fort Nelson NLC campus. There were 16 seats available.

The training started with a mandatory upgrading component that focused on the completion of the Pan-Global upgrade program Basic Mathematics and Physical Science Workbook for Power Engineering. Successful completion of the upgrading was a pre-requisite to the start of the regular Power Engineering program.

Nine months of the program was offered in Fort Nelson. Students then completed one month of training on the boiler at the Fort St. John Campus, plus practicum time at regional Spectra Energy and Encana facilities.

Students received training in 4th Class Power Engineering, 160 hours of firing time on the NLC boiler, and all four levels of Gas Process Operations. Students were able to qualify for the BC Safety Authority Provincial Examinations by successfully completing Parts A and B of the 4th Class Power Engineering program.

A number of other certification courses, related to safety and environmental concerns, were also integrated into the program.

Resources Required

Funding for the program was on a 50:50 share basis between the Government of Canada (Human Resources and Skills Development Canada), and industry partners Encana and Spectra Energy.

Funding partners have also invested through in-kind contributions towards the total program cost of approximately \$600,000.

Outcomes/Benefits

Fourteen of the 16 students that started the program were able to finish.

- 9 Aboriginal students completed the program (8 male; 1 female).
 - As of July 2012 (4 months after program completion), 27% of the Aboriginal graduates are employed, with another 2 awaiting employment offers - bringing employment rate for Aboriginal to 45%.
- 50% of the non-Aboriginal students are working in the power engineering field.
- All other students continue to look for employment.

Graduates have the entry-level qualifications required to find work in the expanding field of natural gas exploration in the Fort Nelson area.

- Certificate in 4th Class Power Engineering
- Certificate in Gas Process Operations

Industry has a local pool of qualified power engineers/gas processors to hire from. Both Spectra Energy and Encana are committed to employing successful local and Aboriginal graduates.

Challenges/Areas for Improvement

NLC did face a few challenges presenting the program in Fort Nelson, particularly finding a qualified instructor with a first or second class power engineering ticket and willing to travel/relocate Fort Nelson to teach this one year program. Power engineers are highly sought after and with the industry operating at full bore, it was a challenge to find someone interested and able to teach the course.

To accommodate an out-of-town instructor, the program was scheduled as a 3 weeks on, 1 week off rotation. This made for very long hours per day and was a challenge for students. Power engineering requires intense studying and this also proved to be a challenge for students - especially those who had been out of school for a period of time.

The more practical, hands-on experience as well as the exposure to industry assists with understanding the practical application of the theory learned in the classroom.

Younger students tended not to have the same level of life experience as the more mature students and not all made the connection between the effort they put into studying, the value of graduating from the program and long-term career opportunities.

Another challenge was making sure all the necessary equipment was on hand, which was accomplished by transporting equipment back and forth between Fort St. John and Fort Nelson.

Keys to Success in Aboriginal Workforce Programs

Collaboration amongst the key partners.

Job Coaches and Circle Meetings (facilitated by NLC Aboriginal Coordinator) were key to assisting students address problems/concerns they faced during the course. These two components were key contributors to the overall high student retention and ultimately graduation rate. Program partners - NEASEP, Encana and Spectra attended as many of the Circle Meetings as possible to share in problem-solving and to give encouragement.

The funding agencies were instrumental to the success of this program. In addition to tuition, the funding also supported students that required living expenses while training. Encana and Spectra provided students practicum placements. Companies moved students to Chetwynd and up and down the Alaska Highway to different plants, to make sure everyone got their practicum placements completed. The practicum tours themselves were very important for students to make the connection between the theory they were learning in class, firing time on the NLC boiler and practical application in the operating environment.

Aboriginal Workforce Related Programs

Program

[Kitimat Valley Institute](#)

Kitimat Valley Institute (KVI) is an accredited non-profit post-secondary educational institute located in Kitimat, BC. KVI was envisioned and developed jointly by the Haisla First Nation and Rio Tinto Alcan as a training institute that could help address the lack of education and training capacity for industrial related projects and jobs. The Institute was established to deliver culturally sensitive programming and provide education and industry training to the Haisla First Nation and the broader communities of the northwest.

Key Features

KVI is focused on regional and Aboriginal employment and designs programs to meet the specific needs of industry. It also offers adult upgrading. KVI provides cultural content and support to students. For example, students from Northern Alberta are coming to the Institute for the Energy Corridor course, even though they would be able to access similar training in Alberta, because of this support.

KVI holds various programs relevant to natural gas industry needs including: a two week Energy Corridor Service Worker course to prepare for gas, hydro and pipeline work; one week Oil and Gas Safety Training; and an International Wharf Security course.

KVI is also in the process of establishing a Class 1 Driver Training with air brakes course.

Other programs address pre-employment and other general training such as:

- An eight-week Industry and Trades Access Certificate which provides exposure to industrial and construction trades as well as safety, employment readiness and essential skills training;
- An eight month pre-employment program, Career and Education Development Achieving Results and Skills (C.E.D.A.R.S.);
- A two-week Introduction to Scaffold certificate course; and
- A Wilderness Information for Lead Development (WILD Safe) program developed for those who work in remote areas.

Outcomes/Benefits

Since the establishment of KVI, the following benefits have been achieved:

- Hundreds complete certificates each year.
- Regular communication with industry informs KVI's selection of courses so that students are trained in what industry needs.
- 94 percent of students who enter KVI's adult upgrading programs complete their Dogwood (BC high school graduation) within a year.

Keys to Success in Aboriginal Workforce Programs

Based on their experience, staff at KVI believes the keys to success in work with Aboriginal adult learners are:

- Strong support of students
- Learning methodologies that are specific to Aboriginal or indigenous learners
- Small class size
- Encouragement of all students to participate in a respectful manner
- Follow-up after graduation

Aboriginal Workforce Related Programs

Program

Construction Careers Development Project- Career Centres, Saskatchewan Indian Institute of Technologies

Key Features

The Construction Career Development Project (CCDP) was created in 1998 following the collaboration between the Saskatchewan Indian Institute of Technologies (SIIT) and a number of organizations. Its purpose was to ensure First Nations/Aborigines were involved in the construction of the Saskatchewan Indian Federated College (SIFC). From this specific targeted goal, CCDP evolved to become an employment development centre. Today, it matches industry's requirements for skilled workers with the availability of an unemployed/under-employed labour force, focusing particularly on First Nations/Aboriginal people.

CCDP later became CCR, Career Centre Regina. This centre became the model for seven others that SIIT set up elsewhere in Saskatchewan including a sister centre in Saskatoon. Steering committees guide the activities of the Centres which include original partners such as the Saskatchewan Construction Association, but also location specific organizations specific such as the local Tribal Council.

The Career Centres work with First Nation/Aboriginal individuals as well as other under-employed groups, Social Assistance recipients and people eligible for Employment Insurance.

The Centres provide links to employment, technical training, driver license training, career planning, academic upgrading, career counseling, and safety training (CSTS). At the recommendation of the construction industry and other partners, the Centres also provide job coaching, act as a liaison between workers and employers and generally help participants overcome barriers to employment and training.

The Centres provide pre-employment training courses for the mining industry and construction. As well, they offer specific construction skills training courses such as steel stud and drywall, concrete forming and residential framing and carpentry.

The program also provides opportunities for apprenticeships. The SIIT Joint Training Committee (JTC) was established in 1999 and indentures First Nation/Aboriginal People in construction trades. Trades training in such occupations as welding, carpentry and plumbing and pipefitting are available and can be offered on reserves.

Outcomes/Benefits

- Career Centre clients are able to gain experience, training, contacts and employment opportunities. As a result, they become more confident, prepared individuals with greater opportunities to find work in their desired sector of the construction workforce.
- The initiative encourages youth to become interested in careers in the industrial sectors.
- Since their launch, the Career Centres have interviewed, assisted and career counseled over 9,800 people and have secured jobs for 1,700 participants.
- Approximately 74 percent of Career Center participants are of First Nation origin;
- Over 50 percent of new participants are under the age of 30
- Almost 2,800 participants are completing, or have completed skills training.

Keys to Success in Aboriginal Workforce Programs

- Close co-operation with industry employers to ensure training and employment opportunities
- Developing effective worker/employer relationships through direct involvement and support

Aboriginal Workforce Related Programs

Program

Skilled Trades Employment Program (STEP), Aboriginal in Trades Training (AITT)

Key Features

The Skilled Trades Employment Program (STEP) is a no-fee development program operated by the B.C. Construction Association (BCCA). STEP is driven by the demand-side of the employment equation, focusing on industry employers' needs in order to match the right job seekers with the trades positions required.

There are four STEP programs running currently with three focused on underrepresented population groups. One of these underrepresented groups is Aboriginals in Trades Training (AITT). All of the programs operate similarly.

STEP is offered out of thirteen offices around British Columbia, including some out of B.C. Construction Association offices in Prince George, Kelowna, Victoria, Vancouver. The program employs some forty staff including regional managers, regional coordinators and Trades Employment Specialists (TES).

The program uses a Connector Model to link TES with job seekers and employers. TES have experience with skilled trades and understand the environment that trades people work in. TES assess job seekers for eligibility and explain the various programs open to them. A proprietary assessment tool is used to identify the job seeker's missing "connection" to employment - a specific technical skill or amount of experience, for example. Once the specific need is determined, the TES works with the job seeker to develop a plan for obtaining the necessary skill or experience and identify any particular support required.

A key feature of the STEP program is the existence of an Innovation Fund. The purpose of this fund is to assist in removing barriers that prevent a job seeker from accessing the training or experience required to connect successfully to work. Some examples of barriers include work boots, daycare (particularly for women), essential skills training, and foundation training. STEP can also assist with credential recognition.

Relationship building with employers is a key part of STEP. A TES has an average of 4-5,000 contacts with employers a year and travels extensively to employer work sites in their area. Because of this, TES have a very good understanding of individual employer needs and are able to find good matches with job seekers.

Aboriginals in Trades Training (AITT) is one of the four STEP programs. AITT matches Aboriginals who have experience or interest in the trades with industry employers who require skilled workers. The program is funded through Industry Training Authority of BC's Aboriginals in Trades Training initiative, a Canada-BC Labour Market Agreement funded program. AITT connects participants with any training they may require. They have held cultural awareness events, bringing First Nations elders councils and participants together with subcontractors to have open dialogues about work expectations and other subjects.

Outcomes/Benefits

- High number of individuals placed in trades training and employment. STEP places between 750-1000 people per year into trades training and apprenticeships with employers.
- Successful placement of Aboriginal peoples in trades careers, opportunities to explore careers in the trades, and connect to employers at no cost.
- High retention rate of job seekers placed with employers, e.g., excellent fit between employer needs and company culture with job seeker skills, experience and personality.

Keys to Success in Aboriginal Workforce Programs

- Innovation Fund - flexibility to address wide range of barriers preventing connection to employment and/or training.
- High degree of connection to local colleges for upgrading or essential skills training.
- Relationships with employers, deep understanding of needs, expectations, and company culture.
- Assessment of job seekers - ensures skills, experience, expectations and cultural needs are identified and met.
- Follow-up with the employer and job seeker after hire - confirms fit and allows any issues to be resolved.

Appendix 2: List of Interviews

Bob Affleck	Spectra Energy
John Amos	Haisla Business Operations
Brian Badge	Northwest Community College
Jeff Beale	Encana
Carla Campbell-Ott	Petroleum HR Council
Diane Collins	PTP ASEP Training Society
Jason Deback	Gabriel Dumont Institute
Brent Deinstadt	Northern Lights College
Laurie Dolan	Northern Lights College (formerly Energy Services BC)
Pam Eales	Northern Lights College
Lorie Gowen	Northwest Community College
Mike Hassel	Nicola Valley Institute of Technology
Cheryl Knight	Petroleum HR Council
Jon Koop	Trinidad Drilling
Gary Ley	Consultant to Haisla Nation
Aireen Luney	Government of BC, Provincial Nominee Program
Adam Molineux	Ministry of Advanced Education
Wendy Moore	KBR
Keith Nyce	Haisla Nation
Dave O'Leary	Northwest Community College
Ines Piccinino	Government of BC
Laurie Rancourt	Northern Lights College
Murray Slezak	Shell Canada
Shad Watts	Nexen
Kelley Williams	Kitimat Valley Institute

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Appendix 4: Detailed Northern and Southern Economic Development Region Profiles and Tables

Summary of Key Economic Indicators for Northern British Columbia

The following table summarizes key population, labour market and economic characteristics for Northern BC development regions.

Table 9 - Summary of Key Population, Labour Market and Economic Characteristics¹⁸

Characteristic	BC	Cariboo	North Coast	Nechako	Northeast
Population (Census 2011 - unless otherwise noted)					
Population (2011) (Percentage of Total BC)	4,400,057 100 %	154,271 3.5 %	56,145 1.3 %	39,837 <1 %	65,550 1.5 %
Population Growth (2006 - 2011)	7 %	-.1 %	-3.4 %	2.5 %	1.9 %
Aboriginal Peoples (Percentage of Population - Census 2006)	4.8 %	12.2 %	35.5 %	19.5 %	12.7 %
Immigrants (Percentage of Population - Census 2006)	30.5 %	9.5 %	10.9 %	9.7 %	7.3 %
Immigrant Arrivals: 2007 - 2011 (% of Total BC) (Citizenship and Immigration Canada, Landed Immigrant Database)	100 %	.7 %	.2 %	.1 %	.4 %
Age Demographics (Census 2011)					
0-17 yrs	19 %	20 %	23 %	24 %	25 %
18 - 24 yrs	10 %	11 %	11 %	11 %	10 %
25-64 yrs	56 %	56 %	54 %	52 %	55 %
65+ yrs	15 %	13 %	12 %	13 %	9 %
Labour Market (Statistics Canada Labour Force Survey Annual Averages compiled by BC Stats)					
Labour Force in 2011	2,458,000	87,900	47,400	39,100	
Participation Rate ¹⁹	65 %	69 %	71.1 %	76.1 %	

¹⁸ In some cases, information for North Coast and Nechako regions are combined due to small samples available in the individual regions.

¹⁹ The participation rate is the number of labour force participants expressed as a percentage of the population 15 years of age and over.

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Characteristic	BC	Cariboo	North Coast	Nechako	Northeast
Male (2010)	70.1 %	74.9 %	74.3 %	81.6 %	
Female (2010)	61.1 %	61.9 %	59.9 %	72 %	
Employment Rate ²⁰	60.2 %	63.7 %	64.9 %	72.4 %	
Average Unemployment Rate ²¹ in 2011	7.5 %	7.6 %	8.6 %	4.9 %	
Unemployment Rate in May 2012	6.9 %	7.9 %	11.6 %	3.9 %	
Education Level (BC Stats - Census 2006)					
Population 24 - 54 years without High School Complete	11.1%	18.0%	23.0%	20.3%	21.0%
Population 24 - 54 years with Certificate or Diploma	31.5%	34.2%	33.1%	31.1%	35.9%
Population 24 - 54 years with University Degree	24.1%	12.9%	11.8%	12.1%	10.1%
Population 24 - 54 years with Trades Skills	15.5%	20.8%	18.7%	21.4%	25.2%
Employment ((Statistics Canada Labour Force Survey Annual Averages compiled by BC Stats))					
Percentage of Full-year/Full-time Workers	46.5%	47.1%	41.4%	44.7%	47.5%
Average Income (All Workers)	\$34,978	\$34,859	\$31,754	\$34,611	\$40,087
Average Income (Full-time Workers)	\$57,772	\$57,831	\$57,265	\$57,466	\$66,376
Percentage of Employment in Good-producing Sectors	19.7%	26.0%	26.1%	28.5%	
Construction	9.0%	8.1%	7.9%	9.4%	
Manufacturing	7.2%	10.8%	11.1%	5.6%	
Mining, Oil & Gas, Forestry & Fishing	1.8%	5.2%	5.5%	10.8%	
Agriculture	1.0%	n/a	n/a	n/a	
Utilities	.5%	n/a	n/a	n/a	

²⁰ The employment rate (formerly the employment/population ratio) is the number of persons employed expressed as a percentage of the population 15 years of age and over.

²¹ The unemployment rate is the number of unemployed persons expressed as a percentage of the labour force.

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Characteristic	BC	Cariboo	North Coast	Nechako	Northeast
Percentage of Employment in Service Sectors	80.3%	74.0%	73.9%		71.2%
Estimated Employment Growth (2010 - 2015) (BC Labour Market Scenario Model, 2010-2020)	1.8 %	1.1 %	3.9 %		2.7 %
Capital Projects (new and/or expansions) (BC Inventory of Major Projects: March 2012)					
Forestry: <i>Under-construction</i>		2	0	0	0
<i>Proposed</i>		1	0	0	0
Mining: <i>Under-construction</i>		3	1	1	1
<i>Proposed</i>		5	10	8	10
Oil & Gas: <i>Under-construction</i>		1	0	0	1
<i>Proposed</i>		2	8	0	2
Utilities: <i>Under-construction</i>		2	5	0	4
<i>Proposed</i>		7	15	4	15

Summary of Key Economic Indicators for Southern British Columbia

The following table summarizes key population, labour market and economic characteristics for the Southern BC development regions.

Table 10 - Summary of Key Population, Labour Market and Economic Characteristics²²

Characteristic	BC	Vancouver Island/Coast	Mainland/Southwest	Thompson/Okanagan	Kootenay
Population (Census 2011 - unless otherwise noted)					
Population (2011) (% of Total BC)	4,400,057 100 %	759,366 (17 %)	2,657,711 (60 %)	520,803 (12 %)	146,264 (3 %)
Population Growth (2006 - 2011)	7 %	4.4 %	9.1 %	6 %	2.9 %
Aboriginal Peoples (% of Population - Census 2006)	4.8 %	6.1 %	2.5 %	6.2 %	4.9 %
Immigrants (% of Population - Census 2006)	30.5 %	15 %	32 %	12 %	10 %
Immigrant Arrivals: 2007 - 2011 (% of Total BC) (Citizenship and Immigration Canada, Landed Immigrant Database)	100 %	5.6 %	89 %	3.1 %	.8 %
Age Demographics (Census 2011)					
0-17 yrs	19 %	17 %	19 %	17 %	18 %
18 - 24 yrs	10 %	9 %	10 %	9 %	10 %
25-64 yrs	56 %	56 %	57 %	54 %	55 %
65+ yrs	15 %	18 %	14 %	19 %	18 %
Labour Market (Statistics Canada Labour Force Survey Annual Averages compiled by BC Stats)					
Labour Force in 2011	2,458,000	397,700	1,531,100	276,400	78,500
Participation Rate ²³	65 %	60.7 %	66.2 %	63.1 %	61.7 %
Male (2010)	70.1 %	66.8 %	70.7 %	69.4 %	64.2 %
Female (2010)	61.1 %	59.6 %	61.6 %	60.6 %	56.6 %

²² Economic and demographic information presented is based on the latest available through BC Stats and/or Statistics Canada 2011 Census. In some cases, information for North Coast and Nechako regions are combined due to small samples available in the individual regions.

²³ The participation rate is the number of labour force participants expressed as a percentage of the population 15 years of age and over.

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Characteristic	BC	Vancouver Island/Coast	Mainland/Southwest	Thompson/Okanagan	Kootenay
Employment Rate ²⁴	60.2 %	56 %	61.4 %	58.2 %	56.7 %
Average Unemployment Rate ²⁵ in 2011	7.5 %	7.7 %	7.3 %	7.9 %	8.2 %
Unemployment Rate in May 2012	6.9 %	5.8 %	6.7 %	8.9 %	7.7 %
Education Level (BC Stats - Census 2006)					
Population 24 - 54 years without High School Complete	11.1 %	11.6 %	9.5 %	12.9 %	12.8 %
Population 24 - 54 years with Certificate or Diploma	31.5 %	34.8 %	28.8 %	37.3 %	39.4 %
Population 24 - 54 years with University Degree	24.1 %	21.7 %	28.8 %	14.2 %	14.3 %
Population 24 - 54 years with Trades Skills	15.5 %	15 %	13.8 %	19 %	21.2 %
Employment ((Statistics Canada Labour Force Survey Annual Averages compiled by BC Stats))					
Percentage of Full-year/Full-time Workers	46.5%	44.5 %	47.8 %	44.8 %	41.7 %
Average Income (All Workers)	\$34,978	\$32,305	\$36,840	\$30,489	\$30,637
Average Income (Full-time Male Workers)	\$57,772	\$53,546	\$59,969	\$51,752	\$54,137
(Full-time Female Workers)	\$41,073	\$39,536	\$43,113	\$35,745	\$36.050
Percentage of Employment in Good-producing Sectors	19.7%	17.1%	18.3%	23.7%	29.4%
Construction	9.0%	8.6%	8.9%	10.0%	11.4%
Manufacturing	7.2%	4.9%	7.3%	8.2%	8.5%
Mining, Oil & Gas,	1.8%	2.2%	.8%	2.1%	2.1%

²⁴ The employment rate (formerly the employment/population ratio) is the number of persons employed expressed as a percentage of the population 15 years of age and over.

²⁵ The unemployment rate is the number of unemployed persons expressed as a percentage of the labour force.

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Characteristic	BC	Vancouver Island/Coast	Mainland/Southwest	Thompson/Okanagan	Kootenay
Forestry & Fishing					
Agriculture	1.0%	1.0%	.9%	2.3%	n/a
Utilities	.5%	n/a	0.5%	1.1%	n/a
Percentage of Employment in Service Sectors	80.3%	82.9%	81.7%	76.3%	70.6%
Estimated Employment Growth 2010-2015 (BC Labour Market Scenario Model, 2010-2020)	1.8 %	1.6 %	1.9 %	1.2 %	2.0 %

Detailed Tables/Information to Support Analysis of Potential Migration from Southern Regions

Table 11 - Industry Make-up Across BC's Development Regions

	Van Island/ Coast	Mainland/ SW	Thompson/ Okanagan	Kootenay	Caribou	North Coast & Nechako	Northeast
Percentage of BC's Total Employment	17 %	62 %	11 %	3 %	4 %	2 %	2 %
<i>Percentage of BC's Employment in Goods Producing Industries</i>							
Agriculture	16 %	48 %	23 %	5 %	6 %	1 %	0.30 %
Forestry	22 %	14 %	23 %	10 %	20 %	10 %	1 %
Fishing, Hunting, & Trapping	34 %	41 %	3 %	4 %	1 %	17 %	1 %
Oil & Gas	8 %	26 %	12 %	6 %	2 %	3 %	44 %
Mining (non Oil & Gas)	6 %	22 %	24 %	25 %	10 %	3 %	11 %
Services to Mining	4 %	17 %	14 %	4 %	10 %	10 %	41 %
Utilities	8 %	66 %	13 %	4 %	4 %	2 %	3 %
Construction	19 %	57 %	14 %	4 %	3 %	1 %	2 %
Mfg--Food & Beverages	12 %	73 %	11 %	1 %	1 %	2 %	0 %
Mfg--Wood Products	13 %	27 %	22 %	12 %	16 %	8 %	3 %
Mfg--Paper Products	39 %	27 %	6 %	4 %	16 %	4 %	3 %
Mfg--Printing	8 %	80 %	7 %	1 %	3 %	1 %	0 %
Mfg--Rubber, Plas. Chem	6 %	71 %	17 %	3 %	3 %	1 %	1 %
Mfg--Mineral Products	7 %	58 %	10 %	12 %	2 %	9 %	1 %
Mfg--Metal Fab & Machinery	8 %	79 %	7 %	2 %	3 %	1 %	0 %
Mfg--Comp, Electronic, Elect	7 %	84 %	5 %	3 %	1 %	0 %	0 %
Mfg--Transportation Eq.	21 %	62 %	15 %	0 %	1 %	0 %	0 %
Mfg--Other	9 %	71 %	14 %	2 %	2 %	1 %	0 %
Total Goods Producing	15 %	55 %	15 %	5 %	5 %	3 %	3 %
<i>Percentage of BC's Employment in Service Producing Industries</i>							
Trade--Wholesale	12 %	73 %	8 %	2 %	3 %	1 %	2 %
Trade--Retail	19 %	58 %	12 %	4 %	4 %	2 %	2 %
Transportation	12 %	67 %	10 %	2 %	5 %	3 %	2 %
Finance, Insurance, R.E.	16 %	69 %	10 %	2 %	2 %	1 %	1 %
Prof--Bus Services	15 %	68 %	10 %	2 %	2 %	2 %	2 %
Prof--Computer Systems	15 %	76 %	6 %	1 %	1 %	1 %	0 %
Prof--Other Services	16 %	69 %	9 %	1 %	2 %	2 %	1 %
Management/Admin/Other Supp	17 %	68 %	8 %	3 %	3 %	1 %	1 %

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

	Van Island/ Coast	Mainland/ SW	Thompson/ Okanagan	Kootenay	Caribou	North Coast & Nechako	Northeast
Education	17 %	65 %	10 %	2 %	3 %	2 %	1 %
Health & Social Assist.	22 %	57 %	11 %	3 %	3 %	2 %	1 %
Information, Culture, Rec	13 %	69 %	12 %	3 %	2 %	1 %	0 %
Accom & Food Services	17 %	62 %	12 %	3 %	3 %	1 %	1 %
Services--other	16 %	63 %	11 %	3 %	4 %	1 %	2 %
Government	27 %	55 %	10 %	2 %	3 %	2 %	1 %
Total Service Producing	17 %	63 %	11 %	3 %	3 %	2 %	1 %

Source: BC 2010 Employment Estimates by Industry and Development Region (BC Stats)

Occupational Transferability

The following table provides an overview of the percentage of BC's employment in the occupations hired by the natural gas and/or industrial construction industries. An employment rate for an individual occupation that is greater than the region's percentage of total employment may indicate a concentration of the qualifications, skills and knowledge the targeted industries are looking for. Occupational concentrations are bolded.

Table 12 - Prevalence of Occupations in the Southern Regions Hired by Natural Gas Industry and/or Heavy Industrial Construction

Occupations by National Occupation Classification (NOC)	Hired By		Southern BC Development Regions			
	Natural Gas	Industrial Construction	Vancouver Island/ Coast	Mainland/ SW	Thompson/ Okanagan	Kootenay
Percentage of Total Employment in BC			17 %	62 %	11 %	3 %
A113 Purchasing managers	X	X	11 %	76 %	7 %	2 %
A121 Engineering managers	X	X	8 %	80 %	6 %	2 %
A141 Facility operation and maintenance managers	X		16 %	65 %	10 %	3 %
A371 Construction managers	X	X	16 %	64 %	12 %	3 %
A381 Primary production managers (except agriculture)	X		14 %	30 %	17 %	10 %
A392 Utilities managers	X		13 %	68 %	10 %	3 %
B315 Purchasing agents and officers	X	X	14 %	65 %	10 %	4 %
B573 Production clerks	X		8 %	78 %	7 %	2 %
B574 Purchasing and inventory clerks	X	X	12 %	72 %	8 %	2 %
C013 Geologists, geochemists and geophysicists	X		13 %	67 %	9 %	2 %
C031 Civil engineers	X	X	13 %	73 %	8 %	2 %
C032 Mechanical engineers	X	X	9 %	81 %	6 %	1 %
C033 Electrical and electronics engineers	X	X	5 %	88 %	4 %	1 %
C034 Chemical engineers	X		9 %	76 %	6 %	2 %
C042 Metallurgical and materials engineers	X	X	4 %	92 %	4 %	0 %
C044 Geological engineers	X	X	18 %	58 %	13 %	2 %
C045 Petroleum engineers	X		14 %	49 %	14 %	3 %
C111 Chemical technologists and technicians	X		14 %	69 %	9 %	2 %
C112 Geological and mineral technologists and technicians	X		14 %	44 %	15 %	8 %
C131 Civil engineering technologists and technicians	X	X	19 %	60 %	12 %	2 %

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Occupations by National Occupation Classification (NOC)	Hired By		Southern BC Development Regions			
	Natural Gas	Industrial Construction	Vancouver Island/ Coast	Mainland/ SW	Thompson/ Okanagan	Kootenay
Percentage of Total Employment in BC			17 %	62 %	11 %	3 %
C132 Mechanical engineering technologists and technicians	X	X	13 %	70 %	9 %	2 %
C133 Industrial engineering and manufacturing technologists and technicians	X	X	9 %	77 %	7 %	2 %
C134 Construction estimators	X	X	11 %	75 %	8 %	2 %
C141 Electrical and electronics engineering technologists and technicians	X		13 %	69 %	9 %	3 %
C143 Industrial instrument technicians and mechanics	X		19 %	40 %	15 %	7 %
C153 Drafting technologists and technicians	X	X	14 %	68 %	10 %	2 %
C161 Non-destructive testers and inspectors	X	X	22 %	43 %	16 %	3 %
C162 Engineering inspectors and regulatory officers	X	X	14 %	69 %	8 %	2 %
C163 Inspectors in public and environmental health and occupational health and safety	X	X	20 %	54 %	12 %	4 %
C164 Construction inspectors	X	X	24 %	52 %	13 %	3 %
H011 Supervisors, machinists and related occupations	X	X	13 %	66 %	11 %	4 %
H012 Contractors and supervisors, electrical trades and telecommunications occupations	X	X	17 %	59 %	13 %	3 %
H013 Contractors and supervisors, pipefitting trades	X	X	13 %	66 %	10 %	3 %
H014 Contractors and supervisors, metal forming, shaping and erecting trades	X	X	17 %	57 %	14 %	4 %
H015 Contractors and supervisors, carpentry trades	X	X	19 %	55 %	15 %	4 %
H016 Contractors and supervisors, mechanic trades	X	X	20 %	49 %	15 %	4 %

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Occupations by National Occupation Classification (NOC)	Hired By		Southern BC Development Regions			
	Natural Gas	Industrial Construction	Vancouver Island/ Coast	Mainland/ SW	Thompson/ Okanagan	Kootenay
Percentage of Total Employment in BC			17 %	62 %	11 %	3 %
H017 Contractors and supervisors, heavy construction equipment crews	X	X	24 %	42 %	17 %	5 %
H019 Contractors and supervisors, other construction trades, installers, repairers and servicers	X	X	16 %	63 %	12 %	3 %
H112 Steamfitters, pipefitters and sprinkler system installers	X	X	20 %	47 %	14 %	5 %
H113 Gas fitters	X	X	18 %	54 %	15 %	4 %
H121 Carpenters	X	X	22 %	49 %	16 %	5 %
H143 Insulators	X	X	20 %	51 %	15 %	4 %
H212 Industrial electricians	X	X	17 %	43 %	15 %	8 %
H213 Power system electricians	X		13 %	48 %	21 %	6 %
H221 Stationary engineers and auxiliary equipment operators	X		23 %	44 %	13 %	5 %
H222 Power systems and power station operators	X		16 %	45 %	19 %	6 %
H311 Machinists and machining and tooling inspectors	X		10 %	72 %	9 %	3 %
H321 Sheet metal workers		X	15 %	64 %	12 %	3 %
H322 Boilermakers		X	21 %	39 %	18 %	5 %
H323 Structural metal and platework fabricators and fitters		X	10 %	72 %	9 %	3 %
H324 Ironworkers		X	15 %	62 %	12 %	4 %
H326 Welders and related machine operators	X	X	19 %	50 %	15 %	5 %
H411 Construction millwrights and industrial mechanics	X	X	19 %	36 %	17 %	8 %
H412 Heavy-duty equipment mechanics	X	X	24 %	26 %	22 %	10 %
H413 Refrigeration and air conditioning mechanics	X	X	16 %	64 %	11 %	3 %
H611 Heavy equipment operators	X	X	27 %	22 %	24 %	10 %
H621 Crane operators	X	X	19 %	51 %	15 %	5 %
H711 Truck drivers	X	X	19 %	45 %	17 %	5 %
H82 Trades helpers and labourers		X	19 %	54 %	15 %	4 %

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

Occupations by National Occupation Classification (NOC)	Hired By		Southern BC Development Regions			
	Natural Gas	Industrial Construction	Vancouver Island/ Coast	Mainland/ SW	Thompson/ Okanagan	Kootenay
Percentage of Total Employment in BC			17 %	62 %	11 %	3 %
I122 Supervisors, oil and gas drilling and service	X		15 %	11 %	18 %	5 %
I132 Oil and gas well drillers, servicers, testers and related workers	X		10 %	13 %	17 %	5 %
I142 Oil and gas well drilling workers and services operators	X		8 %	9 %	17 %	5 %
I215 Oil and gas drilling, servicing and related labourers	X		9 %	9 %	17 %	5 %
J012 Supervisors, petroleum, gas and chemical processing and utilities	X		15 %	47 %	15 %	7 %
J112 Petroleum, gas and chemical process operators	X		11 %	32 %	16 %	6 %

Source: BC 2010 Employment Estimates by Industry and Development Region (BC Stats)

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

The following table provides an overview of occupations that are not hired by the natural gas and/or heavy industrial construction industries. People in these occupations are likely to have enough similar skills that they could transition into a like occupation in the natural gas sector.

Table 13 - Prevalence of Occupations in the Southern Regions Transferable Into Natural Gas and/or Heavy Industrial Construction

Occupations by National Occupation Classification (NOC)	Could potential transition into		Southern BC Development Regions			
	Natural Gas	Industrial Construction	Vancouver Island/Coast	Mainland/SW	Thompson/Okanagan	Kootenay
% of Total Employment in BC			17 %	62 %	11 %	3 %
H83 Public works and other labourers, n.e.c.	Labourer/entry-level	Labourer	24 %	52 %	12 %	3 %
I151 Logging machinery operators	Labourer/entry-level	Labourer	25 %	5 %	25 %	11 %
I16 Logging and forestry workers	Labourer/entry-level	Labourer	31 %	5 %	25 %	9 %
I214 Mine labourers	Labourer/entry-level	Labourer	10 %	12 %	25 %	21 %
I216 Logging and forestry labourers	Labourer/entry-level	Labourer	23 %	20 %	22 %	9 %
J011 Supervisors, mineral and metal processing	Process operator	n/a	9 %	52 %	13 %	13 %
J015 Supervisors, forest products processing	Process operator	n/a	23 %	21 %	19 %	10 %
J111 Central control and process operators, mineral and metal processing	Process operator	n/a	14 %	12 %	24 %	25 %
J113 Pulping control operators	Process operator	n/a	47 %	6 %	6 %	6 %
J114 Papermaking and coating control operators	Process operator	n/a	44 %	18 %	6 %	6 %
J125 Inspectors and testers, mineral and metal processing	Inspector	Inspector	12 %	51 %	14 %	12 %
J13 Machine operators and related workers in chemical, plastic and rubber processing	Labourer/entry-level	Labourer	13 %	58 %	17 %	4 %
J14 Machine operators and related workers in pulp and paper production and wood processing	Labourer/entry-level	Labourer	18 %	29 %	19 %	10 %

Labour Market Supply Side Environmental Scan for BC's Natural Gas Sector

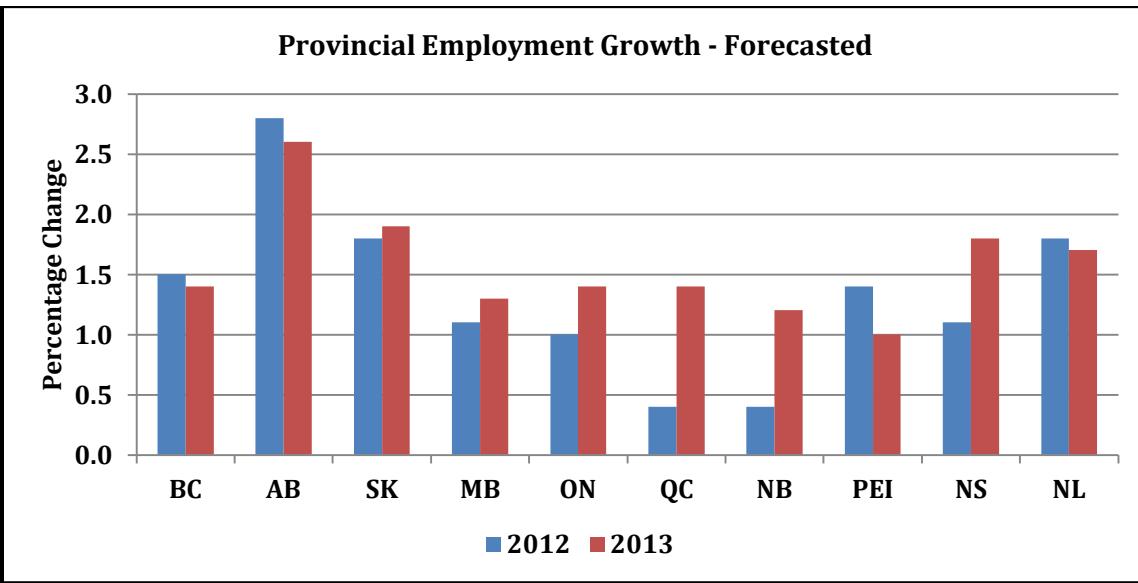
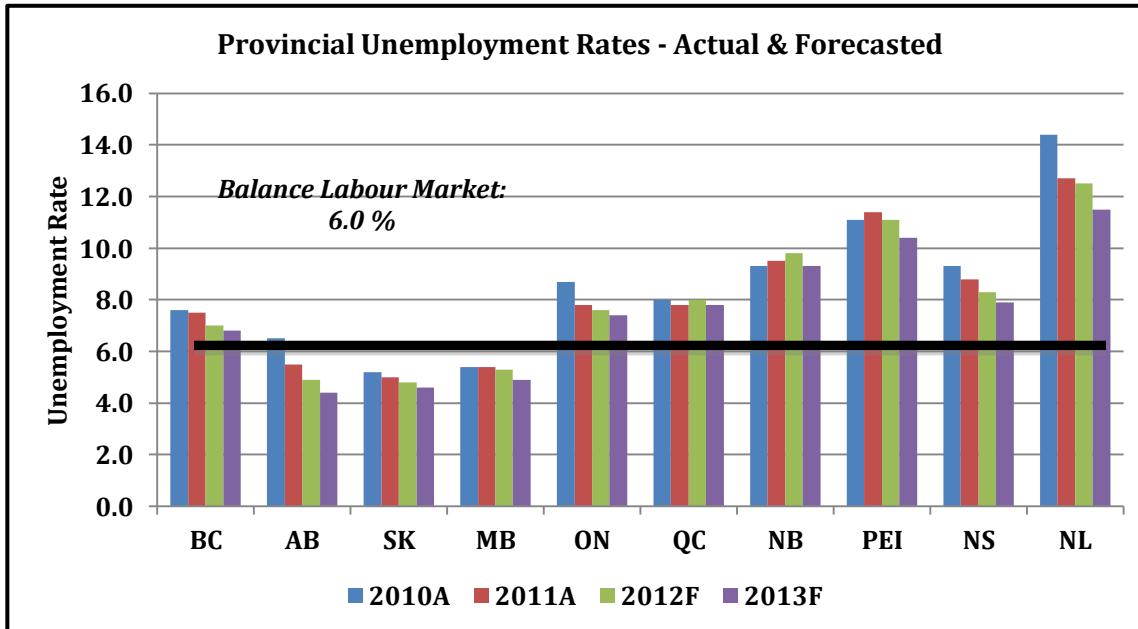
Occupations by National Occupation Classification (NOC)	Could potential transition into		Southern BC Development Regions			
	Natural Gas	Industrial Construction	Vancouver Island/Coast	Mainland/SW	Thompson/Okanagan	Kootenay
% of Total Employment in BC			17 %	62 %	11 %	3 %
J311 Labourers in mineral and metal processing	Labourer/entry-level	Labourer	10 %	50 %	13 %	14 %
J312 Labourers in metal fabrication	Labourer/entry-level	Labourer	11 %	68 %	11 %	4 %
J313 Labourers in chemical products processing and utilities	Labourer/entry-level	Labourer	9 %	59 %	17 %	7 %
J314 Labourers in wood, pulp and paper processing	Labourer/entry-level	Labourer	18 %	23 %	20 %	11 %
J319 Other labourers in processing, manufacturing and utilities	Labourer/entry-level	Labourer	12 %	72 %	10 %	2 %

Appendix 5: Employment Opportunities in Canadian Provinces

To determine the employment potential in the other provinces, we examined two indicators:

1. Unemployment trends
2. Projected employment growth

We assumed that an uncertain employment outlook at home increases the likelihood that workers will migrate to areas where employment is growing and jobs are available. The charts below provide an overview of projected provincial unemployment rates and growth.



Appendix 6: Post Secondary Education and Training Programs in Support of Select Occupations

Select Occupation	NOC	Program/Description	Institution	Qualification
1. Engineers a) Civil Engineers (2131)	213	Civil Engineering	BCIT, School of Energy, Burnaby	Bachelor of Engineering
		Civil Engineering	UBC, Vancouver, Okanagan	Bachelor of Applied Science
b) Mechanical Engineers (2132)	213	Mechanical Engineering	BCIT, School of Energy, Burnaby	Bachelor of Engineering B.Eng - (Mechanical)
		Mechanical Engineering	UBC, Vancouver, Okanagan	Bachelor of Applied Science
		Mechanical Engineering	University of Victoria, Victoria	Bachelor of Engineering, Mechanical
c) Electrical/instrumentation Engineers (2133)	213	Electrical Engineering	BCIT, School of Energy, Burnaby	Bachelor of Engineering Electrical
		Electrical Engineering	UBC, Vancouver, Okanagan	Bachelor of Applied Science in Electrical Engineering
		Electrical Engineering	University of Victoria, Victoria	B.Eng. in Electrical Engineering
d) Chemical Engineers (2134)	213	(1) Chemical Engineering or in (2) Chemical and Biological Engineering	UBC, Vancouver, Okanagan	Bachelor of Applied Science
2. Other engineers a) Petroleum Engineers (2145)	214	Requires Bachelor of Engineering	Full engineering programs at UBC, BCIT, SFU	B.Eng or B.A.Sc.
		Petroleum Engineering degree	University of Alberta	Bachelor of Science
		U of C: Undergraduate Studies Both chemical engineering and oil and gas engineering degrees are offered; minors/specializations include: petroleum engineering, biomedical engineering and energy and environment	University of Calgary, Schulich School of Engineering, Calgary	Bachelor of Science
b) Reservoir Engineers (2145)	214	Require Bachelor of Engineering	Full engineering programs at UBC, BCIT, SFU	B.Eng or B.A.Sc.

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Select Occupation	NOC	Program/Description	Institution	Qualification
		Petroleum Engineering	Note: University of Alberta's Petroleum Engineering degree includes specialization area, Petroleum reservoir engineering	Bachelor of Science
3. Technical occupations - physical science a) Petroleum Engineering Technologists	2212	Petroleum Engineering Technology	NAIT, Edmonton	Diploma
		Petroleum Engineering Technology	SAIT Polytechnic, Calgary	Diploma
b) Geological Engineering Technologists	2212	Geological Technology	Northern Alberta Institute of Technology (NAIT), Edmonton	Diploma
		Mining and Mineral Exploration Technology	BCIT, Burnaby	Diploma of Technology
		Welding Engineering Technology	SAIT, Calgary	Diploma
4. Technical occupations - electrical & electronics (instrumentation technologists) a) Industrial Instrumentation Technicians (2243)	224	Industrial Instrumentation, Apprenticeship	BCIT, Burnaby	Trade Qualification
		Industrial Instrumentation and Controls	BCIT, Burnaby	Diploma of Technical Studies
		Industrial Instrumentation Mechanic Apprenticeship	Northern Lights College, Fort St. John	Trade Qualification
b) Instrumentation Engineering Technologists (2241) /Electrical and electronics engineering technologists and technicians	224	Instrumentation Engineering Technology (from ASET website)	NAIT, Edmonton	Diploma
		Instrumentation Engineering Technology	SAIT, Calgary	Diploma
		Industrial Automation Technician	North Island College, Campbell River	Diploma

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Select Occupation	NOC	Program/Description	Institution	Qualification
5. Inspectors in Public and Environmental Health and Safety (2263)	226	<ul style="list-style-type: none"> A bachelor's degree or college diploma in a discipline such as food science, environmental studies, chemistry or health and safety is usually required. In some establishments, several years of related work experience and the completion of in-house training courses may substitute for formal education. Public health inspectors employed outside Quebec require certification with the Canadian Institute of Public Health Inspectors. Occupational health and safety officers may require certification with the Association for Canadian Registered Safety Professionals National Occupational Standards 		Diploma
		Environmental Health - Public Health Inspection	BCIT, Burnaby	Bachelor of Technology
6. Environmental Technicians	4161	Chemical and Environmental Technology (Analytical Science Option)	BCIT, Burnaby	Diploma, 2 yrs
		Environmental Engineering Technology Bachelor of Technology	BCIT, Burnaby	Diploma
		Environmental Technology Diploma	Camosun College, Victoria	Diploma
		Aboriginal Environmental Technician	College of New Caledonia, Fort St. James	Certificate
		Natural Resources and Environmental Technology, Diploma	College of New Caledonia, Prince George	Diploma
		Environmental Protection Technology	Kwantlen Polytechnic University, Langley	Diploma
		Environmental Technician Certificate	Vancouver Island University, Nanaimo	Certificate

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Select Occupation	NOC	Program/Description	Institution	Qualification
		Environmental Science, Environmental Studies are other options available elsewhere Also see Education Planner.ca		
7. Ironworker/Structural Metal Fabricator and Fitter (construction not NG)	7235 7236	Ironworker - Generalist or Reinforcing, Apprenticeship	BCIT, Burnaby	Trade Qualification
		Metal Fabricator, Apprenticeship	BCIT, Burnaby	Trade Qualification
		Metal Fabrication, Apprenticeship	Camosun College, Victoria	Trade Qualification
		Metal Fabrication, Apprenticeship)	Kwantlen Polytechnic University, Cloverdale	Trade Qualification
		Metal Fabricator Foundation	North Island College, Courtenay, Campbell River, Port Alberni	
		Metal Fabricator (Fitter Certificate)	Okanagan College, Kelowna	Certificate
		Metal Fabricator Foundation)	Thompson Rivers University, Kamloops, Williams Lake	Certificate
8. Carpenters	7271	Carpentry, Apprenticeship	British Columbia Institute of Technology, Burnaby	Trade Qualification
		Carpentry, Apprenticeship	Camosun College, Victoria	Trade Qualification
		Carpentry, Apprenticeship	College of New Caledonia, Prince George, Quesnel, Vanderhoof	Trade Qualification
		Carpentry, Apprenticeship	College of the Rockies, Cranbrook	Trade Qualification
		Residential Construction Program	Discovery Community College, Nanaimo	Certificate/ Diploma
		Carpentry, Apprenticeship	Kwantlen Polytechnic University, Cloverdale	Trade Qualification
		Carpentry, Apprenticeship	Métis Skills and Employment Centre, Abbotsford	
		Carpentry Apprenticeship Level 1	Native Education College, Vancouver	
		Carpentry, Apprenticeship	North Island College, Courtenay, Campbell River, Port Alberni	Trade Qualification

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Select Occupation	NOC	Program/Description	Institution	Qualification
		Carpentry, Apprenticeship	Northern Lights College, Atlin, Chetwynd, Dawson Creek, Dease Lake, Fort Nelson, Fort St. John, Hudson's Hope, Tumbler Ridge	Trade Qualification
		Carpentry, Apprenticeship	Northwest Community College, Currently in Terrace and Houston; can also be delivered in Smithers, Kitimat, Nass and Prince Rupert in response to demand	Trade Qualification
		Carpentry, Apprenticeship	Okanagan College, Kelowna - certificate	Trade Qualification
		Carpentry, Apprenticeship	Selkirk College, Castlegar, Grand Forks, Nakusp, Nelson, Trail	Trade Qualification
		Carpentry	Thompson Rivers University, Kamloops, Williams Lake	Trade Qualification
		Carpentry	Vancouver Island University, Nanaimo	Trade Qualification
		Carpentry	University of the Fraser Valley, Abbotsford, Chilliwack, Mission, Hope, Agassiz	Trade Qualification
		Carpentry, Apprenticeship	VanASEP - Aboriginal Skills and Employment Partnership (Vancouver), Vancouver	Trade Qualification
9. Boilermakers (construction not NG)	7234	Boilermaker Apprenticeship	British Columbia Institute of Technology Burnaby	Trade Qualification
10. Electrical trades & telecommunications Industrial Electricians	7242	Level 1 and 2 = Electrician available at various locations Level 3 and 4 = Industrial Electrician = only available at Thompson Rivers		
		Apprenticeship Industrial Electrician,	Thompson Rivers, Kamloops, Williams Lake	Trade Qualification
11. Steamfitters and	7252	Steamfitting	BCIT, Burnaby	Trade Qualification

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Select Occupation	NOC	Program/Description	Institution	Qualification
Pipefitters		Steamfitter/Pipefitter	Camosun College	Trade Qualification
		Steamfitting	Pacific Vocational College, Burnaby	Trade Qualification
		Steamfitting	UA Piping Industry College of BC, Delta, Fort St. John	Trade Qualification
12. Metal forming, shaping, erecting trades Welders (7265)	726	Welder, Apprenticeship	BCIT, Burnaby	Trade Qualification
		Welding Apprenticeship	Camosun College, Victoria	Trade Qualification
		Welding Apprenticeship	College of New Caledonia, Prince George, Quesnel TBA, Burns Lake, Fort St. James, Mackenzie - Level C- Level B and A in Prince George, Level B in Burns Lake and Fort St. James	Trade Qualification
		Welding Apprenticeship	College of the Rockies, Cranbrook	Trade Qualification
		Welding Apprenticeship	Kwantlen Polytechnic University, Cloverdale	Trade Qualification
		Welding Apprenticeship	North Island College, Campbell River, Port Alberni, Levels C, B and A	Trade Qualification
		Welding Apprenticeship	Northern Lights College, Dawson Creek	Trade Qualification
		Welding Apprenticeship	Northwest Community College, Terrace and Prince Rupert Campuses, and other campuses on a rotating basis	Trade Qualification
		Welder Level C, B and A	Okanagan College, C = Kelowna and on a rotating basis in Penticton, Vernon and Salmon Arm; B and A in Kelowna only	Trade Qualification
		Welding Apprenticeship	Thompson Rivers, Kamloops, Williams Lake	Trade Qualification

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Select Occupation	NOC	Program/Description	Institution	Qualification
		Qualify for Level C certification with 5 mths exp	Selkirk College, Castlegar, Grand Forks, Nakusp, Nelson, Trail	Trade Qualification
		Welding, Level C, B and A http://www.ufv.ca/calendar/2011_12/ProgramsR-Z/TRADES_WLDG.htm	University of the Fraser Valley, Abbotsford, Chilliwack, Mission, Hope, Agassiz	Trade Qualification
		Welding, Level C, B and A; Apprenticeship	Vancouver Island University, Nanaimo	Trade Qualification
		Welding	UA Piping Industry College of BC, Fort St John	Trade Qualification
13. Insulators	7293	Insulator (Heat and Frost) (Heat and Frost Insulator), Apprentice	BCIT, Burnaby	Trade Qualification
14. Machinery & transportation equipment mechanic (/) a) Millwrights (7311)	731	BCIT = Millwright, Apprenticeship	BCIT, Burnaby	Trade Qualification
		Industrial Mechanic (Millwright) /Machinist	College of New Caledonia, Prince George, Burns Lake, Quesnel	Trade Qualification
		Millwright, Foundation	College of the Rockies, Cranbrook	Trade Qualification
		Kwantlen = Millwright/Industrial Mech, Apprenticeship	Kwantlen, Cloverdale	Trade Qualification
		Millwright Apprenticeship	Northern Lights College, Dawson Creek	Trade Qualification
		Millwright/Industrial Mechanic, Apprenticeship	Northwest Community College, Currently at Kitimat high school Rotating every 2 yrs with Terrace in response to demand	Trade Qualification
		Industrial Mechanic IP Upgrade Program	Selkirk College, Castlegar, Grand Forks, Nakusp, Nelson, Trail	Trade Qualification
b) industrial/heavy duty equipment mechanics Heavy-duty Equipment Mechanics (7312)	731	Heavy Duty Technician (Mechanic)	BCIT, Burnaby	Trade Qualification
		Heavy Duty Equipment Technician, Apprenticeship	College of New Caledonia, Prince George, Quesnel	Trade Qualification
		Heavy Duty Equipment Technician, Apprenticeship	College of the Rockies, Cranbrook	Trade Qualification
		Heavy Duty Apprenticeship	North Island College, Courtenay, Campbell River, Port Alberni	Trade Qualification

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Select Occupation	NOC	Program/Description	Institution	Qualification
		Heavy Duty Equipment Technician Apprenticeship	Northern Lights College, Fort St. John	Trade Qualification
		Heavy Duty Service Technician Level	Northwest Community College, Hazelton, Houston, Kitimat, Masset, Nass Valley, Prince Rupert, Queen Charlotte City, Smithers, Terrace	Trade Qualification
		Heavy Duty Equipment Apprenticeship	Okanagan College, Kelowna Vancouver Community College, Vancouver	Trade Qualification
		Heavy Duty Mechanic	Selkirk College	Trade Qualification
		Heavy Duty Mechanic	Thompson River, Kamloops	Trade Qualification
		Heavy Duty/Commercial Transport Mechanics	Vancouver Island University, Nanaimo	Trade Qualification
15. Crane Operators Workers can obtain in-house training through employer	7371	Mobile Crane/Boom Truck Certification Preparation	College of New Caledonia, Mackenzie	Towards BC CraneSafe Certificate
		CR = Boom Truck course (Oil and Gas Training)	College of the Rockies, Cranbrook	Certificate
		Crane Operator - various	Eagle West Crane Academy	Towards BC CraneSafe Certificate
		Crane Common Core Mobile Crane Operator Mobile Lattice Boom Operator	IUOE Local 115 Training Association, Maple Ridge	Trade Qualification
16. Motor vehicle & transit drivers (truck drivers)	7411	Class 1, 3, Airbrake	Private driver training schools throughout the province	
17. Heavy Equipment Operators (except crane)	7421	Heavy Equipment Operator, Apprenticeship (ITA)	NWCC Smithers, Terrace	Trade Qualification
		Heavy Equipment Operator, Apprenticeship (ITA)	Christian Labour Association of Canada, Langley	Trade Qualification
		Heavy Equipment Operator	College of New Caledonia, Quesnel, may be available at Mackenzie	
		Heavy Equipment Operator	Construction & Specialized Workers Training Society, Vancouver	
		Heavy Equipment Operator	Fox Consulting Services, Merritt	

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Select Occupation	NOC	Program/Description	Institution	Qualification
		Heavy Equipment Operator, Apprenticeship (ITA)	IUOE Local 115 Training Association, Maple Ridge	Trade Qualification
		Heavy Equipment Operator	Interior Heavy Equipment Operator School Ltd., Winfield	Certificate
		Heavy Equipment Operator, Apprenticeship (ITA)	Nations First Workforce Development, Blueberry River, and Fort St. John	Trade Qualification
		Heavy Equipment Operator, Apprenticeship (ITA)	Nechako Northwest Construction, Terrace	Trade Qualification
		Heavy Equipment Operator	Operators Training School, Langley	
		Heavy Equipment Operator, Apprenticeship (ITA)	Taylor Pro Training, Kelowna	Trade Qualification
		Heavy Equipment Operator, Apprenticeship (ITA)	Thompson Rivers University, Kamloops Heavy Equipment Operator - Civil & Mining	Trade Qualification
		Heavy Equipment Operator, Apprenticeship (ITA)	VanASEP - Aboriginal Skills and Employment Partnership, Vcr	Trade Qualification
		Heavy Equipment Operator, Apprenticeship (ITA)	Vancouver Island University, Nanaimo	Trade Qualification
		Construction Craft Certificate and others	College of New Caledonia Burns Lake, Fort St. James, Fraser Lake, Vanderhoof	Certificate
18. Construction Trades Helpers and Labourers	7611	Construction Trades Helpers and Labourers	NWCC, Terrace, Nisga'a, Kitimat, Gitanyow, Prince Rupert	Certificates
		Pipeline Construction Boot Camp	NWCC, Terrace, Kincolith and Prince Rupert	
19. Oil and gas field workers Field Workers, Labourers and Operators (8615, 8232, 8412)	8615 8232 8412	Energy Corridor Service Worker Could be beneficial	Kitimat Valley Institute, Kitimat	
		Oil and Gas Field Operations	NLC, Fort St. John	
20. Supervisors, processing operations (oil & gas)	921	Power Engineering and Gas Processing	NLC, Fort St. John	Certificate 4 th Class Power Engineering and Certificate Gas Process Operations