2018

North Central BC Manufacturing Sector LMP: Labour Market Information (LMI) Report - Final

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Barry Carbol, Ph.D.
Schmidt & Carbol Consulting

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Executive Summary

This labour market information (LMI) report provides the results of research related to the North Central (Cariboo and Nechako) economic development region manufacturing sector conducted from September – December 2017. The research was undertaken as a part of Phase 2 of a labour market partnership (LMP) involving companies in the sector and region with the support of the BC Ministry of Advanced Education, Skills and Training.

Phase 2 of the LMP for the region involved the analysis of existing labour market information, a review of relevant background labour market reports, and the collection of data from employers in the region using an online survey tool and through a series of interviews with key manufacturing sector executives and managers. This report provides highlights of the key labour market issues that emerged from that research.

93 companies in the North Central database of manufacturing companies were contacted during September and October 2017 and requested to complete the online survey or participate in an in-person interview. A total of 19 responses were received to the online survey representing a response rate of 20.4%. One hour interviews with 13 company executives, senior managers, and other regional organizational representatives were held during October and November 2017.

Based on the research conducted, labour market issues were identified for the manufacturing sector in the North Central region in the following areas:

- ***Skills gaps or hard to fill positions.*** Most frequently mentioned were trades such as millwrights, commercial truck drivers, and plant and operations managers and leaders.
- ***Lack of availability of trades training.*** Many companies (particularly smaller ones) found it difficult to have employees receive the apprenticeship and trades training they required.
- ***Challenges attracting, recruiting and retaining workers.*** Many reasons were cited by companies for the challenges they faced in finding workers. The reasons range from the location of the work to economic factors such as competitive wage scales.
- ***Workforce diversification.*** Some companies have strategies in place to attract a diverse workforce but many do not. The majority acknowledge that workforce diversification is good for the bottom line but may not have a way to address the issue.
- ***Technology impacts.*** Technology is having an operational impact with many of the companies surveyed indicating that they look for workers who are adaptable and have different skill sets including the ability to work with new technologies.

Companies suggested a number of strategies to address the issues identified. These included:

- Expanding the work of the ITA in the north to enable it to have a greater role in helping manufacturers address identified apprenticeship needs;
- Establishing internship programs targeted at the large indigenous worker cohort;
- Creating opportunities for industry to connect/partner with post-secondary institutions;
- Creating opportunities for greater awareness of the work that manufacturers do;
- Creating an interest free loan program for students who want to study and work in the north;

- Establishing a greater regional training presence in smaller communities in the north;
- Enhancing recruitment through local high schools, post-secondary institutions and First Nations job fairs; and
- Providing opportunities for local industries to collaborate with one another and local colleges to address skills and training needs.

The suggestions for future initiatives and directions provided by regional manufacturers will provide the basis for implementation of initiatives to address the concerns that the sector has voiced through this LMI research. Manufacturers in the region want to see demonstrable steps taken to address skills and training gaps and shortages. They are looking forward to the next phases of this labour market partnership to address the identified issues.

1. Background

In the fall of 2016 and early 2017, Harbour Digital Media (HDM) worked with manufacturers in the North and Central regions of the province (i.e. the Cariboo and Nechako Economic Development regions) and, with the support of the BC Government's Ministry of Advanced Education, Skills, and Training established a regional manufacturing sector labour market partnership.

During Phase 1, a pro-tem advisory group was established (the North Central the North Central Manufacturing sector Advisory Board (NCMAB) as a part of the engagement strategy for the sector. This advisory group consisted of manufacturers from a number of manufacturing sub-sectors including those associated with wood products, fabricated metal products, and petroleum and coal products.

The Phase 1 report highlighted a number of themes that emerged from interviews and discussions with manufacturers in the region related to skills training and development. It was determined that these themes could benefit from a broader, sector-wide training and development strategy but that more work needed to be done to verify the labour market issues in the region. The themes identified were:

- Challenges related to ***attracting and retaining workers in small communities***. Among the issues raised was the following:
    - Living in small communities - According to some of the manufacturers in the region, young people who are qualified in a trade or other occupation are not attracted to living in small north central communities in spite of the general availability of affordable housing options.;
- A ***lack of consolidation of training demand*** in the region resulting in companies developing internal training programs. Issues raised included:
    - Companies are not aware of training that other companies in the region are providing their employees. They are also unaware of the focus of the training provided.
    - There is a need for more communication in the region concerning training opportunities that companies can utilize.
- The ***need for greater investment in training*** for the skilled jobs that manufacturers are trying to fill. Among the issues raised were the following:
    - It is a concern for some companies that they are spending scarce resources on internal training and development. While this is seen as an investment it also impacts the amount of capital they have to spend on expansion and growth.
    - Greater investment is required for the type of skilled jobs that manufacturers in the region are seeking to fill.
    - Some companies have difficulty finding the resources that are available through various government programs.
- The difference between ***apprenticeship*** pay rates from province to province which makes it more difficult for BC companies to attract and retain skilled tradespersons. The issues raised included:
    - A number of companies expressed that they were having difficulty finding enough workers in the skilled trades. Some companies cited difficulty in finding skilled

tradespersons who can operate PLC (programmable logic controller) controlled machinery as an example of the problem.
    - Inter-provincial issues related to apprenticeship pay rates in different provinces was mentioned as a factor that makes attracting and retaining skilled tradespersons difficult.
    - There was also a general sentiment expressed by company leaders that the apprenticeship program needs to change so that it works better for industry. This could include changes that make it easier to combine tickets in the trades.
- Challenges related to ***retirement and an aging workforce***. Among the issues raised were the following:
    - Many manufacturers in the region have young or relatively young workforces. At the same time, some are concerned about the looming retirement of a significant portion of their employees.; and
- Challenges in ***finding individuals with characteristics that will make them successful*** in the workplace. Issues raised by employers included:
    - Manufacturers place a high degree of importance on finding individuals who display a number of key characteristics associated with success in the workplace. These include a desire to work hard, to learn, and to be personally responsible (e.g. workers who are punctual and respect the job that they have and their co-workers). Companies are challenged to find individuals who display these characteristics.

2. About this Labour Market Information Report

Given the range of issues identified through by the NCMAB advisory group during Phase 1 it was important to seek input and feedback from companies and organizations within the region. During Phase 2, the NCMAB group was expanded to include the opportunity for additional manufacturers, regional economic development organizations, post-secondary institutions, and First Nations organizations to provide input and feedback concerning the research methodology and questions that were used to collect survey and interview data. K-12 school districts were approached but did not respond to requests to provide feedback. The input and feedback process involved a combination of email and telephone conversations. Most of those in the manufacturing sector had a preference for this type of communication rather than using online meeting tools or face-to-face meetings. The primary rationale given for this preference is that face to face meetings take too much time particularly for those who must travel long distances to attend. Telephone and email approaches respect the time challenges faced by senior executives who were approached to provide input and feedback. A complete list of those who have been involved in the advisory process for the Phase 2 research is included in Appendix 1[1].

[1] Appendix 1 also includes a description of the industry engagement processes including, key events, meetings, and individual discussions that contributed to the feedback for both Phase 1 and 2 of the North Central LMP project.

The labour market research undertaken in Phase 2 of the North Central LMP project built on the information and themes outlined in the in the Phase 1 Engagement Report. Phase 2 included the following research activities:

- Development of a research design and methodology including the design of research questions for an online survey and an interview protocol. Section 3 of this report provides additional details;
- Analysis of existing labour market information; and
- Collection of data from employers in the region using an online survey tool and a series of interviews with key manufacturing sector executives and managers and other organizations as outlined in Appendices 1 and 3.

This LMI report provides information and discussion concerning labour market metrics and issues that will have a potential impact on workforce development and the future growth and sustainability of manufacturing in the region. The report provides information and discussion concerning the:

- Size and composition of the North Central manufacturing workforce. See Tables 4 and 5 in Section 4.2 for background information concerning the size of the manufacturing workforce in the region and the online survey results in Section 6.1 which outlines background information about the companies in the region (i.e. NAICS codes, company size, characteristics of the workforce including trades and technical occupations, and age of the workforce));
- Economic factors and trends will affect the North Central manufacturing labour supply (see Section 4.2 for a discussion of economic data affecting the manufacturing sector in Canada, British Columbia and the North Central region) ;
- Occupations and skills that are most in demand, current and anticipated and shortages that present the greatest challenges or threats to the industry (see Section 4.2 (in particular the discussion related to the 2017 Labour Market Outlook), the online survey results in Section 6.1 (of note is the data reported in Figure 9 on positions that are difficult to hire and Figure 11 on factors that contribute to future skill shortages), and the hard to fill skill areas described by interviews in Section 6.2);
- Critical impediments are attracting and retaining in-demand skills and occupations (see Section 6.1 (Staff Turnover – Figure 5) and Section 6.2 (Interviewee responses suggest a number of challenges facing regional manufacturers including geography and isolation in rural communities, an aging workforce and transportation challenges); and
- Educational and training requirements for the North Central manufacturing industry and how these needs are being met (see Section 6.1 (Figures 6, 7, and 8 provide an overview of employer training activities training providers used and an indication of the effectiveness of the training) and Section 6.2 (Interviewee responses also suggest that there are gaps between the current education system and industry requirements).

3. Overview of the LMI Research Project

This section provides an overview of the methodology and questions that were developed as a part of the design of the LMI research project. As noted in the previous section, the NCMAB advisory group

was expanded to include a number of other organizations and stakeholders. Representatives from this broader group were asked to provide input and feedback concerning the research methods that would be used and the questions that would be asked. The advice received indicated that manufacturers in the region were suffering from 'survey fatigue' and while they saw value in collecting data specific to the region, they wanted this to be done in a way that did not place significant demands on their time. As a result, the online survey was developed in a way that it would take no more than 15 minutes to complete. Sections 3.1 and 3.2 a brief summary of the research methods used and the questions that underpin the research.

3.1. Research Methodology

Research undertaken in Phase 2 is consistent with best practice social science research methods and survey design, and includes both quantitative and qualitative methods and analysis. The approach involved a triangulation of primary and secondary data sources. This was done to determine the degree to which the information from these sources provides a consistent view of current labour market issues affecting the manufacturing sector of the North Central region.

The research approach taken for this project included:

- A review of selected relevant background reports including a number of reports with labour market data specific to the region;
- A review of existing secondary data sources including Statistics Canada, BC Stats and the BC 2025 Labour Market Outlook report;
- Development of a company database focused on companies with 10 or more employees[2];
- Development, administration, and analysis of an online survey; and
- Development of an interview protocol including conduct and analysis of a set of interviews.

The online survey and interview questions were developed through a rigorous process which included the following steps:

- Review of an existing survey item set that was used in the Vancouver Island/Coastal Region and development of new items as needed;
- Review and validation of the survey items with advisory members of the North Central Manufacturing sector Advisory Board (NCMAB);
- Selection of survey and interview items based on NCMAB feedback;
- Cognitive testing of selected items[3]; and
- Development of the online version of the employer survey.

Additional details concerning the research methodology used in Phase 2 is found in the report entitled *North Central BC Manufacturing Sector LMP: Labour Market Information (LMI) Research Methodology Report* (June 16, 2017).

[2] Although the target audience for the online survey was companies employing 10 or more employees it was often not possible to determine company size prior to approaching them to complete the survey.
[3] Cognitive testing involves determining the degree to which survey respondents understand the meaning of the questions they are being asked.

3.2. Research Questions

A set of research questions was developed based on discussions with the North Central advisory group and other manufacturers and organizations in the region. The research questions were also vetted by staff in the Labour Market Information Office and the Labour Market Partnership Program of the Ministry of Advanced Education, Skills, and Training. The questions were used to frame the secondary and primary research and to guide the development of the background document review that will formed the labour market research for this phase of the North Central LMP.

The following research questions were used in the development of an interview schedule for employers, a brief employer survey, and to conduct a secondary review of existing labour market information.

Descriptive Background Information Questions

1. What types of businesses are included in the North Central manufacturing sector? How many people are employed and what is the nature of the economic activity that they engage in? What sub-sectors are included in the region's manufacturing sector? (NOTE: Both NOC (occupational) and NAICS (industry) codes will be used in this analysis.)
2. What are the characteristics of the workforce that is employed in the manufacturing sector in the North Central region? (Workforce characteristics include, age, gender, education and training levels, certification requirements, workforce occupational breakdown, length of service, etc.)
3. What are the current labour market conditions and outlook for the North Central region?

Regional Labour Market Questions

4. What are the short term and long term issues affecting the manufacturing sector in the North Central region? (e.g. What impact is technology (automation, robotics) having on the sector?)
5. What are the key trends affecting the skill requirements of employers in the region? What future trends will affect the labour market for manufacturers in the North Central region?
6. What impacts of an aging workforce are being felt by the region's manufacturers?
7. To what extent are recruitment and retention issues for manufacturing sector employers in the region?
8. What are the most common recruitment and retention barriers experienced by manufacturing sector employers in the region?
9. How engaged are employees in their work and what impact does this have on the likelihood that they will stay with a company (i.e. be retained by the company)?
10. To what extent is the cost of training an issue for regional manufacturers?
11. What are the most common education, training, and skills gaps (including those related to industry-specific trades requirements) experienced by manufacturing sector employers in the region?
12. How do employers intend on addressing skills gaps?
13. What issues do employers observe with respect to the trades and trades training?

14. Are manufacturing sector employers in the region interested in working with training providers to establish regional training initiatives that will address identified skills gaps and result in improved efficiency and productivity)?
15. What are your company's beliefs or actions concerning workforce diversification?

4. Sector Analysis: Background Report Review

4.1 Selected Background Reports

An important part of research into the manufacturing sector in the North Central BC region is a consideration of other recent studies and commentary, particularly those that consider the relationship between skills gaps, training and learning, and company performance. This brief review focuses on recent background reports and data from British Columbia (and in particular the North Central region. The labour market study conducted on behalf of manufacturers in the Vancouver Island/Coastal region includes a broader overview of research from Canada and selected industrialized countries. Readers are encouraged to refer to the VI/Coastal *Phase 2 – Final Labour Market Information Research Report* (August 22, 2016) for details.

The review in this report includes documents specific to British Columbia and the North Central economic development regions. In preparing this section, the authors reviewed the following documents:

- *A Profile of British Columbia's Manufacturing Sector* (BC Stats – 2015)
- *Labour Market Outlook 2016 – 2025* (Asia Pacific Gateway)
- *Transportation Labour Market Outlook for the Asia Pacific Gateway Corridor 2016 – 2025* (Asia Pacific Gateway)
- *Workforce Intelligence Study* (prepared for Prince George Economic Development – 2014)
- *British Columbia Labour Market Outlook: 2017 Edition*

Information directly related to or impacting the manufacturing sector in the North Central (Cariboo/Nechako) region was of most interest in preparing this section of the report. A study prepared for Initiatives Prince George Economic Development[4] and published in 2014 provides some useful insights concerning the occupations that are in high demand in the Prince George region. Among the occupations highlighted in the report are the following:

- *Professional Engineers* (NOCs 2131, 2132, and 2133). As indicated in the report, engineers in these fields are employed in manufacturing associated with the pulp and paper and forestry industries.
- *Industrial Instrumentation Technicians and Mechanics* (NOC 2243). According to the Initiatives Prince George study, these occupations were most frequently mentioned as being

[4] See Initiatives Prince George Economic Development. (2014). *Workforce Intelligence Study - Identifying Canadian Talent Pools for Prince George's In-Demand Occupations.*

in high demand and having a high incidence of vacancy. Individuals in these occupations are typically employed in pulp and paper and manufacturing industries. In 2014, there was a national shortage of individuals in this occupational category due to the high demand of the Alberta oil and gas sector. Given the downturn in economic activity in Alberta in the 2015 – 2017 period it is likely that qualified individuals are likely available to employers in the region should they be able to attract them.

- *Construction Millwrights and Industrial Mechanics* (NOC 7311): In the Prince George region, these occupations are employed in pulp & paper and various types of manufacturing. The Initiatives Prince George study indicated that there is a serious shortage of Red Seal journeyman millwrights in the region.
- *Power Engineers* (NOC 9241): Power engineers are in demand by the pulp and paper and manufacturing sectors.
- *Heavy Duty Equipment Mechanics* (NOC 7312): Individuals who work in occupations that require a background in heavy duty equipment mechanics are in short supply in the region.
- *Truck Drivers* (NOC 7511): As pointed out in the Initiatives Prince George report, truck drivers are critical to the functioning of Prince George's economy. There is a general shortage which continues to this day.
- *Welders and Related Machine Operators* (NOC 7237): The mobility of individuals in this occupation has resulted in a shortage in the Prince George region. Skilled tradespeople are more likely to move to where the work is and where the rates of pay are higher.

The Initiatives Prince George report also cited a number of attraction and recruitment challenges. Most notably are the following issues/barriers:

- Lack of knowledge about Prince George's low cost of living, short commute times, outdoor activities, and amenities like shopping;
- Misperception of Prince George as only a "forestry town";
- Significant wave of retirees will exacerbate the number of job openings; and
- Perception that Prince George is a dangerous place to live.

The Asia Pacific Skills Table recently published a report which provides economic forecasts and workforce analyses for the 2016 – 2025 timeframe. Of particular interest for the North Central region is the forecast for the number of openings for truckers over the next five years in the Asia Pacific Gateway (APG) region[5]. It is estimated that there will be an estimated 16,000 job openings for truckers in the APG with 35% of those openings in British Columbia. The North Central manufacturing sector will be directly impacted by a potential inability of companies to hire truckers to get their goods to market or to other modes of transportation such as rail and ships.

The most recent British Columbia Labour Market Outlook (2017 Edition) provides an overview issues affecting the labour market in all of the economic development regions of the province. For the purposes of this report of greatest interest are the Cariboo (which includes Prince George) and North Coast/Nechako regions.

[5] The Asia Pacific Gateway includes the four western Canadian provinces.

As pointed out in the BC Labour Market Outlook (2017 Edition), manufacturing is one of the largest employers in the Cariboo region. The population is younger than the provincial average which accounts in part for the third highest employment participation rate in the province. At the same time the economic forecast for job openings in the Cariboo suggests that most of the 25,900 job openings will occur through retirement and only 10 percent will be generated through economic growth. The jobs with the largest number of job openings that will potentially impact the manufacturing sector are projected to be:

- Manufacturing managers – 150 job openings to 2027 (current employment is 190)
- Transport truck drivers - 960 job openings projected to 2027 (current employment is 2,720) (Government of British Columbia, 2017, pp. 34-35)[6]

The North Coast/Nechako economic development region is geographically large, has the lowest population density in the province, and has the youngest population in the province which results in a high rate of labour market participation. Although the current study only relates to the Nechako part of the economic development region, the 2017 Labour Market Outlook provides some useful background information. According to the 2017 forecast, over the next 10 years a total of 11,700 job openings are expected in the region but nearly all of these will be due to replacement of retiring workers and not due to increased economic activity.

Only one category of manufacturing is forecast to have significant job openings. 'Other Manufacturing'[7] is expected to grow by 8.8% and have 530 job openings by 2027 (Government of British Columbia, 2017, p. 38).

Jobs with the largest number of openings in the North Coast/Nechako development region that potentially impact the manufacturing sector are:

- Manufacturing managers – 70 openings by 2027 (currently employs 120);
- Accounting techincians and bookkeepers – 210 openings (currently 520 employed); and
- Heavy equipment operators – 340 openings (currently 820 employed) (Government of British Columbia, 2017, p. 39)

Additional information concerning the two economic development regions can be found at: https://www.workbc.ca/Labour-Market-Information/Regional-Profiles/Cariboo#employment-statistics.

4.2 Secondary Background Data

Secondary research using existing data sources was conducted as a way of describing the manufacturing sector for British Columbia and to look for information that specifically referred to the North Central region. Documents used in this review process are listed in Appendix 4 (Bibliography).

[6] The report referenced is entitled the *British Columbia Labour Market Outlook: 2017 Edition.*
[7] Other manufacturing refers to miscellaneous manufacturing activities covered by NAICS code 339 (e.g. medical equipment, jewelry, office supply, and sign manufacturing)

Secondary research provided useful background information that was used to inform the development of the online survey and interview questions that were posed to manufacturers in the North Central region. The primary and secondary data taken together help to determine the issues facing North Central region manufacturers and will be used in future phases of this labour market partnership to develop strategies that address identified issues.

Number and Size of Manufacturing Companies

The North American Industry Classification System (NAICS) is used to classify the manufacturing industry into a set of sub-sectors. These sub-sectors provide a useful way of considering the breadth of manufacturing activity in the province. The following table provides a list of the NAICS codes for the 13 manufacturing sub-sectors that were of interest in this LMI research project.

Table 1: Manufacturing Industry by NAICS Codes

Manufacturing Sub-sectors	NAICS Codes[8]
Beverage and tobacco product manufacturing	312
Leather and allied product manufacturing	316
Wood product manufacturing	321
Paper manufacturing	322
Chemical manufacturing	325
Plastics and rubber products manufacturing	326
Primary metal manufacturing	331
Fabricated metal product manufacturing	332
Machinery manufacturing	333
Computer and electronic product manufacturing	334
Electrical equipment, appliance and component manufacturing	335
Transportation equipment manufacturing	336
Furniture and related product manufacturing	337

Innovation, Science and Economic Development Canada (formerly Industry Canada) routinely collects data on the number and size of companies according to their NAICS codes. The following table[9] shows the number of manufacturing businesses by province in four size categories. The

[8] **Source:** Statistics Canada
http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=118464&CVD=118465&CPV=31-33&CST=01012012&CLV=1&MLV=5

[9] **Source:** Innovation, Science and Economic Development Canada
https://www.ic.gc.ca/app/scr/sbms/sbb/cis/establishments.html?code=31-33&lang=eng

primary research for this project was targeted at a sub-set of BC manufacturing companies in one region (i.e. those with 10 or more employees in the North Central (Cariboo – Nechako region). Estimating the size of the population of companies for the North Central region was challenging since region-specific data was not available. More will be said about this later in the section of this report dealing with the online survey results.

Table 2: Number and Size of Manufacturing Companies in Canada by Province

Number of employer establishments by employment size category and province/territory: December 2016 Manufacturing (NAICS 31-33)				
Province or Territory	Employment Size Category (Number of employees)			
	Micro 1-4	Small 5-99	Medium 100-499	Large 500+
Alberta	1893	2940	249	22
British Columbia	2808	4103	311	16
Manitoba	378	878	102	20
New Brunswick	274	481	72	7
Newfoundland and Labrador	136	231	39	5
Northwest Territories	1	16	0	0
Nova Scotia	349	596	62	5
Nunavut	2	6	0	0
Ontario	6976	11661	1349	140
Prince Edward Island	72	130	14	1
Quebec	4326	7930	850	74
Saskatchewan	355	657	55	3
Yukon Territory	15	14	0	0
CANADA	17,585	29,643	3103	293
Percent Distribution	34.7%	58.6%	6.1%	0.6%

Innovation, Science and Economic Development Canada also reports the following data for the manufacturing sector in Canada[10]:

Employment in Manufacturing

Overall employment in the manufacturing sector in BC has been relatively stable over a 6 year period (2011 – 2016) as reported by BC Stats[11]. The percentage change in employment from 2015 to 2016 was a modest 0.45% reduction in the number working in the sector. As can be seen in the following

[10] Source - Innovation, Science and Economic Development Canada
https://www.ic.gc.ca/app/scr/sbms/sbb/cis/establishments.html?code=31-33&lang=eng
[11] Source - BC Stats:
http://www.bcstats.gov.bc.ca/StatisticsBySubject/BusinessIndustry/BusinessCountsEmploymentByIndustry.aspx

table, food, wood product, and fabricated metal manufacturers employ the greatest numbers across the province.

Table 3: BC Employment by Manufacturing Sub-sector (2011-2016) (in thousands)

Manufacturing Sub-sector	2011	2012	2013	2014	2015	2016	% change (2015-16)
Food Manufacturing	22.6	24.6	21.9	21.9	26.6	29.5	10.9
Beverage and Tobacco Product Manufacturing	6.1	4.4	4.8	6.2	6.4	7.4	15.6
Textile Mills & Textile Product Mills	2.2	-	-	2.6	-	2.3	-
Clothing Manufacturing & Leather & Allied Production	4.4	3.6	3.1	4.2	3.3	3.3	0.0
Wood Product Manufacturing	29.4	25.2	26.4	29.3	36.0	32.0	-11.1
Paper Manufacturing	8.7	11.4	10.5	12.2	10.1	8.5	-15.8
Printing and Related Support Activities	7.3	7.9	6.5	5.5	8.5	4.5	-47.1
Petroleum and Coal Products Manufacturing	-	-	-	-	-	-	-
Chemical Manufacturing	4.4	6.5	6.5	7.1	8.7	6.1	-29.9
Plastics and Rubber Products Manufacturing	4.1	4.5	6.4	4.3	4.8	5.1	6.3
Non-Metallic Mineral Product Manufacturing	6.8	5.8	4.6	5.1	5.0	4.4	-12.0
Primary Metal Manufacturing	5.8	5.5	5.0	2.3	5.0	3.1	-38.0
Fabricated Metal Product Manufacturing	11.2	13.8	11.1	12.3	15.7	13.8	-12.1
Machinery Manufacturing	9.0	9.7	9.4	8.6	7.9	10.2	29.1
Computer and Electronic Product Manufacturing	6.2	7.0	6.2	8.0	7.2	8.1	12.7
Electrical Equipment, Appliance & Component Manufacturing	1.7	3.9	2.9	3.8	3.6	4.0	11.1

Manufacturing Sub-sector	2011	2012	2013	2014	2015	2016	% change (2015-16)
Transportation Equipment Manufacturing	8.8	10.9	8.5	9.6	8.2	9.1	11.0
Motor Vehicle, Body, Trailer & Parts Manufacturing	4.3	3.6	4.0	4.2	3.9	2.9	-25.6
Other Transportation Equipment Manufacturing	4.5	7.3	4.5	5.4	4.3	6.2	44.2
Furniture and Related Product Manufacturing	6.5	7.9	6.9	7.6	3.9	6.9	76.9
Miscellaneous Manufacturing	11.0	9.9	9.8	10.0	10.0	10.9	9.0
Totals	**165.0**	**173.4**	**159.0**	**170.2**	**179.1**	**178.3**	**-0.45**

BC Stats[12] reports provide limited data related to employment in manufacturing in the Cariboo and Nechako economic development regions. Tables 3 and 4 provide an overview of employment in the two regions for the two sub-sectors of manufacturing with the greatest employment in each region.

Table 4: Cariboo Region Manufacturing Sector Employment 2011 - 2016 (in thousands)

Manufacturing Sub-sector	2011	2012	2013	2014	2015	2016	% change (2015-16)
Wood Product Manufacturing	5.3	4.8	5.6	5.0	5.3	5.6	5.7
Paper Manufacturing	1.5	3.3	2.2	2.6	2.1	2.5	19.0
Totals	**6.8**	**8.1**	**7.8**	**7.6**	**7.4**	**8.1**	**9.5**

Table 5: Nechako and Northeast Region Manufacturing Sector Employment 2011-2016 (in thousands)

Manufacturing Sub-sector	2011	2012	2013	2014	2015	2016	% change (2015-16)
Wood Product Manufacturing	2.3	2.2	1.8	1.6	2.6	2.2	-15.4
Primary Metal Product Manufacturing	1.9	n/a	n/a	n/a	n/a	n/a	n/a
Totals	**4.2**	**2.2**	**1.8**	**1.6**	**2.6**	**2.2**	**n/a**

The percentage change over the 2015/16 timeframe for the North Central region should be interpreted cautiously given the lack of availability of data for many of the manufacturing sub-sectors.

[12] Source: BC Stats: http://www.bcstats.gov.bc.ca/StatisticsBySubject/BusinessIndustry/BusinessCountsEmploymentByIndustry.aspx

Employment in the manufacturing sector represents the four national occupation classification categories (i.e. NOC skill levels A, B, C, and D). Percentages of employees in each category are broadly known for the Canadian employed population but a breakdown for the manufacturing sector is not available. In terms of the Canadian employed population, 29.9% are employed in positions that require NOC skill level A (management and professional occupations requiring a university degree), 31.5% in NOC skill level B positions (positions requiring college education or apprenticeship training), 27.7% in NOC skill level C positions (secondary school or occupation-specific training), and 11% in NOC skill level D positions (positions requiring on-the-job training)[13].

The *British Columbia Labour Market Outlook: 2017 Edition*[14] indicates that many of the occupations that manufacturing companies in the North Central region employ as a part of their 'back office' operations are ones where demand will be high over the next nine years (see p. 17-19). These occupations include senior managers, human resource managers, computer programmers and network administrators. The same is not true for occupations that are aligned with the core operations of manufacturers in terms of plant operations.

Overall, *British Columbia Labour Market Outlook: 2017 Edition*[15] also indicates that 26,200 job openings (due primarily to replacement and a small amount of expansion (i.e. 500 jobs) can be expected in the manufacturing sector across the province over the 2017 – 2027 period. Food manufacturing and wood product manufacturing are expected to "post the largest numbers of job openings" in the next ten years (p. 13). The manufacturing sector in British Columbia represents 7.5% of total employment or approximately 170,000 jobs.

The general outlook for the North Central (Cariboo and Nechako) region in terms of job growth across all sectors/industries is positive with an anticipated 25,900 job openings in the Cariboo and 11,600 job openings in the Nechako-North Coast region to 2027.

Additional information related to the region's industries and sectors, employment statistics, and a regional overview are provided on the WorkBC[16] website.

Economic Data

During the period of 2011 through 2016, the value of the manufacturing industry to the BC economy has been generally constant with the 2015-16 year over year growth outpacing manufacturers in the other major provinces (i.e. Alberta, Ontario, and Quebec) in Canada. The following table shows the growth patterns in GDP for provinces and territories. As pointed out by Statistics Canada, GDP is an important measure of the short term stability or instability of the economy.

[13] **Sources:** Statistics Canada: http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-012-x/99-012-x2011002-eng.cfm - 2011 Census
See also http://www.statcan.gc.ca/pub/12-583-x/12-583-x2011001-eng.pdf for detailed classification of occupations (NOC descriptions)
[14] See (Government of British Columbia, 2017)
[15] See (Government of British Columbia, 2017)
[16] See https://www.workbc.ca/Labour-Market-Information/Regional-Profiles/8#section-overview

Table 6: Gross Domestic Product and Growth

	Gross Domestic Product by province: 2011 - 2016 Manufacturing (NAICS 31-33)[17]						
	Value in chained 2007 $ (millions)						% Change
Province or Territory	2011	2012	2013	2014	2015	2016	2015 - 2016
Newfoundland and Labrador	910	1,022	987	937	985	906	-8.0
Prince Edward Island	376	393	430	475	483	495	2.5
Nova Scotia	2,763	2,651	2,562	2,532	2,626	2,570	-2.1
New Brunswick	2,870	2,794	2,883	2,746	2,864	2,949	3.0
Quebec	43,849	43,944	43,858	45,250	45,720	44,400	-2.9
Ontario	74,958	76,494	75,567	78,399	79,572	81,005	1.8
Manitoba	5,176	5,376	5,560	5,579	5,472	5,404	1.2
Saskatchewan	3,506	3,710	3,965	3,940	3,830	4,044	5.6
Alberta	17,766	17,746	18,274	18,805	17,561	16,323	-7.0
British Columbia	13,710	14,115	14,048	14,821	15,154	16,034	5.6
Yukon	17	21	14	14	15	18	20

[17] **Source:** Statistics Canada. Table 379-0030 - Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), provinces and territories, annual (dollars)
http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=3790030

	Gross Domestic Product by province: 2011 - 2016 Manufacturing (NAICS 31-33)[17]						
	Value in chained 2007 $ (millions)						% Change
Province or Territory	2011	2012	2013	2014	2015	2016	2015 - 2016
Northwest Territories	11	11	11	11	12	11	-8.3
Nunavut	2	7	7	7	7	7	0

5. Sample Company Profiles

Manufacturers in the North Central region are generally either directly related the resource industries (i.e. forestry, mining) or provide secondary support and products for these industries. The following company profiles illustrate the types of manufacturing activities that are taking place in the sector in the region. The companies highlighted in this section were selected to also provide the reader with an understanding of the breadth of manufacturing activity in the region.

Babine Forest Products – (321 NAICS)

Babine Forest Products has been a part of the Hampton Affiliates Group of companies since 2006. Babine is a sawmill operation that produces SPF studs and framing lumber. Hampton also manages approximately 120,000 hectares (300,000 acres) of public timberland in British Columbia for the Babine and Decker Lake sawmills. The Babine and Decker Lake sawmills have a production capacity of 335 million board feet of lumber per year. Babine Forest Products employs approximately 200 fulltime employees and generates an estimated $24 million in annual revenue.

Pinnacle Renewable Energy Ltd. - (321 NAICS)

Pinnacle Renewable Energy Inc. is the oldest wood pellet producer in Western Canada having been in business for over 25 years. Pinnacle produces a wide range of wood pellet products for the home market including softwood pellet fuel and animal bedding and natural sorbent. Pinnacle also is engaged in production for the bulk domestic and overseas markets. Pinnacle operates six pellet plants throughout B.C., producing more than 1.4 million tonnes annually.

Wolftek – (332 & 333 NAICS)

Wolftek provides a range of products and services for the forestry and mining industries in BC. The company produces and services planers for sawmills, conveyer systems, thermal monitoring systems, and dust control systems as a part of its offerings. The company also provides training on OEM equipment, field services, equipment engineering expertise, and machine shop services (including fabricating and planer rebuilding services) to its customers.

Northern Lights Estate Winery – (312 NAICS)

Northern Lights Estate Winery produces a variety of fruit wines and blends using fruits primarily produced on site including blueberry, strawberry, haskap, gooseberry, apple, cherry, raspberry, black currant, and rhubarb in order to capitalize on local materials and climate. The winery also includes a production facility and wine tasting room. As BC's most northern winery, Northern Lights has, since its opening, added tours, wedding services, and a restaurant/bistro.

6. Primary Research: Employer Survey and Interviews

To undertake primary survey and interview research for the manufacturing sector in the North Central region it was necessary to first develop a database of manufacturing companies operating in the region, their size (in terms of number of employees), and the type of manufacturing conducted (as defined by the North American Industry Classification System or NAICS). Developing the database involved contacting municipal authorities, Chambers of Commerce and Economic Development Agencies in the region to acquire lists of licensed businesses. These lists were then reviewed and potential manufacturers that could be contacted (i.e. an email, web URL and/or telephone number could be found) were included in a final list. This list was used as the basis for email contact with key personnel concerning the online survey. A total of 93 companies were included in the list as potential respondents to the online survey or for in-person interviews (see Appendix 2 for a list of the companies in the database and their location).

An initial email was sent on September 20, 2017 to the manufacturers included in the database. This was followed by reminder emails and phone calls on a weekly basis until Nov 1, 2017. The online survey was closed on November 2, 2017. A total of 19 responses were received to the online survey which took respondents 30 minutes on average to complete. This resulted in a completion rate of 20.4%[18] which given the nature of the business operations surveyed and their size is reasonable. The 19 companies also represented 1167 employees of the 5685 employees in the company database or 20.5% of the employees.[19]

One hour interviews with 13 company executives, senior managers, and other regional organizational representatives were conducted between October 30th and November 29, 2017. The companies involved in these interviews represented a cross-section of the manufacturing sector in the region. The 13 companies and organizations also represented 2907 of the 5685 employees in the company database or 51.1% of the employees. This sample of employers interviewed represents a larger proportion of employment in the region than the online survey. As such it provides additional perspectives beyond those found through the survey. Taken together the two sets of results, while sometimes not completely aligned form a solid basis for arriving at the conclusions included in this report. A list of the companies involved in the interviews is provided in Appendix 3.

[18] The Canadian Manufacturers and Exporters (albeit with a larger province-wide sample) reported a survey completion rate of approximately 16% (see (Can121))

[19] Given the small sample and population sizes for the online survey, the confidence level for the data is quite broad (+/- 20 at the 95% confidence level). From the outset, manufacturers in the region expressed reluctance to completing another survey from 'government'. This sentiment translated into a lower than desirable response rate. At the same time the number of employees represented by employers responding to the survey provides a reasonable basis reaching conclusions concerning labour market and workforce development issues facing North Central manufacturers.

6.1 Online Survey Results[20]

Background of Companies Responding to the Survey

Company Manufacturing Sub-sector

The 19 individuals completing the online survey represented companies in 7 sub-sectors of the manufacturing sector as shown in Table 7 below.

Table 7: North Central Region Manufacturers Responding to the Survey

Manufacturing Sub-sectors by NAICS code	Number of Respondents[21]	Percentage of Respondents
Beverage and tobacco product manufacturing (312)	1	5.3
Wood product manufacturing (321)	9	47.4
Chemical manufacturing (325)	1	5.3
Plastics and rubber products manufacturing (326)	1	5.3
Fabricated metal product manufacturing (332)	5	26.3
Transportation equipment manufacturing (336)	1	5.3
Miscellaneous manufacturing (339)	1	5.3
Total	19	100[22]

Given the nature of manufacturing in the region, it was not surprising that the most predominant types of manufacturing activity reported are wood product manufacturing (47%) and fabricated metal product manufacturing (26%).

Company Size

Company size reported in the online survey varied from large operations with over 500 employees to smaller companies with 3 reporting that they have fewer than 10 employees. Although these companies were not originally part of the target audience, they represent a number of unique manufacturing sub-sectors so they were retained as a part of the analysis. The following figure illustrates the range of manufacturing company size (based on the number of employees) in the region. For example, in the graph indicates that six companies in the sample reported having between 20 and 49 employees.

[20] It is important to note that in some cases the number of respondents for a specific question is less than the total number of respondents to the survey as a whole (i.e. although there were 19 company responses some questions were responded to by less than that number; graphs and tables reflect the actual number of responses received)
[21] Respondents could select more than one sub-sector so the total number of respondents exceeds the number of companies responding to the survey.
[22] Percentage total does not add to 100 given rounding.

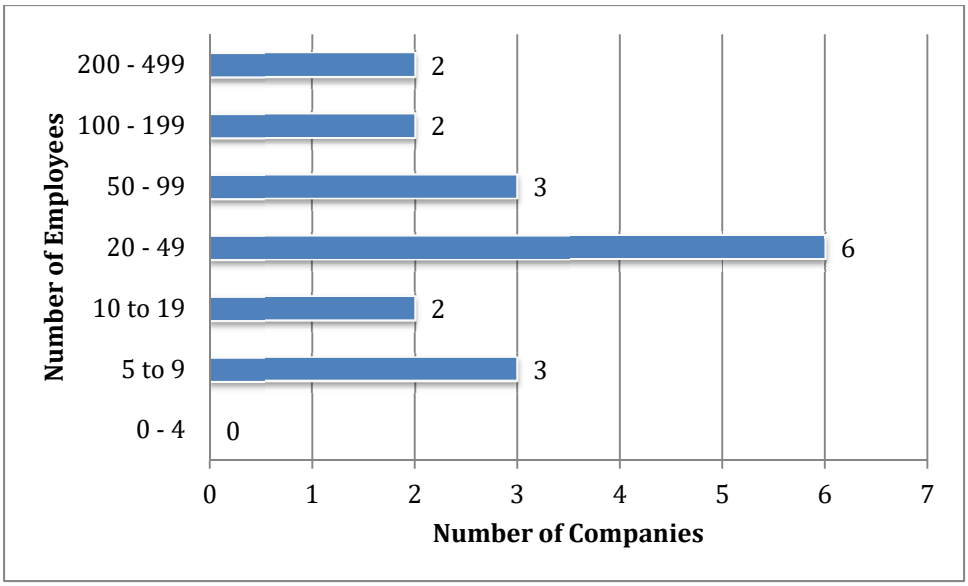
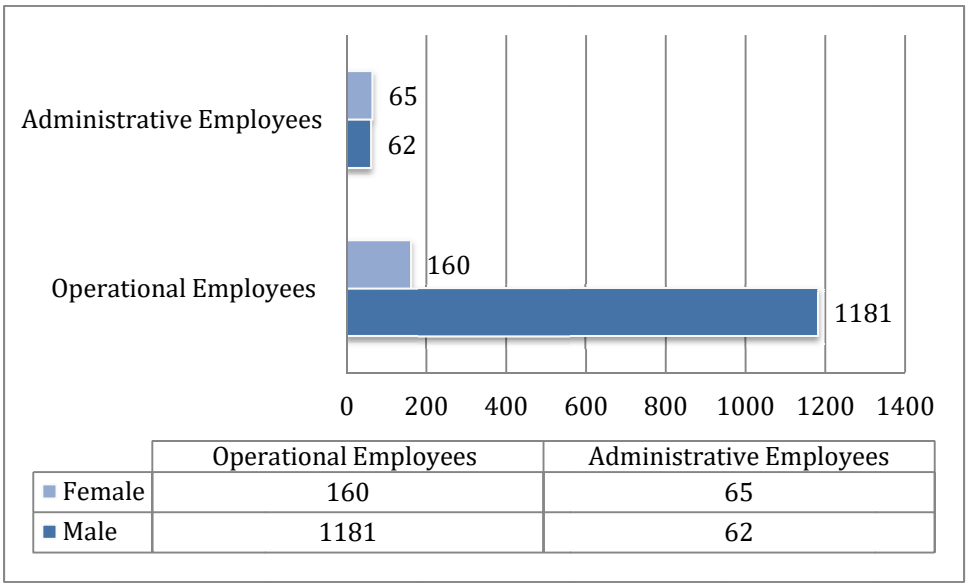


Figure 1: Number of Workers Employed by Companies Responding to the Survey

Characteristics of the Workforce

Gender Breakdown of Employees

Companies were asked to provide a breakdown of the number of male and female workers they employ. Males represent 88% of the operational and 49% of the administrative workforce while females represent 12% of the operational and 51% of the administrative workforce in the sample. The following figure provides a breakdown of the number of employees by gender in operational and administrative positions.



	Operational Employees	Administrative Employees
Female	160	65
Male	1181	62

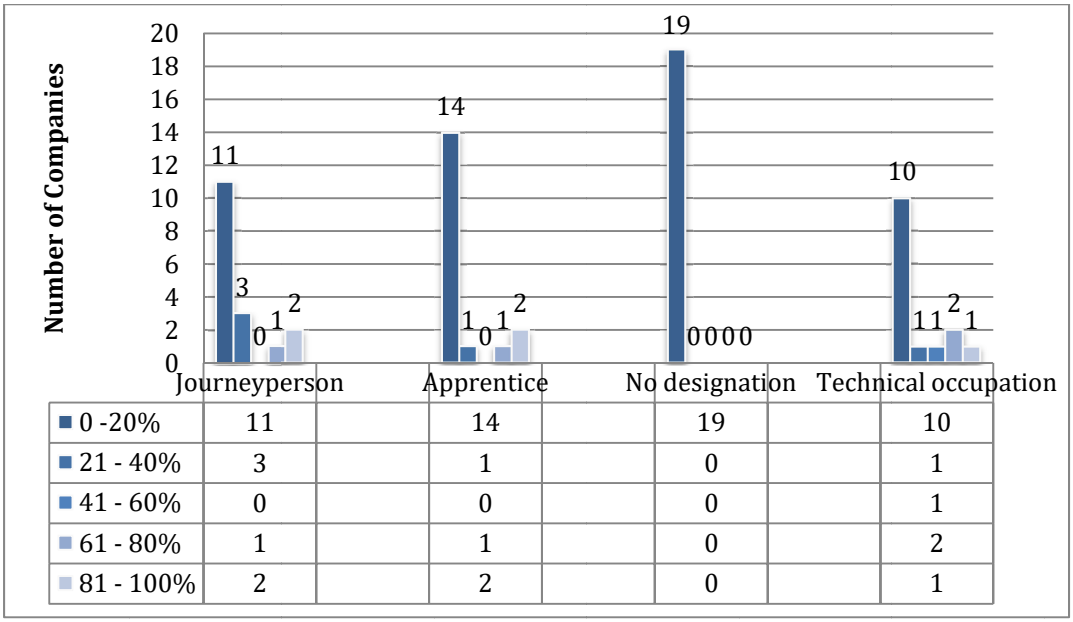
Figure 2: Breakdown of Operational and Administrative Employees by Gender

Overall, the sample suggests a ratio of 5.5 males for every female employed in the sector in the region. Historically, manufacturing has been a male dominated industry so this finding is not surprising but is higher than what was found in the Vancouver Island/Coastal region by nearly a factor of two. The average company workforce reported was 118.4.

Trades and Technical Occupations Reported

Manufacturing companies in the North Central region like other parts of the province have an expectation that their workers are well qualified and trained. Of particular importance to employers is training in an apprenticeable trade.

The following figure provides a breakdown of the percentage of workers who are working in an apprenticeable trade, are working on acquiring a Canadian trade's credential (e.g. a Red Seal credential), are working in a trade but not toward a designation (no designation), or who are working in a technical occupation.



	Journeyperson		Apprentice		No designation		Technical occupation
0 -20%	11		14		19		10
21 - 40%	3		1		0		1
41 - 60%	0		0		0		1
61 - 80%	1		1		0		2
81 - 100%	2		2		0		1

Figure 3: Number of Companies and the Percentage of Workers in Apprenticeable Trades and Technical Occupations

For the purposes of interpreting the information in the table it is important to note the following definitions for each of the categories provided:

- Journeyperson – individuals who are working in a wide range of trades (with or without a Red Seal designation). Examples of these trades included welders, machinists, industrial mechanics, and electricians;
- Apprentice – individuals in this category are working as apprentices in the trades (a complete list of trades reported by employers is provided in Table 8 below);
- No designation – individuals in this category are working in one of the trades but are neither a journeyperson nor apprentice; and

- Technical Occupation – this category includes individuals who are working in technical occupations such as assemblers, machine and equipment operators (e.g. PLC operators). These occupations are not in an apprenticeable trade.

Nearly three-quarters of the companies (14/19) reported that up to 20% of their workers are apprentices working toward a Red Seal trade designation and nearly 60% (11/19) reported that up to 20% of their workers are journeypersons. The graph also indicates that approximately 50% of the companies (10/19) have up to 20% of their employees working in technical occupations that are not part of an apprenticeable trade. As a result, for this part of their workforce, companies do not rely on the trades training system as a source of potential hires.

All of the companies responding to the survey have up to 20% of their workers who are working in a trade but are neither a journeyperson nor apprentice. Companies were provided with the opportunity to provide additional comments to clarify their choices but did not provide written comments. However, company representatives who were interviewed indicated that there were two factors that influenced the fact that companies have up to 20% of their workforce working in trades who are neither journeypersons nor apprentices. These factors were:

- the lack of locally available apprenticeship spaces in the trades that they needed for their businesses (an example of that was cited was millwright apprenticeship training); and
- the fact that some of the jobs that require trades training are 'blends' of two or more apprenticeable trades (e.g. welder and sheet metal worker; millwright and metal fabricator). There are no provincial programs that offer these types of 'blended' apprenticeship programs.

The most common trades reported by North Central region manufacturers are listed in the following table.

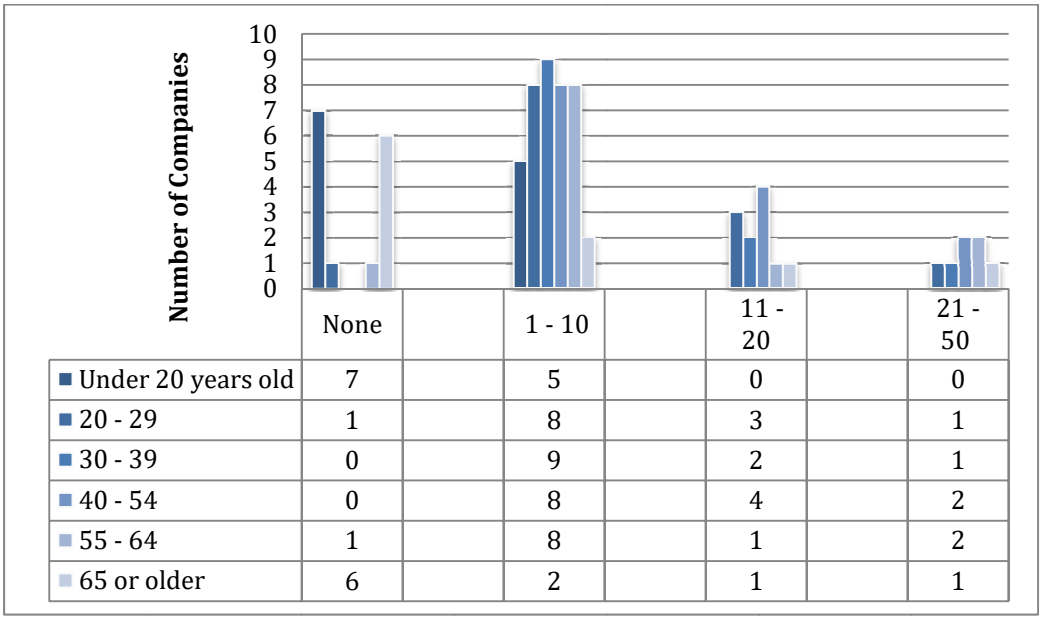
Table 8: Trades Designations Reported by North Central Manufacturing Companies

	Number of Companies Responding	Percentage of Companies Responding
Welder	12	63.2
Industrial Mechanic (Millwright)	9	47.4
Electrician	9	47.4
Sheet Metal Worker	6	31.6
Other (e.g. PLC Operator, Small Engine Mechanic)	6	31.6
Metal Fabricator (Fitter)	5	26.3
Heavy Duty Equipment Mechanic	5	47.4
Machinist	5	26.3
Truck & Transport Mechanic	2	10.5
Mechanical Assembler	1	5.3

Age Range of the Workforce

Companies were also asked to report the age ranges of their workforce. The manufacturing workforce in the North Central region tends to be younger than in other parts of the province. Some of this is due to the nature of the work (i.e. many of the jobs are physically demanding and not well suited to older individuals). The following figure shows the breakdown of age ranges reported by companies responding to the survey.

The question related to the data in this graph asked employers to indicate the numbers of employees they have in their companies in each of the categories. The could respond by indicating that they had no employees in the age range (i.e. None), had between 1 and 10 employees in the age range (1-10), had 11 – 20 employees in the age range, or had 21- 50 employees in the age range. Employers were also given two other categories to respond to: (51 – 100) and more than 100. No responses were received for these categories and as a result this information is not included in the table.



	None	1 - 10	11 - 20	21 - 50
Under 20 years old	7	5	0	0
20 - 29	1	8	3	1
30 - 39	0	9	2	1
40 - 54	0	8	4	2
55 - 64	1	8	1	2
65 or older	6	2	1	1

Figure 4: Age Range of Workforce

The figure above indicates that companies generally reported employees in the majority of the age categories. The most frequently reported category was the 40 – 54 age category with a total of 14 companies reporting either 1 – 10, 11 – 20, or 21 – 50 employees in this age range. It is also worth noting that 11 companies reported having employees in the 55 – 64 age category. This suggests that companies in the region will be bracing themselves for a potential wave of retirements in the next 1 – 5 years. Also noteworthy, was the data reported for the age 65 or older category with 4 companies reporting that they have workers of this age including 1 company that has between 21 and 50 employees who are 65 or older. This information when combined with what tends to be a generally young workforce in the region suggests that employers will be challenged by inter-generational issues related to a number of potential issues including workplace culture and communication.

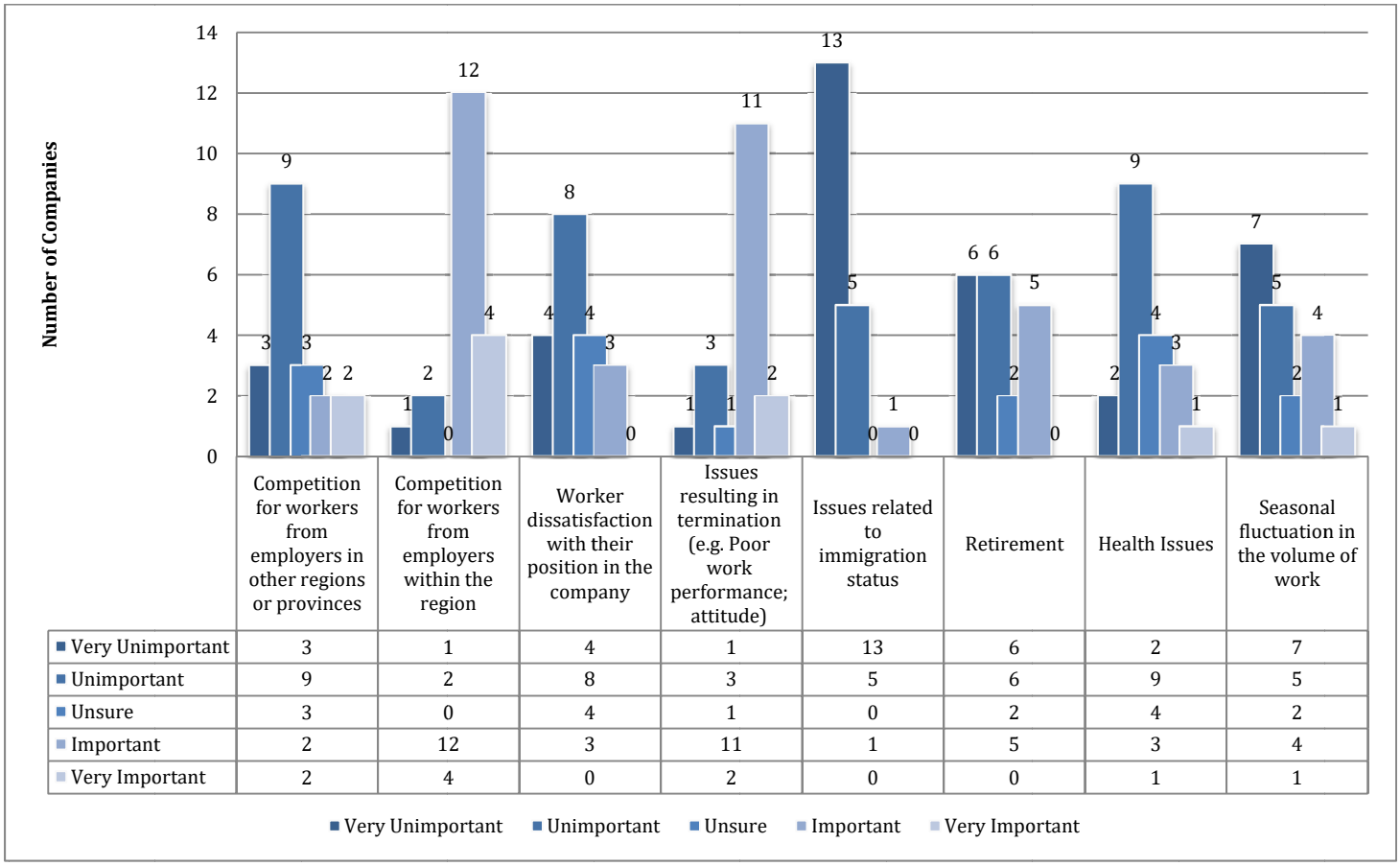
Staff Turnover

Figure 5 provides a breakdown of how companies responded to the questions focused on reasons for staff turnover. Several of the choices for staff turnover were considered either 'Unimportant' or 'Very Unimportant'. These factors included the following:

- Issues related to immigration status – 18 out of 19 (95%) of the companies;
- Worker dissatisfaction with their position in the company - 12 out of 19 (63%) of the companies; and
- Competition for workers from employers in other regions or provinces – 12 out of 19 (63%) of the companies.

The factors that were considered either 'Important' or "Very Important' were:

- competition for workers from employers within the region – 16 out of 19 (84%) of the companies; and
- Issues resulting in termination such as poor work performance or poor attitude – 13 out of 19 (68%) of the companies.



	Competition for workers from employers in other regions or provinces	Competition for workers from employers within the region	Worker dissatisfaction with their position in the company	Issues resulting in termination (e.g. Poor work performance; attitude)	Issues related to immigration status	Retirement	Health Issues	Seasonal fluctuation in the volume of work
Very Unimportant	3	1	4	1	13	6	2	7
Unimportant	9	2	8	3	5	6	9	5
Unsure	3	0	4	1	0	2	4	2
Important	2	12	3	11	1	5	3	4
Very Important	2	4	0	2	0	0	1	1

Figure 5: Reasons for Staff Turnover

Employer Training

Employer Training Activities

Employers were asked a number of questions related to their training activities. Questions were asked about the specific type of training that employees receive and who provides the training. The following figure provides an overview of the types of training that manufacturing employees in the North Central region receive. As can be seen in the graph below, all 19 companies (100%) reported providing new employee orientation training and 16 of the 19 companies (84%) also undertake internal training related to harassment prevention and creating a respectful workplace. A significant proportion of the companies involve their employees in trades training (14 out of 19 companies or 74%) and a range of soft skills including team building, communication skills (15 out of 19 or 79%) and leadership training (8 out of 19 or 42%).

It is interesting to note that only one of the 19 companies reporting providing company-specific technical training. This is interesting given the degree to which the workforce of the 19 companies responding to the survey included a focus on technical occupations and trades.[23]

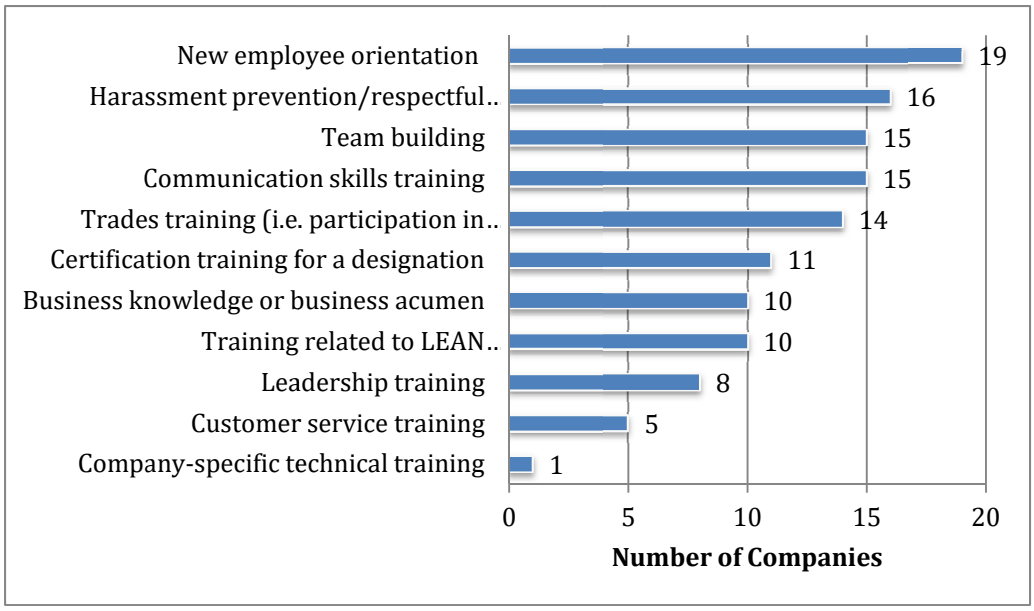
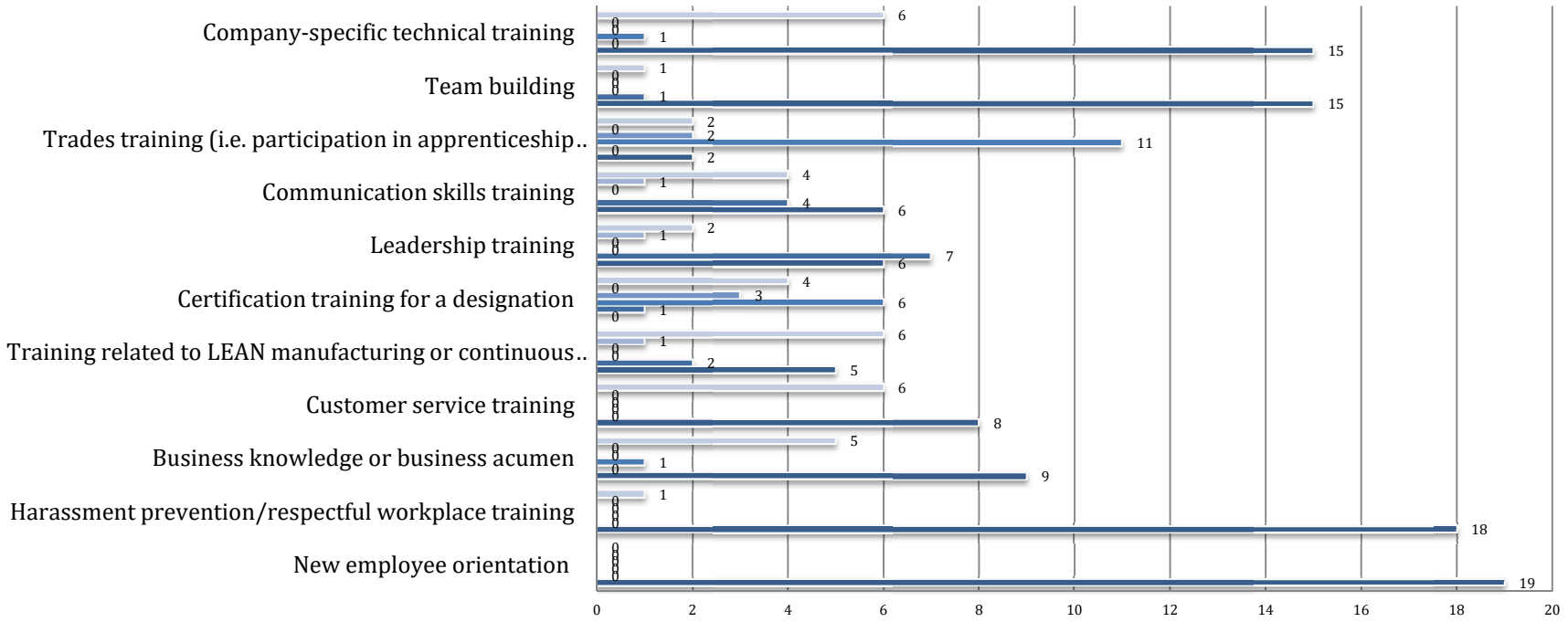


Figure 6: Training Provided to Manufacturing Operations Employees

Internal and External Training

The figure on the next page provides an overview of the types of internal and external training activities that the sample companies in the region are undertaking. A discussion of the details follows on the next page.

[23] See Figure 3 and Table 8 earlier in this report.



	New employee orientation	Harassment prevention/respectful workplace training	Business knowledge or business acumen	Customer service training	Training related to LEAN manufacturing or continuous improvement	Certification training for a designation	Leadership training	Communication skills training	Trades training (i.e. participation in apprenticeship training)	Team building	Company-specific technical training
Other	0	1	5	6	6	4	2	4	2	1	6
A union	0	0	0	0	1	0	1	1	0	0	0
A certifying body	0	0	0	0	0	3	0	0	2	0	0
A local college or technical institute	0	0	1	0	0	6	0		11	0	1
Contracted external training company	0	0	0	0	2	1	7	4	0	1	0
In-house	19	18	9	8	5	0	6	6	2	15	15

Figure 7: Training Providers

The data in the table demonstrates a number of patterns related to the categories of training provided to employees by this sample of North Central companies. In terms of ***internal training***, the following was found:

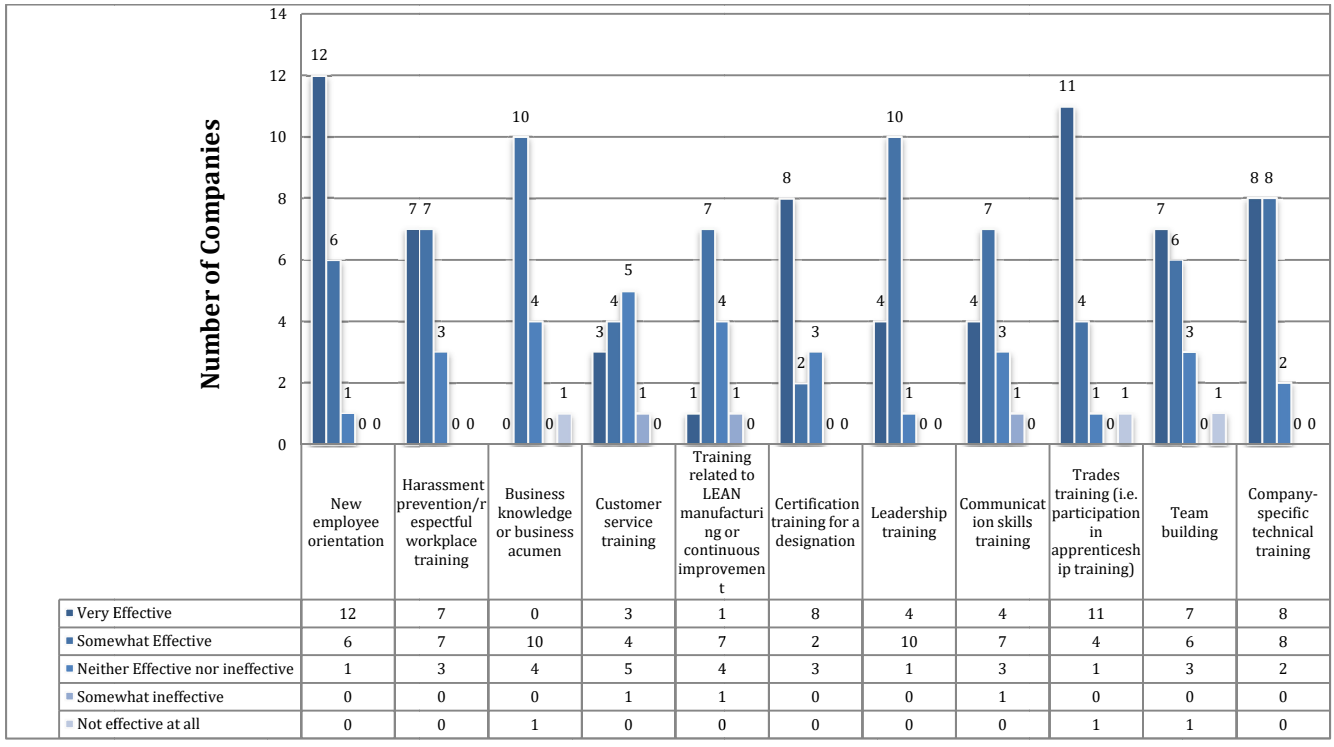
- The majority of companies provide new employee orientation (19 out of 19) and harassment prevention/respectful workplace training (18 out of 19) by using in-house training resources; and
- 15 out of 19 (79%) companies also report using in-house resources to conduct team building and company-specific technical training.

External training resources were used by companies in fewer cases. It is worth noting the following external training activities reported by the companies in the sample:

- 11 out of 19 (58%) companies reported using a local college or technical institute for trades training (including apprenticeship training);
- 7 out of 19 (37%) companies used a contracted external training company for leadership training; and
- 6 out of 19 (32%) companies reported using 'other' resources for customer service training or lean manufacturing training.

Effectiveness of Training

Employers were asked to rate each of the types of training that they engage in or support on a scale ranging from 'Very Effective' to 'Not Effective at All'.



	New employee orientation	Harassment prevention/respectful workplace training	Business knowledge or business acumen	Customer service training	Training related to LEAN manufacturing or continuous improvement	Certification training for a designation	Leadership training	Communication skills training	Trades training (i.e. participation in apprenticeship training)	Team building	Company-specific technical training
Very Effective	12	7	0	3	1	8	4	4	11	7	8
Somewhat Effective	6	7	10	4	7	2	10	7	4	6	8
Neither Effective nor ineffective	1	3	4	5	4	3	1	3	1	3	2
Somewhat ineffective	0	0	0	1	1	0	0	1	0	0	0
Not effective at all	0	0	1	0	0	0	0	0	1	1	0

Figure 8: Effectiveness Ratings for Training Activities

In looking at the effectiveness of training data it is useful to go back to the discussion related to types of internal and external training in relation to who provides the training.

In terms of ***internal training*** provided by companies in the sample:

- New employee orientation was found to be 'Very Effective' or 'Somewhat Effective' by 18 out of 19 employers (95%);
- Harassment prevention/respectful workplace training was found to be 'Very Effective' or 'Somewhat Effective' by 14 out of 17 employers (82%);
- Company-specific technical training was found to be 'Very Effective' or 'Somewhat Effective' by 16 out of 19 employers (84%); and
- Team building was found to be 'Very Effective' or 'Somewhat Effective' by 13 out of 17 employers (76%).

In terms of ***external training*** provided by local regional colleges or technical institutes:

- Trades training (including apprenticeship training) was found to be 'Very Effective' or 'Somewhat Effective' by 15 out of 17 employers (88%).

In terms of ***external training*** provided by a contracted external training company or 'other' resources:

- Leadership training was found to be 'Very Effective' or 'Somewhat Effective' by 14 out of 15 employers (93%);
- Customer service training was found to be 'Very Effective' or 'Somewhat Effective' by 7 out of 13 employers (54%); and
- Lean manufacturing training was found to be 'Very Effective' or 'Somewhat Effective' by 8 out 13 employers (62%).

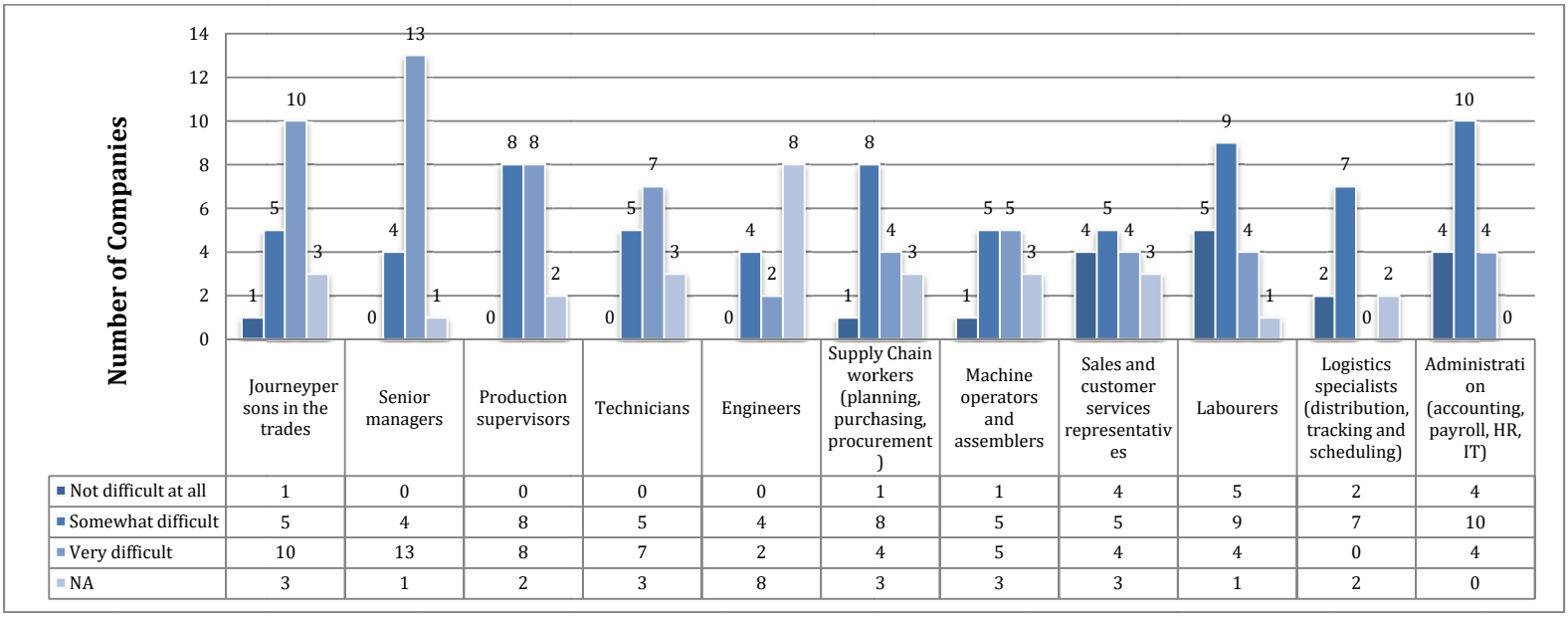
Overall, employers are highly satisfied with their internal training initiatives. They also appear to be satisfied with trades training. Interviews suggested that while this is the case there remain concerns among regional manufacturers concerning the availability of trades training in the region. There are lower reported degrees of effectiveness for some of the other external training that companies have undertaken including customer service and lean manufacturing training.

Labour and Skill Shortages

Difficult to Fill Positions

While there appears to be a general climate of growth for manufacturers in the region, companies are finding it difficult to hire qualified employees for some positions. The following table provides an indication of the extent to which employers are having difficulty filling certain types of positions.

- 94 % of the companies (17 out of 18) reported that it was either somewhat or very difficult to fill senior management positions;
- 79% (15 out of 19) are having difficulty finding qualified journeypersons in a broad range of trades;
- 84% (16 out of 19) are having difficulty hiring production supervisors;
- 75% (12 out of 16) reported that it was either somewhat or very difficult to hire supply chain workers;
- 78% (14 out of 18) reported difficulty in hiring administration staff (i.e. for accounting, payroll, HR, and IT positions); and
- Even unskilled labourers were reported as being difficult to find and hire. 13 out of 19 companies (68%) reported challenges in hiring labourers.



	Journeypersons in the trades	Senior managers	Production supervisors	Technicians	Engineers	Supply Chain workers (planning, purchasing, procurement)	Machine operators and assemblers	Sales and customer services representatives	Labourers	Logistics specialists (distribution, tracking and scheduling)	Administration (accounting, payroll, HR, IT)
Not difficult at all	1	0	0	0	0	1	1	4	5	2	4
Somewhat difficult	5	4	8	5	4	8	5	5	9	7	10
Very difficult	10	13	8	7	2	4	5	4	4	0	4
NA	3	1	2	3	8	3	3	3	1	2	0

Figure 9: Difficulty in Hiring Qualified Workers

Reasons for Job Applicants' Failure to Meet Job Requirements

Employers also selected areas that they believe prospective employees fail to meet the requirements for positions offered by their companies. The top three reasons selected by companies concerning why job applicants fail to meet job requirements were:

- Attitude or commitment towards the type of work (i.e. technical, skilled labour, managerial, unskilled labour, etc.) the company has to offer (12 out of 19 companies or 63%);
- In the case of hiring associated with management positions, the lack of management experience was often cited as a reason for applicants to fail to be hired (11 out of 19 companies or 58%); and
- The amount of work experience (10 out of 19 companies or 53%). This was closely followed by a number of other factors including knowledge, skills, and experience with company-specific manufacturing operation, the ability to work with or manage people, communication skills, and business knowledge or business acumen (9 out of 19 companies or 47%).

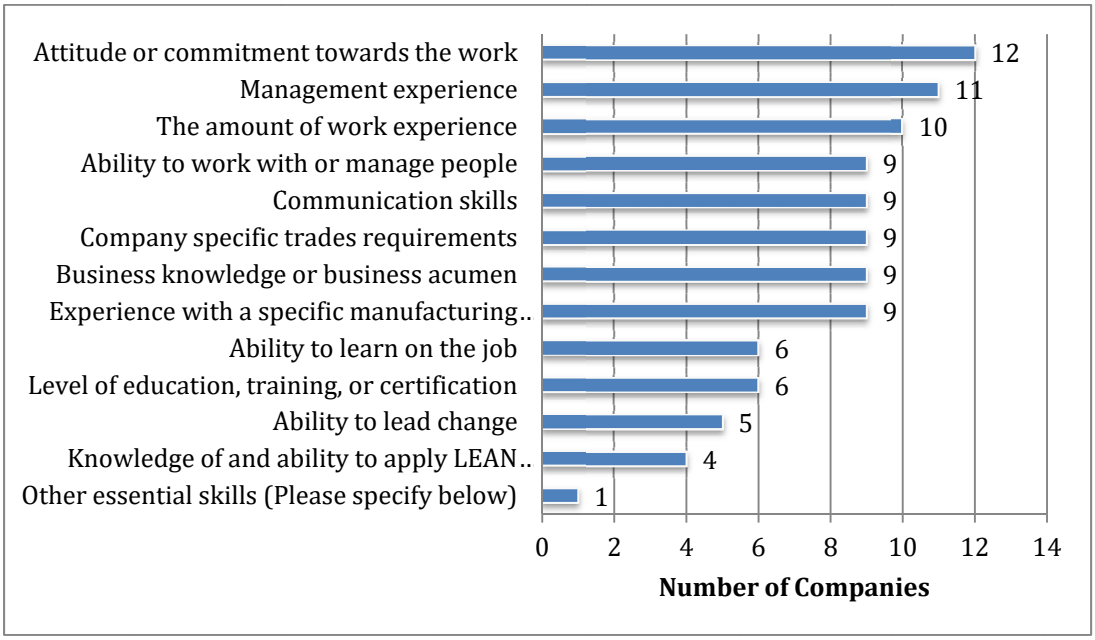


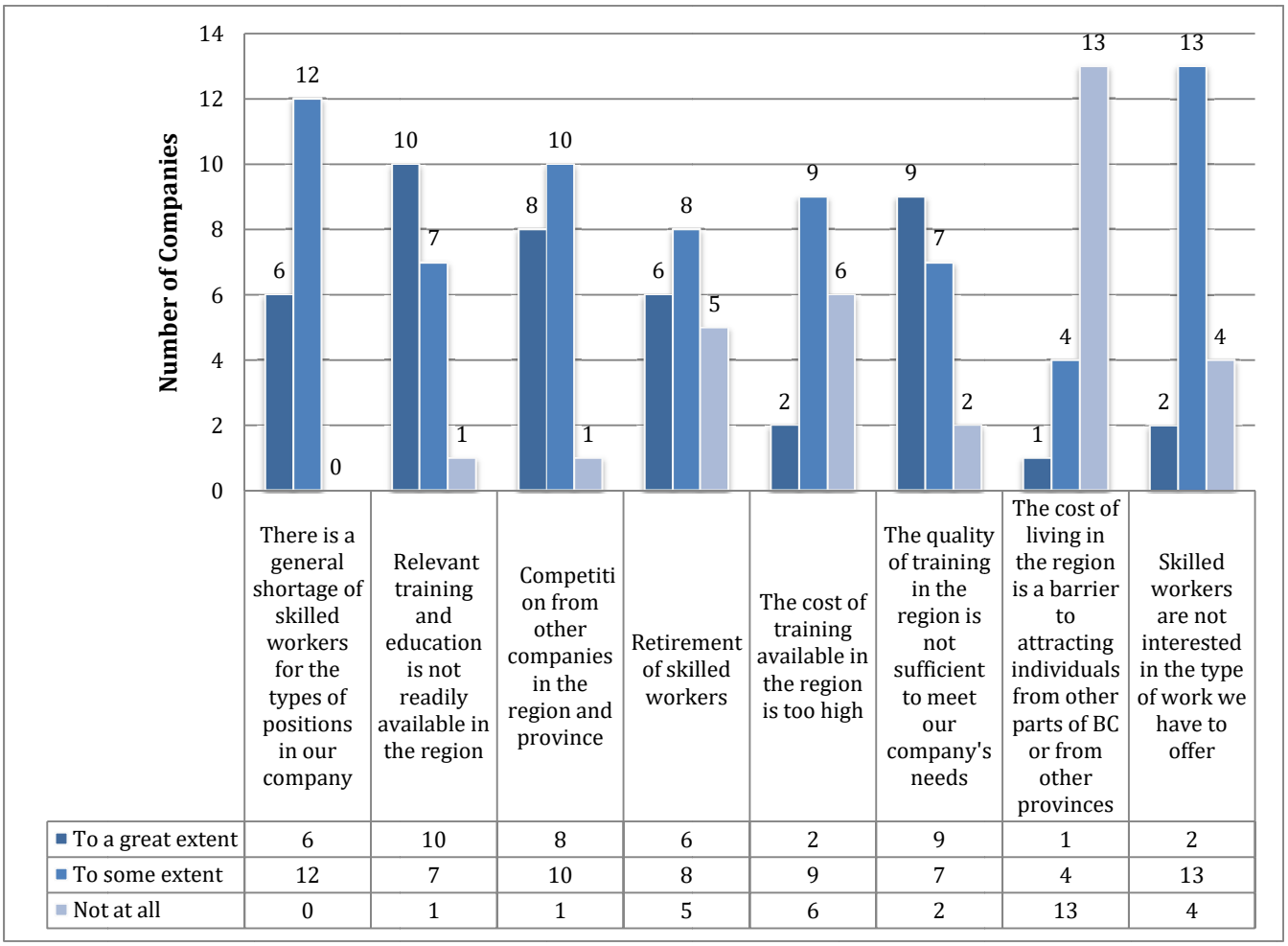
Figure 10: Reasons for Failure of Job Applicants to Meet Position Requirements

It is worth noting that interviews with employers that it was clear that they found themselves hiring for attitude and would then undertake the necessary training either internally or externally.

Factors Contributing to Future Skill Shortages

Employers were asked to consider a number of factors that they think will contribute to future skill shortages that they expect to experience. While all of the factors listed were considered to impact future skill shortages either a great deal or to some extent, employers seem to be most concerned about the general skill shortage for the types of positions they have (18/19 companies or 95%), that relevant training and education is not available in the region (17/19 companies or 89%), and that other companies in the region and province are competing for skilled workers (18/19 companies or 95%). Availability of relevant training in the region likely refers to the availability of trades training

and those hard to fill skill areas outlined in Figure 8 earlier in this report. The cost of living was not seen as a barrier to attracting individuals from other parts of the province or the country in general (17/19 companies or 89%). The following figure provides a breakdown of the factors that companies think will contribute to future skill shortages.



	There is a general shortage of skilled workers for the types of positions in our company	Relevant training and education is not readily available in the region	Competition from other companies in the region and province	Retirement of skilled workers	The cost of training available in the region is too high	The quality of training in the region is not sufficient to meet our company's needs	The cost of living in the region is a barrier to attracting individuals from other parts of BC or from other provinces	Skilled workers are not interested in the type of work we have to offer
To a great extent	6	10	8	6	2	9	1	2
To some extent	12	7	10	8	9	7	4	13
Not at all	0	1	1	5	6	2	13	4

Figure 11: Factors Contributing to Future Skill Shortages

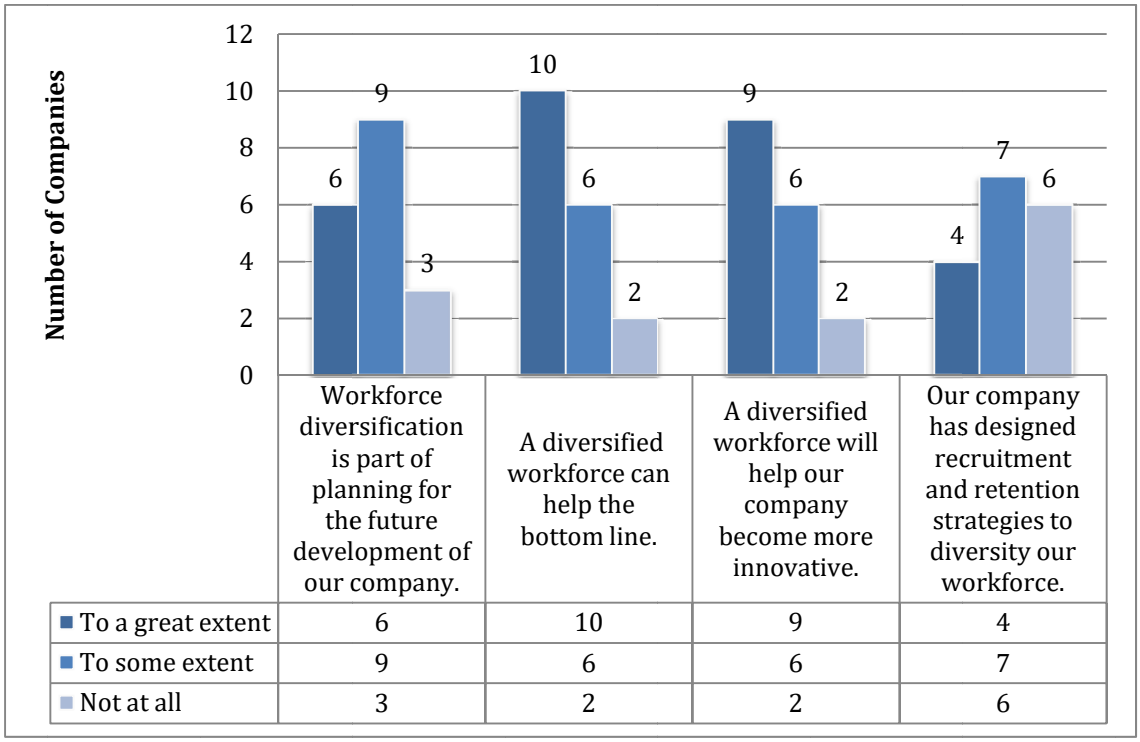
Actions Regarding Workforce Diversification

Employer Opinions and Actions Concerning Workforce Diversification

The final section of the survey asked employers to provide their opinions concerning workforce diversification. Workforce diversification involves recruitment and retention practices that help to attract individuals who are traditionally underrepresented in the manufacturing workforce such as women, indigenous peoples, and persons with disabilities.

As can be seen by the following figure those responding on behalf of manufacturing companies in the region expressed support for the value of a diversified workforce but fewer have developed strategies to diversify their workforce. The interviews that were conducted as a part of this research shed some

light on the workforce diversification issue. More will be said about this in the next section of this report.



	Workforce diversification is part of planning for the future development of our company.	A diversified workforce can help the bottom line.	A diversified workforce will help our company become more innovative.	Our company has designed recruitment and retention strategies to diversity our workforce.
To a great extent	6	10	9	4
To some extent	9	6	6	7
Not at all	3	2	2	6

Figure 12: Opinions and Actions Concerning Workforce Diversification

6.2 Summary of Themes Emerging from Employer Interviews

Thirteen (13) interviews of key manufacturing sector executives and senior managers were conducted during October and November 2017. A protocol (i.e. a set of interview prompts and questions) was used to guide the interview process. The interviews were conversational in tone and interviewees were encouraged to express their opinions on a broad range of topics affecting the manufacturing sector in the region.

Interview questions covered the same topic areas as the online survey but allowed the interviewers to probe in areas that were clearly of greater importance to company representatives. Interviewees were given the opportunity to describe the 'burning issues' affecting their companies in terms of labour market and workforce development, to comment on recruitment, retention, attraction, and training issues, and to articulate current and future trends in their industry.

The results of the interviews were subjected to a content analysis. A series of themes emerged from this analysis. Company executives and managers interviewed reported that there are:

- Skill areas that are hard to fill and some notable skills gaps;
- Issues they are facing related to training;

- A number of factors that are affecting their company's ability to attract, recruit, and retain workers in the region;
- Issues related to workforce diversification;
- Impacts that technology is having on their company and workers; and
- Some individual company strategies that could be more broadly implemented across the region to address the skills gaps and training issues identified.

1. Hard to Fill Skill Areas and Skills Gaps

Interviewees reported that the following skill areas or positions requiring these skills were particularly difficult to fill[24]:

- Millwrights – included in NOC 7311. Includes construction millwrights and industrial mechanics that install, maintain, troubleshoot, overhaul and repair stationary industrial machinery and mechanical equipment.
- Industrial electricians – NOC 7242. Industrial electricians install, maintain, test, troubleshoot and repair industrial electrical equipment and associated electrical and electronic controls.
- Commercial driver training – not included in NOC. Licensed commercial drivers are required for many of the companies in the region, particularly those involved in logging operations.
- IT specialists – included in NOC 2171. Information systems analysts and consultants analyze systems requirements, develop and implement information systems development plans, policies and procedures, and provide advice on a wide range of information systems issues.
- Basic computer skills – not included in the NOC. Companies in the regions stressed the importance of hiring workers who have a basic understanding of computer technologies.
- Soft skills training – not included in the NOC. Soft skills requirements mentioned by manufacturers in the region included communication skills, interpersonal relationship skills, and leadership and administration skills.
- Incident and accident reporting – not included in the NOC. In general, employers are required by Work Safe BC to ensure that staff are trained in effective incident and accident reporting procedures.
- PLC (programmable logic controller) training – not included in the NOC. Most of the manufacturers in the region are automating their plant operations with equipment that requirement PLC operators.
- Plant maintenance managers – included in NOC 0714. Maintenance managers plan, organize, direct, control and evaluate the maintenance department within commercial, industrial, institutional, recreational and other facilities.
- Quality control specialists and managers – included in NOC 0911 and NOC 2141. NOC 2141 describes the work of quality control engineers in the following manner. Industrial and manufacturing engineers conduct studies, and develop and supervise programs to achieve the best use of equipment, human resources, technology, materials and procedures to enhance efficiency and productivity.

[24] NOC descriptions provided with the assistance of the NOC search tool found at: http://noc.esdc.gc.ca/English/NOC/QuickSearch.aspx

- Small engine repair – included in NOC 7335. Workers in this unit group test, repair and service small gasoline and diesel-powered engines and equipment, such as garden tractors, outboard motors, lawn mowers and other related equipment.

2. Issues Related to Training

In most cases, companies reported that training is 'internal' or done 'in-house'. However, there were some notable examples of work with colleges and universities and in one case initiatives with a local school district were highlighted. Some examples of these initiatives are:

- Apprenticeship training offered by the College of New Caledonia;
- Entry level training and trades program development with TRU;
- Heavy equipment program and 'maker days' with local school districts (e.g. School District #27);
- Industry collaboration in the creation of a wood products program at BCIT; and
- College programs related to career promotion within the manufacturing sector.

One company representative made a point of indicating that retention of workers improves when they are trained in the north. Others expressed some concern that the workforce was not being 'managed' in the North. By that, they meant that the supply of skilled workers was not always available to the industries in locations where workers are most needed. A small number of company representatives expressed concern that there is a gap between the current education system and the work that occurs in industry. In their opinion this gap needs to be addressed through curriculum revision. Others suggested more proactive approaches which encouraged involvement in local school career initiatives as a way of highlighted the work that occurs in the manufacturing sector.

3. Factors Affecting Attraction, Recruitment and Retention of Workers

A number of interviewees mentioned issues or barriers that affect their ability to attract, recruit and retain workers. The issues mentioned included the following:

- Mixed union and non-union environments create challenges in moving staff within the company
- Geography (e.g. isolated communities) and reputation of the region (e.g. pulp mill smell, reported crime rates)
- Small companies can't compete with larger companies for the same people
- Larger industries (e.g. mining, oil and gas) pay better and are attracting young people
- An aging workforce (retirement and succession planning are issues)
- Reduction in training caused by economic conditions faced by some companies
- Transportation challenges which result in a lower representation of First Nations individuals in the workforce

4. Issues Related to Workforce Diversification

Company representatives provided a range of responses to questions related to workforce diversification. It was clear that many of the companies do not have specific strategies to attract underrepresented groups but the majority of those interviewed recognized the importance of attracting a diverse workforce. Companies that do have strategies in place often referred to their

partnerships with local indigenous peoples. One company pointed out the need for targeted programs for training First Nations peoples in the technologies of the wood industries.

5. Impact of Technology

Interviewees acknowledged that technology is having a major impact on companies and the nature of work in the manufacturing sector in the region. In particular, companies in the wood products sub-sector involved in the manufacture of products such as lumber, plywood, veneers, wood containers, wood flooring, and wood trusses have incorporated new technologies into the production processes for these products (i.e. sawing, planing, shaping, laminating, and assembling).

Production machinery in sawmills is typically driven by computer technology that requires fewer but more technically trained workers. An example is the introduction of programmable logic controlled (PLC) machinery in wood product operations. At one time plywood or veneer plants relied on workers to manually move materials along an assembly line. This process is now done using PLC machinery with an operator controlling the movement of materials at all stages of production. The result has been a reduction in the need for manual labour. Instead, employers are looking for workers who are trained in the use of technology enabled machinery. Employers also indicated that they are looking for employees who are able to adapt to change and are flexible and able to adapt to the introduction of new technologies.

The introduction of this technology has made the industry more competitive and allowed wood product manufacturers to diversify the products they are able to offer. Examples of this diversification are the development of next-generation building systems and the creation of bioproducts that take advantage of wood-fibre residues which previously would have been waste for disposal.

Technology has also had an impact on the environmental performance of companies in the wood products manufacturing sub-sector. Sawmill operations have become cleaner and more energy efficient over the past decade as a result of the application of new technologies and lean manufacturing and product development approaches.

6. Strategies to Address Issues

Several interviewees offered suggestions concerning strategies that could be used to address specific issues. Some of the strategies that are being employed by companies in the region or could be considered for implementation are:

- Expand the work of the ITA in the north to enable it to have a greater role in helping manufacturers address identified apprenticeship needs;
- Set up internship programs targeted at the large indigenous worker cohort;
- Create opportunities for industry to connect/partner with post-secondary institutions;
- Create opportunities for greater awareness of the work that manufacturers do and focus these opportunities on colleges and schools;
- Consider providing an interest free loan program for students who want to study and work in the north;

- Provide a greater regional training presence in smaller communities in the north;
- Provide opportunities for local industries to collaborate with one another and local colleges to address skills and training needs; and
- Enhance recruitment through local high schools and First Nations job fairs.

It is important to comment on the last potential strategy in the list. Other conversations[25] with regional manufacturers indicated that there are initiatives that are already helping connect North Central BC indigenous communities with the region's manufacturing community. In addition, many of the larger companies and educational organizations have Aboriginal and First Nations Advisors or liaisons. Some of these companies include Carrier Lumber, West Fraser, Babine Forset Products, Canfor, Tolko and Spectra Energy. Bands in the North Central region have also created comprehensive educational programs and partnerships. Two examples are the Williams Lake Band and Haisla Nation.

In the North Central region there are a number of educational and private training organizations that are working to connect the indigenous communities with the manufacturing sector. These organizations include:

- First Nations Technology Council and Canada's Digital Technology Supercluster Consortium
- The New Relationship Trust Foundation (https://www.nrtf.ca/)
- PGNAETA (Prince George Nechako Aboriginal Employment and Training Association - http://pgnaeta.bc.ca/) including the Aboriginal Gateway Training Centre
- Indigenous Works (https://indigenousworks.ca/en) including membership in the Leadership Circle
- Northern Development Initiatives Trust (NDIT) - First Nations Government Internship Program
- ITA - Indigenous Peoples in Trades (http://www.itabc.ca/indigenous-peoples-trades/overview)

It is imperative that any future strategic training and development initiatives in the manufacturing sector in the North Central region to collaborate with existing organizations and initiatives to ensure that there isn't overlap and duplication of effort.

7. Summary

The online survey and interviews conducted as a part of the this LMI research study revealed several important training and skills development issues that are of general concern to manufacturing companies in the North Central region. These are:

- ***Skills gaps or hard to fill positions.*** Most frequently mentioned were trades such as millwrights, commercial truck drivers, and plant and operations managers and leaders.
- ***Lack of availability of trades training.*** Many companies (particularly smaller ones) found it difficult to have employees receive the apprenticeship and trades training they required.

[25] These conversations occurred during the course of developing this LMI research report and are in addition to the online survey and formal interviews.

- ***Challenges attracting, recruiting and retaining workers.*** Many reasons were cited by companies for the challenges they faced in finding workers. The reasons range from the location of the work to economic factors such as competitive wage scales.
- ***Workforce diversification.*** Some companies have strategies in place to attract a diverse workforce but many do not. The majority acknowledge that workforce diversification is good for the bottom line but may not have a way to address the issue.
- ***Technology impacts.*** Technology is having an impact of the companies surveyed with many of them acknowledging that technology is also causing them to look for workers who are more adaptable and have different skill sets.

The suggestions for future initiatives and directions provided by regional manufacturers will provide the basis for implementation of initiatives to address the concerns that the sector has voiced through this LMI research. Manufacturers in the region want to see demonstrable steps taken to address skills and training gaps and shortages. They are looking forward to the next phases of this labour market partnership to address the identified issues.

Appendix 1: North Central LMP Advisors[26]

The following table provides an overview of individuals who provided advice during Phase 1 and 2 of the North Central Manufacturing Labour Market Project.

Company/Organization	Location	Contact(s)/Role
NCMAB		
Allrite Heating & Ventilation	Prince George	John Worswick - Project / Office Manager
Pinnacle Renewable Energy	Prince George	Erin Strong - Director, Human Resources
Wolftek Industries	Prince George	Gordon Gallop - General Manager
Nechako Mechanical (Bid Group)	Vanderhoof	Brian Fehr - Owner/Partner of Bid Group
BKB Cedar Manufacturing	McBride	Rajpal Basran - President
Hampton Affiliates	Babine / Burns Lake	Ruben Gaytan - HR Manager
C&C Wood Products	Quesnel	Ron Dunn
Carrier Group of Companies	Prince George	Madison Kordyban
Northern Lights Estate Winery	Prince George	Doug Bell
Shadow Leathers	Vanderhoof	Mitch Brain
Sitka Log Homes	100 Mile House	Brad Johnson
Stinger Welding	Prince George	Willy Manson
West Fraser Mills	Smithers / Quesnel / Williams Lake / Fraser Lake / 100 Mile House	Brian Balkwill
Economic & Educational Organizations		
Northern Development Initiatives Trust (NDIT) - Supply Chain Connector	Prince George	Renata King
City of Prince George Economic Development Officer	Prince George	Marissa Barcellos
Kevin Brown Communications	Prince George	Kevin Brown
Prince George Chamber of Commerce	Prince George	
UNBC	Prince George	Christie Ray

[26] NAICS codes and number of employees for manufacturing companies listed in the above table are found in Appendix 2.

Company/Organization	Location	Contact(s)/Role
UNBC	Prince George	Mark Barnes
New Caledonia College	Prince George	Laurie Dillman
First Nations Organizations		
New Relationship Trust Foundation	Fort St. John	Gloria Catherall
Prince George Nechako Aboriginal Employment & Training Association	Prince George	Nicole Doucette
Northern Development Initiatives Trust (NDIT) - First Nations Government Internship Program	Prince George	Renata King
ITA - Indigenous Peoples in Trades	Richmond	Shaun Cox
Carrier Lumber - Outland Camps Ranger Program	Prince George	Derek Orr
Williams Lake Indian Band	Williams Lake	Willie Sellars
New Caledonia College - Aboriginal Advisor	Prince George	Adele Chingee
Haisla Nation Council	Haisla	Ken Stewart / Jason Majore
All Nations Consulting & Coaching	Prince George	Lisa Mueller

Engagement Processes

Industry and business organizations have been actively engaged in the North Central Manufacturing Labour Market Project. An initial attempt was made to replicate the Vancouver Island Manufacturing Advisory Board structure and approach in North Central BC. However, the unique characteristics of the North Central business environment suggested that email communication, phone conversations and interviews with company and business organization representatives would be a more effective way of engaging the community and soliciting feedback. Conference and forum participation and interactions were also used to receive the feedback and response necessary for both Phase 1 and Phase 2 of the LMP project.

The following table provides an overview of the events and feedback mechanisms used during Phase 1 and 2 of the North Central LMP project.

Date	Events and Reports	Feedback Mechanisms
Sept. 11th – 13th, 2016	First visit to Prince George / visiting with potential NCMAB members / meeting with key business stakeholders with	**Individual meetings with the following**: - Kevin Brown, KB Communications - Dan McLaren, Commonwealth Financial - Jennifer Brandle-McCall, Board Chair, Prince George CoC - Christie Ray, CEO, Prince George CoC - Renata King, Program Manager, NDIT

Date	Events and Reports	Feedback Mechanisms
	intent to build project network	- Brian Fehr (Vanderhoof), Partner, Bid Group / Nechako Mechanical
Nov. 14th – 15th, 2016	First meeting of NCMAB members at Prince George CoC offices.	**Meeting with the following**: - Ruben Gaytan – Babine Forest Products - Gord Gallop - Wolftek Industries - Erin Strong - Pinnacle Renewable Energy (attended via conference call) - Rajpal Basran - BKB Cedar Manufacturing (since this meeting the facility burned down) - Brian Fehr - Nechako Mechanical - +2 from Prince George Chamber (not attending - John Worswick - Allrite Heating)
Nov. – Dec. 2016	Feedback - Phase 1 – Interim Engagement Report	**Report feedback requested:** - 146 company contacts[27] (including NCMAB companies) - 29 Community & Business Organization Stakeholders
Jan. 31st – Feb. 2nd 2017	Attendance at: - 2017 Premiers Natural Resources Forum (Prince George) - 2017 Business Development Forum (sponsored by Prince George CoC)	**Meetings with the following individuals**: - Donald McInnes, Alterra Power (Toronto) - Doug Hinton, Hatch (Vancouver) - Peter Van Dongen, MNP (Nanaimo) - Engin Ozberk, U Saskatchewan (Saskatoon) - Rahul Ray, EDI (Prince George) - John Simoes, Nechako Mechanical (Vanderhoof) - Jennifer Campeau, Rio Tinto (Vanderhoof) - Lianne Olson, Rio Tinto (Burns Lake) - Bartek Kienc, CEIC (Calgary) - Kelly Butz, Magna (Edmonton) - Ronni-Lynn Walker, Chinook Scaffold (Quesnel) - NewGold Blackwater Project, Vanderhoof - Derek Drummond, Stantec (Kamloops) - Cheryl Wallace, UNBC (Prince George) - Joanna Yu & Mindy Brar, Canfor (Prince George) - George Kovacic, Croscorp International (Burnaby) - Shauna Harper, Live Work Communications (Prince George) - Renata King, NDIT (Prince George) - Kiel Giddens, TransCanada (Prince George) - Karen Eden, Community Futures (Williams Lake) - Maynard Angus, Port of Prince Rupert (Prince Rupert) - Tom Hoffman, Tolko (Williams Lake) - Donny Van Dyk, Enbridge Northern Gateway (Prince George) - Doug Parton, Ironworkers Local 97 (Burnaby)
Feb. – Mar. 2016	Feedback - Phase 1 – Final Engagement Report	**Report feedback requested**: - 146 company contacts (including NCMAB companies) - 29 Community & Business Organization Stakeholders
June 4th –	Touch base, re-	**Individual meetings with the following:**

[27] The number of contacts exceeds the number of companies in the NC company database given that several companies have more than one contact.

Date	Events and Reports	Feedback Mechanisms
7th, 2017	connection, coffee meetings with North Central Industry and Community representatives in Prince George, Burns Lake, Quesnel and Vanderhoof.	- Ruben Gaytan, Babine Forest Products (Burns Lake) - John Simoes, Nechako Mechanical (Vanderhoof) - Mitch Brain, Shadow Leathers (Vanderhoof) - Madison Kordyban, Carrier Lumber (Prince George) - Kate Iverson, Pinnacle Renewable Energy (Prince George) - Doug Bell, Northern Lights Estate Winery (Prince George) - Greg Sinclar, Trudy Langthorne, Sinclar Group (Prince George) - Renata King, Program Manager, NDIT (Prince George) - Ron Dunn, C&C Wood Products (Quesnel) - Gary Salmons, West Fraser Mills (Quesnel) - Tony Mogus, Dunkley Lumber (Quesnel)
March - 2018	Feedback - Phase 2 Final LMI Summary document	**Report feedback requested**: - 146 company contacts (including NCMAB companies listed below) - 29 Community & Business Organization Stakeholders - John Worswick, Allrite Heating & Ventilation, Prince George - Erin Strong, Pinnacle Renewable Energy, Prince George - Gordon Gallop, Wolftek Industries, Prince George - Brian Fehr, Nechako Mechanical (Bid Group), - Ruben Gaytan, Babine Forest Products, Burns Lake - Ron Dunn, C&C Wood Products, Quesnel - Madison Kordyban, Carrier Group of Companies, Prince George - Doug Bell, Northern Lights Estate Winery, Prince George - Mitch Brain, Shadow Leathers, Vanderhoof - Brad Johnson, Sitka Log Homes, 100 Mile House - Willy Manson, Stinger Welding, Prince George - Gary Salmons, West Fraser Mills, Smithers / Quesnel / Williams Lake / Fraser Lake / 100 Mile House
Jan. 15th – 18th, 2018	Attendance at: - 2018 Premiers Natural Resources Forum (Prince George) - 2018 Business Development Forum (sponsored by Prince George CoC)	Re-connected with members from the North Central BC Industry & Manufacturing Sector. A specific emphasis was made to introduce the LM Project to 1st Nations representatives. 1st Nations contacts for future North Central BC LMP updates and feedback now include: - Gloria Catherall, New Relationship Trust Foundation, Fort St. John's - Nicole Doucette, Prince George Nechako Aboriginal Employment & Training Association, Prince George - Renata King, Northern Development Initiatives Trust (NDIT) - First Nations Government Internship Program, Prince George - Shaun Cox, ITA - Indigenous Peoples in Trades, Richmond - Derek Orr, Carrier Lumber (Outland Camps Ranger Program), Prince George - Willie Sellars, Williams Lake Indian Band, Williams Lake - Adele Chingee, New Caledonia College, Aboriginal Advisor, Prince George

Date	Events and Reports	Feedback Mechanisms
		- Ken Stewart / Jason Majore, Haisla Nation Council, Haisla - Lisa Mueller, All Nations Consulting & Coaching, Prince George

Appendix 2: North Central Manufacturers Company Database

Company	Municipality/City	Website	NAICS Category	Number of Employees
A.J. Forsyth (A Division of Russel Metals Inc.)	Prince George	http://www.russelmetals.com/en/Pages/Home.aspx	332	20
Advanced Millwright Services	Vanderhoof	http://www.advancedmillwrightservices.com/index.html	332	75
A-Mac Truss & Engineered Wood Products	Prince George	http://www.amactruss.com/	321	
Allrite Heating & Ventilation	Prince George	http://www.allriteheating.com/profile.html	332	12
Artic Manufacturing	Prince George	http://www.arcticmfg.com/	336	
BC Coastal Refrigeration	Smithers	http://www.bccoastalrefrigeration.com/	332	
Babcon Group	Quesnel	http://www.babcon.ca/index.html	332	45
Babine Forest Products	Burns Lake	http://www.hamptonlumber.com/communities/babine/	321	132
BC Strong Truss	Vanderhoof	http://www.bcstrongtruss.com/	321	
Beamac Installation	Williams Lake	http://www.beamac.ca/	332	30
Brink Forest Products	Prince George	http://brink.bc.ca/	321	50
Brodex Industries	Quesnel	http://www.brodexindustries.com/	332 / 333	50
Bulkley Valley Machining & Fabricating 2000 Ltd.	Houston	n/a	332	
C&C Wood Products	Quesnel	http://www.ccwoodproducts.com/	321	75
Canada's Log People	100 Mile House	http://www.canadaslogpeople.com/	321	15
Canada Rig Mats	Vanderhoof	http://www.rig-mat.ca/	339	10
CanaSteel Rebar Services	Prince George	http://www.canasteel.com/	332	10
Canfor (Cdn Forest Products)	Prince George / Vanderhoof / Quesnel / MacKenzie / Houston	http://www.canfor.com/	321	545
Cariboo Steel & Machine	Williams Lake	http://www.cariboosteel.com/index.html	332	15
Carrier Group of Companies	Prince George	http://www.carrierlumber.bc.ca/operations/cfp-fabrication-shop	321 / 332	200
Cascade Mechanical	Prince George	http://www.cascade-mechanical.ca/	332	10
CC Industries	Prince George	http://www.ccindustries.net/	332	35

Company	Municipality/City	Website	NAICS Category	Number of Employees
CFI Steel	Prince George	http://cfisteel.com/	332 / 333	10
Chemtrade Logistics	Prince George	http://www.chemtradelogistics.com/main/	325	50
Chinook Scaffolding	Prince George/ Quesnel	http://www.chinookscaffold.ca/home.html	332	200
CIF Construction	Prince George	http://www.cifcon.com/index.php	339	100
Conifex Timber	Prince George / Fort St James	http://conifex.com/	321	400
DBD Log Homes	100 Mile House	http://www.dbdloghomes.com/default.htm	321	
Decker Forest Products	Burns Lake	http://www.hamptonlumber.com/communities/decker-lake/	321	105
DSL Mills & Dollar Saver Lumber	Prince George	http://www.lumber.ca/lumbermill.htm	321	35
DelTech Manufacturing (Bid Group)	Prince George	http://www.deltech.ca/	339	40
Dunkley Lumber	Hixon (near PG)	http://dunkleylumber.com/	321	350
Edgewater Holdings Ltd.	Prince George	http://www.edgewaterholdings.com/	321 / 332	50
Emcon Services	Quesnel	http://www.emconservices.org/index.html	336	
Environmental Mats	Prince George	http://www.envmats.ca/	339	75
Exact Welding	Prince George	http://www.exwelding.ca/	332/333	
FabCan Metalworks	Prince George	http://www.fabcan.ca/	332	
Farr Fabricating	Prince George	http://www.farrfabricating.ca/	332	15
Frost Lake Group of Companies	Prince George / Fort St James	http://frostlake.ca/home	321	65
FreFlyt Industries / P&H Supplies	Vanderhoof	http://www.freflyt.ca/	336	50
Free Line Signs & Graphics	Bridge Lake (100 Mile House)	http://www.freelinesigns.com/	339	
Hy-Tech Drilling	Smithers	http://hy-techdrilling.com/index.html	333	160
Industrial Transformers	Burns Lake	https://www.industrialtransformers.ca/contact-us.html	332	35
Integrity Welding	Prince George	http://www.integritywelding.ca/	332	15
KJM Sales	Prince George	http://www.kjmsales.com/about/	332	35
KTS Millwork Plus	Prince George	http://ktsmillworkplus.weebly.com/	321	15
Kodiak Industrial Chrome & Hydraulics	Prince George	http://www.kodiakchrome.ca/	332	15

Company	Municipality/City	Website	NAICS Category	Number of Employees
Leading Edge Wood Products	Horsefly	http://leadingedgewoodproducts.ca/index.html	321	
Linden Fabricating	Prince George	http://www.linfab.com/index.htm	332	10
Lumisave Industrial LED Technologies Ltd.	Prince George	http://lumisave.com/	339	30
Mackenzie Pulp Mill Corporation	Mackenzie	http://www.paperexcellence.com/	321	200
Mackenzie Fibre Management	Mackenzie	n/a	321	150
Mitch Gobbi Contracting	Prince George	http://www.mitchgobbicontracting.com/	332	
Monster Industries	Houston	http://www.monsterindustries.ca/	332 / 334	35
Northern Capital Wood	Prince George	http://www.ncwp.ca/contact-us	337	
Nechako Mechanical (Bid Group)	Vanderhoof	http://www.nechakomechanical.ca/	332	100
Northern Dynamic Metalworks	Prince George	http://www.dynamicmw.ca/	332	15
Northern Engineered Wood Products (NewPro)	Smithers	http://www.newpro.ca/	321	15
Northern Lights Estate Winery	Prince George	https://northernlightswinery.ca/	312	35
Northern Steel	Prince George	http://www.northernsteelltd.com/	331 / 332	70
Northern Monumental	Vanderhoof	http://www.northernmonumental.com/	339	
Norweld Mechanical Installations	Prince George	http://www.norweld.ca/	332	100
Ole's Woodworking	Prince George	http://oleswoodworking.com/id6.html	321	
Parallel 55 (East Fraser Fibre)	Mackenzie / Williams Lake	http://www.parallel55.com/	321	75
P. Scheck Industrial Electric	Quesnel	http://www.pscheck.ca/	333 / 335	12
Pacific BioEnergy	Prince George	http://www.pacificbioenergy.ca/	321	100
Pacific Truck & Equipment dba Peterbilt	Houston	http://pacifictruck.ca/	336	25
Pacific Western Brewing	Prince George	http://www.pwbrewing.net/	312	70
Parallel 55 (East Fraser Fiber)	McKenzie	http://www.parallel55.com/	321	75
PeroxyChem	Prince George (Philadelphia HO)	http://www.peroxychem.com/	325	75
Precision Machinery	Prince George	http://www.pgmr.ca/	332 / 333	25
Pinnacle Renewable Energy	Williams Lake / Houston / Burns Lake	http://www.pinnaclepellet.com/	321	150

Company	Municipality/City	Website	NAICS Category	Number of Employees
Prince Sheet Metal & Heating	Prince George	https://www.roofingbc.com/	332	15
Prolenc Manufacturing	Prince George	http://www.prolenc.com/	332	10
Redwood Plastics	Prince George	https://www.redwoodplastics.com/	326	50
Salem Contracting	Prince George	http://salemcontracting.ca/	332	180
S. Desjardines & Associates	Prince George	http://www.anythingmetal.com/index.html	332	
Sitka Log Homes	100 Mile House	http://www.sitkaloghomes.com/index.html	321	35
Sinclar Group	Fort St. James / Vanderhoof / Prince George / Fort St. James	http://www.sinclar.com/contact_us.php	321	650
Stinger Welding	Smithers	http://www.stingerwelding.com/	332	35
The Tahtsa Group	Burns Lake	http://www.tahtsagroup.com/	321	20
Tip of the Glacier Water Company	Smithers	http://www.tipoftheglacier.com/	339	12
Tolko Industries	Vernon / Quesnel / Williams Lake	http://tolko.com/who-we-are/divisions	321	600
Tricon Truss & Millwork	Smithers	http://www.tricontruss.ca/	321	15
Trinity Post & Panel	100 Mile House	http://www.trinitypostandpanel.com/Site/#contact	321	
Valley View Fences	Vanderhoof / Smithers	http://www.valleyviewfences.com/	339	
Vanderhoof Machine Works	Vanderhoof	http://www.vanderhoofmachine.ca/	332	10
Vanderhoof Specialty Wood Products	Vanderhoof	http://www.vanwaycabinets.com/	321	60
West Fraser Electro / Mechanical Ltd.	Prince George	http://www.west-fraser.com/index.php	336	21
Western Equipment	Prince George	http://westernequipmentltd.com/	339	35
West Fraser Mills	Smithers / Quesnel / Williams Lake / Fraser Lake / 100 Mile House	http://www.westfraser.com/	321	635
Whisper Creek Log Homes	Valemount	http://www.wclhdealer.com/valemount	337	
Winton Engineered Wood Products & Prefabricated Building Solutions	Prince George	http://www.wintonhomes.ca/	321	75
Wolftek Industries	Prince George	http://www.wolftek.ca/	332	50

Appendix 3: List of Companies and Organizations Interviewed

Company	Contact	Date of Interview	NAICS Code
Allrite Heating	John Worswick - Owner	Nov 27, 2017	332
Dunkley Lumber	Tony Mogus – General Manager	Nov 3, 2017	321
P & H Supplies Ltd / FreFlyt Industries Inc	Paul Stewart - Purchaser	Oct 31, 2017	336
Babine Forest Products / Decker Lake Forest Products	Ruben Gaytan – HR Manager	Nov 6, 2017	321
Northern Initiative Development Trust	Renata King – Director, Business Development	Nov 29, 2017	Not applicable
Northern Lights Winery	Doug Bell – Owner / Operator	Nov 6, 2017	312
Shadow Leathers	Mitch Brain - Owner	Nov 22, 2017	337
Sinclar Group	Trudy Langthorne – HR Director	Nov 16, 2017	321
Sitka Log Homes	Walter Bramsleven – Director, Sales & Business Administration	Oct 30, 2017	321
Tolko Industries	Tina O'Neill – HR Manager	Nov 17, 2017	321
University of Northern BC	Mark Barnes – Director, Office of Research / Christie Ray – Business Development Officer, Continuing Studies	Nov 29, 2017	Not applicable
West Fraser Lumber	Gary Salmons – HR Manager, Solid Wood	Nov 1, 2017	321
Western Equipment	John Morrison - Manager	Nov 23, 2017	332

Appendix 4: Bibliography

NOTE: The bibliography includes a list of reference materials that was used in preparing the background report review (Section 2.3) and the secondary background data review (Section 2.4).

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