Labour Market Information Research for the BC Manufacturing Sector

EXECUTIVE SUMMARY

Canada
British Columbia
Canada Starts Here | BC Jobs Plan
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Purpose of the Study

The objectives of this project, as defined by the Specialized Skills for Manufacturing Steering Committee (SSSM), were to develop an inventory of existing Labour Market Information and Intelligence (LMI) and complete a thorough environmental scan focused on (1) the size and high level characteristics of the sector by sub-sector, region and size of company; (2) the characteristics of the workforce in the sector including level of current employment, staffing by National Occupational Classification (NOC), recent growth, projected growth, and demographic characteristics (age, gender, years of experience in occupation, language, training, and immigration); and (3) the primary occupations and skills identified as in short supply by BC manufacturers.

Method of Study

A detailed work plan was developed during the first phase of the project which defined the research questions, what data was required to address each question, identified the key data sources, and outlined the methodologies that would be used to collect the required data. The approach and data collection tools were then approved by the Steering Committee established for the project prior to commencement of the field research. The methodologies included a review of available labour market information and other data published by Statistics Canada, Industry Canada, Census Canada, BC Stats and others related to the manufacturing sector in BC; a review of past reports, literature and other documents relevant to labour market for the BC manufacturing sector; development of a database of 6,487 companies active in the BC manufacturing sector; a survey of 557 of manufacturing companies in BC (which together account for 19% of employment in the sector; the questionnaire was lengthy and detailed with the average response time amongst those who fully completed the questionnaire being over 48 minutes); and interviews with 18 subject matter experts.

Major Conclusions

The major findings of our review are as follows:

Employment in the Manufacturing Sector

1. Manufacturing is a major contributor to the economy in BC.

Manufacturing is BC's third largest source of employment, directly providing over 179,200 jobs and indirectly supporting hundreds of thousands of others in related sectors. In 2012, the sector was the fourth largest contributor to provincial GDP and was the primary source of exports for BC. GDP in the sector has grown by 43% since 1997 and manufacturing shipments have grown at the rate of 6.2% annually since 2009.

2. Manufacturing is very diverse, characterized by wide variations in the nature of employment not only across sub-sectors but also within sub-sectors and occupational classifications.

BC's manufacturing sector has become increasingly diversified over time, producing an ever widening range of value-added products and components. Even within particular sub-sectors, manufacturing operations vary widely in terms of size of operation, labour and capital intensity, level of value-added, level of unionization, and regional locations.

As a result of this diversity, manufacturing employs workers from a wider range of NOCs and experiences greater variation in the nature of positions within those NOCs than any other segment of the provincial economy. Approximately 40% of BC manufacturing employees are employed in occupations relatively unique to the sector (i.e. the sector employs a majority of the people employed in those professions) while 60% work in occupations which are not unique to manufacturing and processing. Amongst those unique to the sector, the most common occupations are machine operators, manufacturing labourers and manufacturing managers and supervisors; even within these occupations, the nature of positions varies widely across operations depending upon the manufacturing process, machinery, products produced and other factors. Amongst those occupations which are not unique to manufacturing, the leading occupations in the sector include trades and other production-related positions, administrative support services, transportation and material handling, management, sales and service, mechanics, equipment operating, engineering and science, and other technical positions.

3. A majority of manufacturing jobs are permanent, full-time positions located in the Lower Mainland and Southwestern region which are filled by men over the age of 35.

The wood, food, paper, transportation equipment and machinery sub-sectors employ the greatest numbers of workers. The Lower Mainland/Southwest region of the province accounts for 64% of the number of manufacturers and 67% of the number of people employed in the sector. According to the survey:

- The vast majority of workers are employed on a permanent, full-time basis (94%).
- Almost one-third (33%) are under the age of 35, 43% are between the ages of 36 and 54 years, and 24% are aged 55 years and older.
- Women account for less than one-fifth of the workforce and 4% of manufacturing employees are Aboriginal.
- While temporary foreign workers make up considerably less than 1% of the work force, 8% of the workers have immigrated to Canada in the past five years.
- Approximately 8% of manufacturing employees commonly work in a language other than English, usually in Mandarin or Cantonese (51%), Tagalog (14%) or Spanish (11%).
- Approximately 16% of workers possess credentials or professional designations other than trade certificates which are either required or important for their positions and 13% of workers have a university degree.

- A little more than half of manufacturers employ tradesworkers, most of whom (65%) are journeypersons followed by apprentices (18%). About 17% of tradesworkers are neither journeypersons nor apprentices. Overall, 73% of journeypersons were credentialed prior to being hired by their current employer. The most common trades include welder, machinist, industrial mechanic (millwright) and metal fabricator.

Labour Market Conditions and Outlook

4. While the BC labour market for manufacturing has tightened somewhat over the past two to three years, conditions remain balanced.

Employment has recovered, but remains below the levels which existed between 2000 and 2008. After declining by 20% over a two year period from 2007 to 2009, employment in the sector has grown at the rate of 3.7% annually. This rate is similar to the growth rate reported by the employers that were surveyed (average employment growth of 19% over the past five years).

Most subject matter experts and employers indicate that current labour market conditions are balanced. This is consistent with the results of the survey, which indicate that the rate of new hiring is consistent but moderate, the level of staff turnover is comparatively low, the majority of that turnover is employer driven (e.g. seasonal, cyclical, or performance related) rather than worker driven, and the level of inter-firm poaching remains low (most new hires were either unemployed or working outside the sector at the time).

5. Employers, selected experts and secondary sources anticipate that conditions will likely tighten somewhat over the next few years, which could create shortages amongst skilled workers and semi-skilled workers.

The key factors expected to contribute to some further tightening of labour market conditions include:

- Growth in existing operations (nearly 60% of surveyed employers expect higher employment over the next five years). Surveyed employers project that employment within their organization will grow by 13% over the next three to five years (about 3% per year). Nearly 60% of surveyed employers expect higher employment while 22% expect employment demand to stay at current levels. Increased employment demand is believed to be driven primarily by increases in the volume of goods produced. In comparison, the Canadian Occupational Projection System projected that employment in positions associated with the manufacturing sector would grow at the rate of about 1.3% per year.

- Aging of the existing work force (increasing replacement demand). Nearly one-quarter of the work force is 55 years or older and will need be to be replaced over the next eight to ten years with new workers or through productivity improvements.

- Increased competition for workers from other regions. Strong demand for resources combined with implementation of major project currently proposed would increase the demand for skilled workers in northern BC and Alberta.

6. **There is growing uncertainty within the sector regarding how significant future shortages in manufacturing will be.**

The survey and key informant interviews detected a certain cynicism regarding the potential for future labour shortages. Both employers and key informants have long heard about the impact that major projects and the aging of baby boomers will have on access to workers. Although conditions have tightened somewhat with the economy recovery, the predicted shortages have not materialized. Although employers remain somewhat concerned about the potential for shortages, they are becoming less convinced of the inevitability or significance of those shortages.

According to employers and key informants, the magnitude of future shortages will be a function of:

- Market conditions, including the strength of the demand for BC-made goods in the United States, within Canada's domestic market, and in other key markets including Asia.
- Factors that affect the cost competitiveness of BC manufacturers including the value of the Canadian dollar, level of productivity, labour rates, and various input costs such as raw materials, transportation, power and border-related costs which pose a financial burden on Canadian manufacturers exporting goods to large US markets.
- The extent to which proposed major projects proceed in the resource and construction sectors;
- The strength of the international competition;
- The influence of government programs, regulations, policies and agreements; and
- Labour market participation rates (e.g. extent to which older workers remain in the workforce and participation rates increase amongst under-represented groups).

7. **At a growth rate of 1.3% to 3% per year in employment, it is projected that the manufacturing sector in BC will need to attract from 58,000 new workers to 88,000 new workers through 2020.**

Over 40,000 of the new hires will be workers needed to replace people who are retiring or otherwise leaving the manufacturing work force. The leading types of positions in terms of the projected number of new workers that will be required over the next eight years include machine operators, trades and other production positions, labourers in manufacturing and processing, managers and supervisors in manufacturing and utilities, administrative support, mechanics, sales and service, and engineers and related occupations.

Skills Shortages

8. Occupational skills shortages will likely be most significant in the trades (journeypersons), managers and supervisor positions, technicians, engineers, and machine operators and assemblers.

The occupations which employers expect will be the most difficult to fill going forward include journeypersons (identified by 20% of employers), managers and supervisors (15% and 14%, respectively), technicians (13%), engineers (12%) and machine operators and assemblers (10%). The table below provides a detailed listing of the leading occupations in each category, the projected number of new hires required through 2020, the percentage of employers indicating that these positions will be difficult to fill, and the sub-sectors which most commonly identified difficulties. Most of these positions are not unique to the manufacturing sector but rather are shared with other sectors.

Occupational Skill Shortages

Category	Leading Occupations		Projected Demand	Employers Reporting Difficulty	Sub-sectors Most Commonly Identifying
Trades (Journeypersons)	• Welder • Machinist • Millwright • Fabricator (fitter) • Electrician	• Mechanic • Sheet metal • Carpenter • Heavy Equipment	5,200	20%	• Machinery • Fabricated metal • Wood & paper • Electrical • Transportation
Managers and Supervisors	• Senior management • Production supervisors	• Sales and marketing • Administration	9,600	Managers 15%; Supervisors 14%	• Computer & electronic • Food & beverage • Plastics & rubber • Wood & paper • Electrical equipment
Technicians	• Electronics • Equipment maint. • Process engineers • Programmer/software	• Designers • Quality Control • Robotics • Food/forestry	2,000	13%	• Electrical • Transportation • Machinery • Plastics
Engineers	• Electrical and electronics • Mechanical • Civil	• Industrial • Process/ systems • Chemical	2,000	12%	• Electrical • Machinery • Computer • Transportation • Metal
Machine Operators and Assemblers	• CNC machines • Printing Press • Industrial sewing • Food/beverage • Assemblers • Tool and die	• Gluers • Fabrication • Forklift • Metalworking • Fitters • HEO/Drivers	12,000	10%	• Transportation • Machinery • Fabricated metal

The nature of the skills shortages does not vary widely by region with the exception that employers in southern interior and northern interior were significantly more likely to identify skilled tradesworkers as being in short supply. Employers, particularly those in the northern interior, noted that their work force is aging and the region has not been successful in attracting and retaining younger workers (youth outmigration remains a major issue in the north). Larger employers, particularly those with 50 or more employees, will need to fill more positions and were significantly more likely to identify skills shortages in the areas of journeypersons, management, and engineers than were smaller employers.

9. Some shortages will result from simply not having enough workers with the needed education, training or certifications (e.g. an anticipated shortage of engineers or journeypersons in particular trades). However, most shortages will be a consequence of the fit between the experience, education or training of applicants and the unique needs of the employer.

The results of the research indicate that skills requirements vary widely from employer to employer, particularly for positions related to management, supervision, machine operation, and assembly. Although positions may share a similar title, the duties and nature of skills required can vary widely across employers depending upon the products produced, nature of the production process, equipment used, level of value-added, and other factors. The result is that, while there are workers available who have experience, education or training in a particular area (e.g. machine operator), employers will still report a shortage because they do not see that experience or training as directly relevant to the their type of operation. This is reflected in the survey finding that the area where applicants most commonly fall short is not in their education, training, certifications, or work experience per se, but rather in their experience or familiarity with the employer's type of operation. The wide variation in nature of positions across employers makes it much more difficult for education and training programs to prepare workers for these positions and for employers to meet their needs by hiring workers away from another employer.

The issue of fit is more prevalent among smaller employers than larger employers. Larger employers (e.g. 50 or more employees) have much greater capacity to train and develop their workers (e.g. hire workers with some experience or training in the position and then provide further training or orientation to enable the new worker to transfer his or her existing skills to the employer's operation). Large employers also tend to have greater management capabilities and systems and are usually better able to compete for workers. In contrast to this, smaller employers (which account for 96% of manufacturing establishments and about one-half of employment) tend to have less standardized operations, invest less in staff training and development, and consequently rely more on the willingness and ability of new employees to learn on the job. The challenge is to provide smaller employers with the tools and resources they need to train new and existing workers.

10. Key trends in the industry are affecting the skill requirements of employers.

The results of the research indicate that:

- Increasing sophistication of manufacturing processes is raising the skill requirements of the industry. For example, greater use of automation and robotics is leading to increased demand for technicians, technologists and programmers. The increasing rate of technological change is change creates the need for regular skills updating.

- Increasing diversity in the nature of manufacturing operations combined with the accelerating rate of technological change increases the need for employers to provide training, mentoring, orientation and other assistance to enable workers to transfer their existing skills and learn new skills.

- Rising skill requirements increases the need for workers with more advanced soft skills and essential skills, who are adaptable and oriented towards continuous

learning and are capable of responding to changing needs of manufacturing employers. The implication for educators and trainers is that programs must not only impart occupational skills that workers can apply in the workplace in the short-term but also prepare students for a lifetime of continuous learning. The challenge is less about making people "job ready" and more about better preparing people to develop in the workplace.

- Some positions require workers whose expertise and skill sets cross traditional trades. For such positions, it may be more important that workers have specific levels of skills and experience rather than full credentials. Educators and industry work may need to together to identify the skill sets in demand, develop clearly defined career paths with stages of skills development for candidates, and develop modular-based trades and certification programs which would allow for faster training and integration for candidates who do not require full credential programs, and would better enable employers and students to obtain the specific skill sets required for the diverse occupations in the sector.

11. Employers will use a variety of strategies to address shortages.

In response to developing skill shortages, employers indicated that they plan to provide more training, invest in new equipment or technology, and outsource some functions or processes. Some employers may also increase wages or benefits, more aggressively promote job openings, increase overtime of existing workers, hire new immigrants or temporary foreign workers, or slow the rate of business growth.

Implications for the Future

12. The future strength of the manufacturing sector in BC will be determined, in large part, by the ability of the sector to attract, develop and retain skilled workers and improve productivity.

The subject matter experts, including representatives of the various manufacturing sub-sectors, indicated that there are opportunities for the various sub-sectors within manufacturing work together to address broad systemic labour market issues. Both employers and subject matter experts believe that there is a need for industry, educators and government to work more together closely to:

- Improve staff development activities implemented by employers, particularly smaller employers. Employers would benefit from training incentives (e.g. training tax credits, incentives, or wage subsidies) as well as increasing access to tools and resources that would help them in their staff development activities.

- Increase investment in innovation and productivity. Capital investment, which improves productivity, is an important means of strengthening competitiveness and easing potential future skill shortages. Subject matter experts recommended that government remove barriers to private sector investment and provide financial support in the form of tax credits or rebates for training expenditures to facilitate employer investment in labour productivity and innovation.

- Attract new workers into the sector by creating greater awareness of career and employment opportunities. Potential targets include youth as well as under-

represented groups. Employers recommended development of a website and materials to promote employment opportunities in the BC manufacturing sector and promoting careers in manufacturing to youth, Aboriginal people and other target groups.

- Enhance the effectiveness of existing education and training programs in preparing workers for industry in the short-term and in the longer-term. For example, employers recommended better tailoring existing training programs to meet employer skills requirements, integrating more hands-on training and experience into programs, enhancing delivery of existing education and training programs (e.g. by ensuring the equipment is up-to-date and relevant to industry, encouraging further professional development of instructors, designating Centres of Excellence for training, and introducing a system-wide quality assurance program and accreditation process for training programs), revising student recruitment strategies and career paths, and increasing the level of communication, collaboration and coordination between industry and educators.

- Increase recognition of the BC manufacturing sector as an important industry with many high-skilled, high-paying, and interesting job opportunities. Experts noted that there is a lack of awareness and understanding on the part of government and the public as to the importance of the manufacturing sector and its contribution to GDP and employment.

- Facilitate greater labour mobility and credential recognition (regionally, nationally and internationally) and enhance use of immigrant and foreign worker programs. Steps could be taken to facilitate more streamlined, faster processing of applications under the Temporary Foreign Worker Program and Provincial Nominee Program. The federal and provincial governments should continue working to improve the LMO process to hire temporary foreign workers when available labour in the province will not suffice, to encourage labour mobility within the province's development regions, and to continue to facilitate immigration as a source of recruiting skilled workers. It was recommended that industry and government work together to establish qualifications frameworks to identify transferable and common skills as well as the unique skills obtained through each subsector, and to develop faster skills assessment practices for screening internationally-trained and educated applicants.

- Improve the educational system in BC by strengthening education in the essential skills, better integrating the trades during secondary school, greater promotion of trades and technical studies, and providing guidance to students regarding skills requirements, possible career paths, and realistic wage and work expectations.

As Canada's largest trade and industry association, Canadian Manufacturers & Exporters (CME), is committed to helping its members succeed in domestic and global markets. CME represents and serves the voice of over 10,000 leading companies. The association focuses on improving business competitiveness through policy change, workforce skills development, productivity and innovation programs, and SME capacity building.

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