



MINING IN CANADA'S OIL SANDS

Labour Market Trends and Human Resources Challenges



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For more information, contact:

Mining Industry Human Resources Council
260 Hearst Way, Suite 401
Kanata, Ontario K2L 3H1

Tel: 613-270-9696
Fax: 613-270-9399
Email: research@mihr.ca

Or visit the website at:
www.mihr.ca

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About MiHR

The Mining Industry Human Resources Council (MiHR) is a multipartite, industry-driven organization that brings all mining sector stakeholders together to address human resources issues. Incorporated in 1996, MiHR is an independent not-for-profit organization. Today, MiHR is the recognized leader in the identification and analysis of HR issues facing the industry as well as the catalyst for the development and implementation of HR solutions.

Vision

MiHR contributes to the strength, competitiveness and sustainability of the Canadian mining industry by leading the collaboration among communities of interest to address emerging human resources opportunities and challenges.

Mission

MiHR is a catalyst and industry leader by spearheading the collaboration among the Canadian mining sector's communities of interest to:

- Identify emerging human resources opportunities and challenges;
- Develop targeted solutions; and
- Facilitate their implementation.

Research Mandate

MiHR's research mandate is to identify the HR challenges and opportunities and relevant public policy in the Canadian mining industry using sound socio-economic and social sciences research and to encourage a proactive, industry-wide approach to addressing the issues. MiHR strives to be the industry's recognized HR thought leader and solutions provider. MiHR also contributes to the advancement of the HR discipline through sound research practices, detailed case studies of practical, sector-based examples, and growing a sector-specific HR community of practice.

Acknowledgements

Human Resources and Skills Development Canada (HRSDC) provided funding to MiHR to develop this research initiative on mining in the oil sands. Consultants conducting research for this project on behalf of MiHR included The Conference Board of Canada, Fulcrum Consulting and Ascentum Consulting.

MiHR is grateful to all of the individuals and organizations that contributed their resources, knowledge and insights to this study and report. MiHR wishes to thank all research participants for their valuable time and input to engage in interviews and contribute to focus groups associated with this report.

We are particularly indebted to the project steering committee for their hard work, guidance and insights. The following organizations provided valuable input to this research:

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- Regional Municipality of Wood Buffalo
- Keyano College
- Fort McKay First Nation
- Oil Sands Developers Group
- Petroleum Human Resources Council of Canada — A Division of Enform

Introduction

Oil sands development is a leading source of employment in Canada. While oil sands production is expected to grow in the long term,¹ oil sands producers face significant labour market challenges in the coming years. Both mining and oil sands employers have identified the need to better understand the human resources (HR) issues related to mining activities in the oil sands. The Mining Industry Human Resource Council (MiHR) created this report to identify HR trends and labour challenges in mining operations in the oil sands. A comparison is made with Canada's overall mining labour force. To the extent that mining in the oil sands is related to the rest of the industry, the demographic trends observed in the mining industry provide context for oil sands mining. The outcomes of this research provide an understanding of the HR challenges for mining in the oil sands, as well as their impacts on the rest of the mining sector.

Approach and Methodology

To fully grasp future HR challenges and identify potential solutions, it is important to understand the current make-up of the oil sands mining labour force. Therefore, MiHR has conducted a demographic analysis of this labour force to develop a clear picture of the current labour market. This report also includes insights from human resources leaders, key informants and stakeholders — who provide valuable, ground-level perspectives based on their experiences and direct observations of oil sands mining operations. In addition, the report discusses implications for human resources strategy and practice. The methodology used in this research includes several components:

Demographic Analysis

Using data from Statistics Canada, MiHR has created a demographic profile of the oil sands mining labour force, which provides a framework for understanding the important trends and issues. This analysis examines the size and composition of the labour force, as well as important characteristics such as age, educational attainment, diversity, mobility trends and income levels.

Background Research

This report reviews existing information and expert opinion on a variety of identified topics and presents key findings for each. Information specifically addressing employee perspectives on mining was also sought, although oil sands-specific perspectives were limited.

Interviews

Gaps in the literature and underreported areas of study in oil sands HR research were identified to develop questions for a series of research interviews with leading oil sands mining employers, key informants and stakeholders. Interview subjects were asked to address areas where there are gaps in the existing research and to comment on existing research — by sharing their unique perspectives on these identified topics, as active, current participants in fields affected by mining in the oil sands.

¹ Canadian Association of Petroleum Producers (CAPP), *Canadian Crude Oil Forecast and Market Outlook*, 2012 (www.capp.ca/forecast/Pages/default.aspx).

Interview participants were organized into distinct response categories to ensure that the insights they provided reflected the various diverse viewpoints on the industry and related HR priorities. The categories include:

1. Oil Sands Mining Employers

Oil sands mining employers have the most direct experiences with HR trends and challenges in the oil sands, given their frontline positions managing staff, developing strategies for recruitment and retention, and executing HR policies and procedures. Participants included HR executives from three of the six key mining petroleum companies that employ miners in Canada's oil sands region.

2. Other Mining Employers

Human resources executives from non-oil sands mining companies can identify HR trends and challenges that face the Canadian mining industry as a whole. Further analysis allows for the identification of challenges that are specific to mining in the oil sands region. Participants included HR executives from two non-petroleum mining companies that employ miners outside of Canada's oil sands region and that directly compete for skilled labour with oil sands employers.

3. In situ Oil Sands Employers

In situ oil sands employers can provide information on key issues unique to the oil sands region. Further analysis permits the separation of those challenges that are specific to mining from those faced by in situ oil sands employers. The participants included HR executives from in situ-based oil sands companies employing petroleum workers in the region.

4. Key Informants and Stakeholders

Leaders in the oil sands labour market are frequently found outside mining organizations (e.g., associations, governments and the education system). Input from these sources provides balance and insight from outside the sector. Participants in this group included:

- An administrator from an applied post-secondary institution in the oil sands region, whose students are often employed or seek employment in mining in the oil sands; and
- A leader from a labour union whose members are directly employed as miners in Canada's oil sands region.

Participants were interviewed using prepared question guides, with the assurance that their answers would be recorded confidentially. This report summarizes the insights and observations of participants to build a more complete picture of the trends and challenges facing Canada's oil sands mining employers.

Focus Groups

In April of 2013, MiHR hosted a focus group session to explore the critical HR issues stakeholders are experiencing on a day-to-day basis. Participants included representatives from oil sands companies with mining operations, the Regional Municipality of Wood Buffalo, education/training providers, Aboriginal groups and industry associations. This session provided participants the opportunity to collaborate and discuss perspectives on the important issues in mining in the oil sands.

In June of 2013, MiHR hosted industry consultations to further validate the key findings from the research. These sessions gathered feedback from key informants in the oil sands region, and included a webinar with mining representatives in other regions across Canada.

Phases of the Research

Project work was divided into three phases: a situational analysis; intensive primary and secondary industry research; and stakeholder consultations to develop a strategy and action plan.

Phase 1: Situational Analysis

The first phase of research assessed the current state of the workforce and available labour market information on mining in the oil sands. Primary activities in this phase included:

- Analysis of current labour market conditions in the oil sands and a scan of current literature, including data from Statistics Canada, the Canadian Association of Petroleum Producers (CAPP) and Enform (formerly the Petroleum Human Resources Council);
- Determination of the scope of stakeholders' labour market information on oil sands mining and identification of gaps in this information.

Phase 2: Primary and Secondary Research

In this phase, primary and secondary research led to the identification of HR challenges and opportunities related to mining in the oil sands. Activities included:

- Review of existing literature on HR issues that are relevant to the sector;
- Use of interviews and focus groups with industry stakeholders to determine their perceptions of short- and long-term HR trends and challenges in the sector; and
- Identification of key insights into the short- and long-term HR challenges and opportunities facing the sector.

Phase 3: Strategy and Action Plan

In the third phase, industry stakeholders were consulted to review project findings and begin to develop an industry strategy for addressing the identified issues. Activities included:

- Consultation with industry stakeholders about Phase 1 and Phase 2 findings through roundtable and focus group discussions, and determination of the overall implications for the industry;
- Discussion on how to capture insights and develop practical solutions; and
- Development of an initial industry strategy to address key issues.

Report Overview

This report contains two main sections:

- Section 1 provides a situational analysis of the oil sands mining labour force. To provide context and depth to the analysis, this section also highlights many of the prevailing issues faced by the overall mining industry. It also discusses the definition and scope of oil sands mining, and the process of accessing labour market information using the North American Industrial Classification System (NAICS) and National Occupational Classification (NOC) codes. It concludes with a demographic profile of the labour force and a description of key labour market issues.
- Section 2 provides discussion and insights on key HR challenges and opportunities in oil sands mining operations. It concludes with recommendations for an industry strategy to address these issues.



1

Situational Analysis

Oil sands operations are involved in a wide range of activities. This section describes these activities and outlines the scope of oil sands mining examined in this report.

Oil Sands Mining: Definition and Scope

Oil sands operations refer to those primarily engaged in recovering (or processing) crude bitumen — extra heavy oil that does not flow to a well in its natural state. Oil sands production can be divided into two components — synthetic crude oil, which is upgraded bitumen similar to conventional light oil, and non-upgraded bitumen, which has diluents added to it to allow it to flow through pipelines and is similar to conventional heavy oil.

There are four major bitumen deposits located mostly or entirely in Alberta — in Athabasca, Peace River, Wabasca and Cold Lake. These four deposits cover approximately 140,000 square kilometres and hold proven reserves of 1.8 trillion barrels of bitumen. About 10 per cent of these reserves are recoverable using current technology and based on current prices. Oil sands operations can be divided into three different activities: surface mining, in situ operations and upgrading. These are described as follows:²

Surface Mining: refers to the open-pit mining methods used for bitumen deposits that are near the surface. *Heavy equipment operators, heavy-duty equipment mechanics, construction millwrights, welders* and various other trades are common for this type of oil sands operation.

In situ: involves drilling wells for bitumen that occur at greater depths. These operations typically employ workers such as petroleum engineers, technologists and geoscience professionals. Note that these occupations are also common in the mining industry.

Upgrading: denotes the processing of bitumen into other petroleum products for downstream use. Common occupations in these operations include chemical engineers, plant operators and other trades workers.

² The categories for oil sands operations (i.e., surface mining, in situ and upgrading) are also used by Enform in its outlook report: *The Decade Ahead: Oil Sands Labour Market Outlook to 2022*, 2013 (www.petrohrsc.ca/document-list.aspx).

This report focuses on the workforce in surface mining — activities to explore and recover oil sands reserves through open-pit mines. It is the surface portion of oil sands development that most directly relates to Canada's mining industry (including in the area of labour and other inputs). Therefore, the examination of oil sands mining is put in context within the overall mining industry throughout this report.

Accessing Labour Market Statistics

Some of the analysis presented in this report relies on labour market statistics from Statistics Canada, which are organized using two different classification systems.

- Industry data is based on the **North American Industrial Classification System (NAICS)**, which is used by statistical agencies in Canada, the United States and Mexico to describe economic and business activity at the industry level.
- Occupational data is based on the **National Occupation Classification (NOC)**. This is a national system developed by Statistics Canada and Human Resources and Skills Development Canada (HRSDC) to provide a standardized way of describing the work performed by Canadians in the labour market.

Together, the NAICS and NOC systems provide a way to define the labour forces in the mining industry and mining in the oil sands. Unfortunately, there is no single NAICS code or set of codes that directly encompasses the oil sands mining sector. Likewise, no single set of NOC categories corresponds to only mining in the oil sands. People employed in occupations common in oil sands mining also work in other industries. Accordingly, some of these occupations could overlap with those common to other types of oil sands operations, namely, in situ production and upgrading. Therefore, the number of workers in mining in the oil sands may be overstated. Despite the imperfect estimate, the results still give an accurate description of the demographic structure of the oil sands mining workforce.

Industry and Occupational Classification for the Mining Industry

MiHR defines the mining industry as including all phases of the mining cycle: prospecting and exploration, construction and development, extraction, processing, reclamation, closure, care and maintenance. MiHR has aligned its definition of the mining industry with a set of NAICS codes found in the Appendix. For occupational data and analysis, MiHR considers 66 occupations identified to be core to the mining industry. Details on the NOC codes that MiHR uses in its analyses are also found in the Appendix.

Industry and Occupational Classification for Mining in the Oil Sands

Statistics Canada's data were obtained for the Wood Buffalo-Cold Lake economic region, where oil sands activity takes place. In order to focus on the demographic profile of the oil sands mining labour force, the regional data were cross-tabulated by industry and occupation.

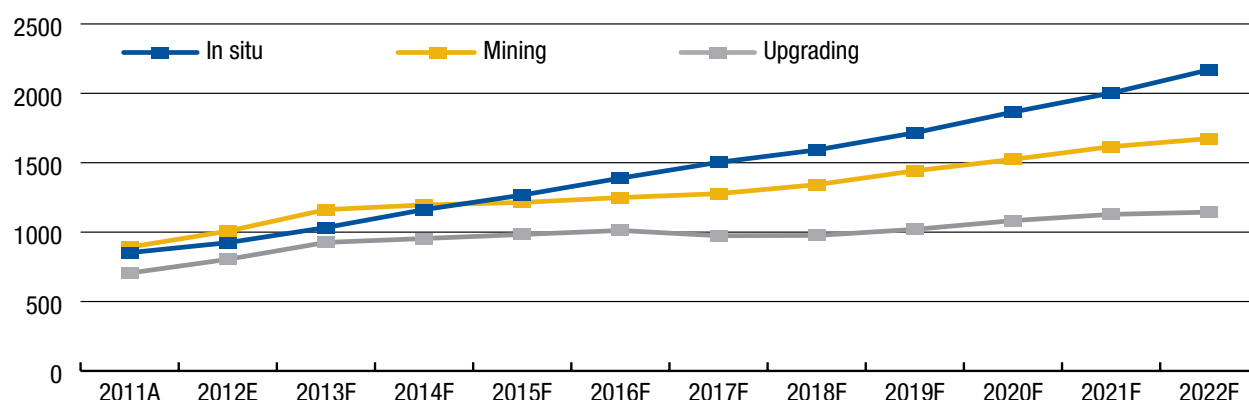
Two industry codes were used to define the oil sands labour force in the Wood Buffalo-Cold Lake region: *oil and gas extraction (NAICS 211)* and *support activities for mining and oil and gas extraction (NAICS 213)*. To isolate oil sands mining, data from 59 NOC categories were intersected with data for the two industry codes. Occupations were selected from those that MiHR identified as core to the mining industry. Occupations that are irrelevant to oil sands mining were excluded; these include seven occupations related to underground mining or mineral and metal processing.

Forecasted Developments in Oil Sands Mining

Oil sands development continues to be a driver of economic growth for Alberta and the rest of Canada. According to the Canadian Association of Petroleum Producers' (CAPP's) annual outlook report on crude oil production in Canada,³ 59 per cent of western Canada's crude oil production comes from the oil sands. The growth of the oil sands is expected to increase in the long term. CAPP's forecast for oil sands production is shown in Figure 1 below.⁴ Under CAPP's forecasted scenario, all three types of oil sands operations (in situ, mining and upgrading) are projected to increase production over time.

Many factors may affect the pending economic growth in the oil sands. In particular, Enform lists labour and skills shortages, pipeline-capacity constraints, cost management, diversifying markets and minimizing environmental impacts as key variables that could influence the competitive potential of the oil sands, which in turn, could alter the production levels predicted in Figure 1.

Figure 1
*CAPP's Forecast of Oil Sands Production (Expected to 2022)**



Source: Enform, 2013; Canadian Association of Petroleum Producers, 2012

* A = actual; E = estimated; F = forecasted

CAPP's outlook report⁵ states that 80 per cent of the established reserves in Alberta's oil sands will require in situ techniques and 20 per cent will require surface mining for extraction. As a result, oil sands developments are anticipated to shift toward in situ projects; however, with several surface-mined projects expected, the mining component of the oil sands is also anticipated to grow in the long term. About half of the raw bitumen produced in 2011 was mined.

³ CAPP, *Canadian Crude Oil Forecast and Market Outlook*, 2012.

⁴ Enform, *The Decade Ahead: Oil Sands Labour Market Outlook to 2022*, 2013. The forecast is based on CAPP's outlook report: *Canadian Crude Oil Forecast and Market Outlook*, 2012.

⁵ CAPP, *Canadian Crude Oil Forecast and Market Outlook*, 2012.

Demographic Profile of the Oil Sands Mining Labour Force

This section provides a demographic profile of the oil sands mining labour force. It includes an analysis of the size and composition of this labour force and investigates important characteristics such as age, educational attainment, diversity, mobility trends and income levels.

The profile of the oil sands labour force is compared to that of the mining industry overall. To the extent that mining in the oil sands is related to the rest of the industry, the demographic trends observed in the mining industry may provide context for oil sands mining operations. In certain instances, comparisons are also made with the population in the region where oil sands activities take place, other resource sectors and the national labour force as a whole.

According to Enform's report,⁶ direct employment in the overall oil sands sector was estimated at 22,340 workers in 2012. This estimate is further broken down by major oil sands activity:

- Mining operations employed 8,880 (40 per cent);
- In situ operations employed 9,080 (40 per cent); and
- Upgrading operations employed 4,380 (20 per cent).

This report's demographic analysis pertains to the mining segment of the oil sands labour force. MiHR's independent estimate of the oil sands mining labour force in the Wood Buffalo-Cold Lake economic region was about 7,070 people in 2006. Using growth rates from Statistics Canada's Labour Force Survey (LFS), MiHR estimates the labour force in oil sands mining stood at 8,870 people in 2011.⁷ This estimate is consistent with Enform's mining workforce estimate of 8,880 in 2012.

Enform's estimate for the oil sands mining workforce is further broken down by major occupation.⁸ A few notable occupations, such as *heavy equipment operators* (estimated at 3,021 in 2012), *heavy-duty equipment mechanics* (estimated at 719 in 2012) and *construction millwrights and industrial mechanics* (estimated at 257 in 2012) make up roughly 45 per cent of the mining oil sands workforce, and are among those projected to have the largest hiring needs over the next decade. As such, these occupations (and other notable occupations such as *truck drivers*, and *welders and related machine operators*) are profiled throughout this report.

Age Profile

An aging population has significant implications for Canada's mining labour force. Previous research by MiHR⁹ has shown that the mining labour force is relatively older than in other industries. With relatively fewer younger people entering the industry, there is an escalating pressure to replace the number of experienced older workers who are entering their retirement years.

The age profile of oil sands mining, however, exhibits a few notable differences. As Figure 2 illustrates, oil sands mining has a relatively higher proportion of younger workers, especially in the 25 to 34 age category. Additionally, oil sands mining has a lower proportion of workers in the older age categories (55 and over).

6 Enform, *The Decade Ahead: Oil Sands Labour Market Outlook to 2022*, 2013.

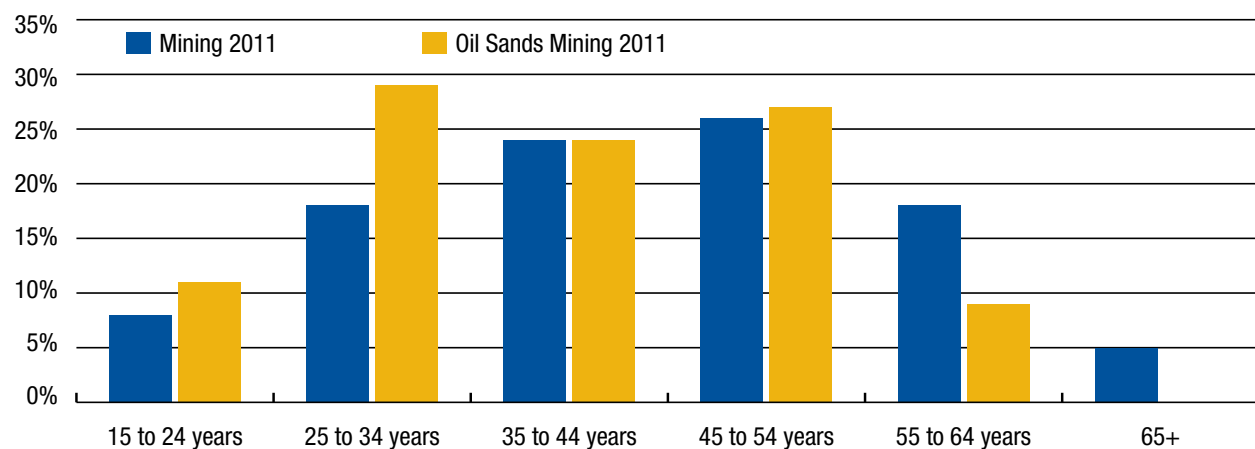
7 However, we are likely underestimating the current size of the labour force because the Wood Buffalo-Cold Lake region is home to a large and growing shadow population — temporary residents who are employed in the region for a minimum of 30 days — who are not enumerated in the labour force survey. Thus, labour force growth in Wood Buffalo-Cold Lake was likely much stronger than the labour force survey indicates.

8 Enform, *The Decade Ahead: Oil Sands Labour Market Outlook to 2022*, 2013.

9 MiHR, *Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook*, 2013.

Despite having a relatively higher portion of workers in the early- to mid-career range, the oil sands labour force also exhibits a pattern of attrition among workers in the mid-career category (ages 35 to 44). Many factors may be contributing this trend. For example, age-related mobility could be a factor; 35- to 44-year olds may have a higher likelihood of switching out of oil sands mining — depending on their experience, flexibility in career prospects and where they are in their working life. Findings from key-informant interviews and focus groups suggest that many younger workers find the lifestyle and shift schedules appealing, but once employees begin to take on family obligations, they are much more concerned about maintaining work-life balance.

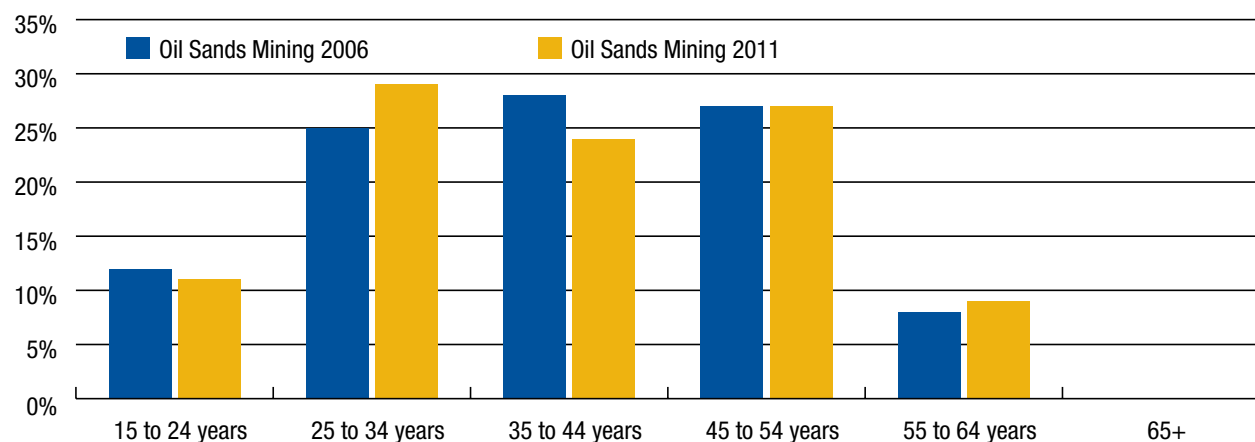
Figure 2
Age Distribution — Mining and Oil Sands Mining (2011)



Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

Figure 3 compares the age distribution of the oil sands mining labour force in 2006 with that of 2011. The figure indicates that the attrition among workers aged 35 to 44 is a relatively recent development — as this age category had a higher representation in 2006. Conversely, the proportion in the 25 to 34 age category has increased since 2006.

Figure 3
Age Distribution — Oil Sands Mining (2006 and 2011)

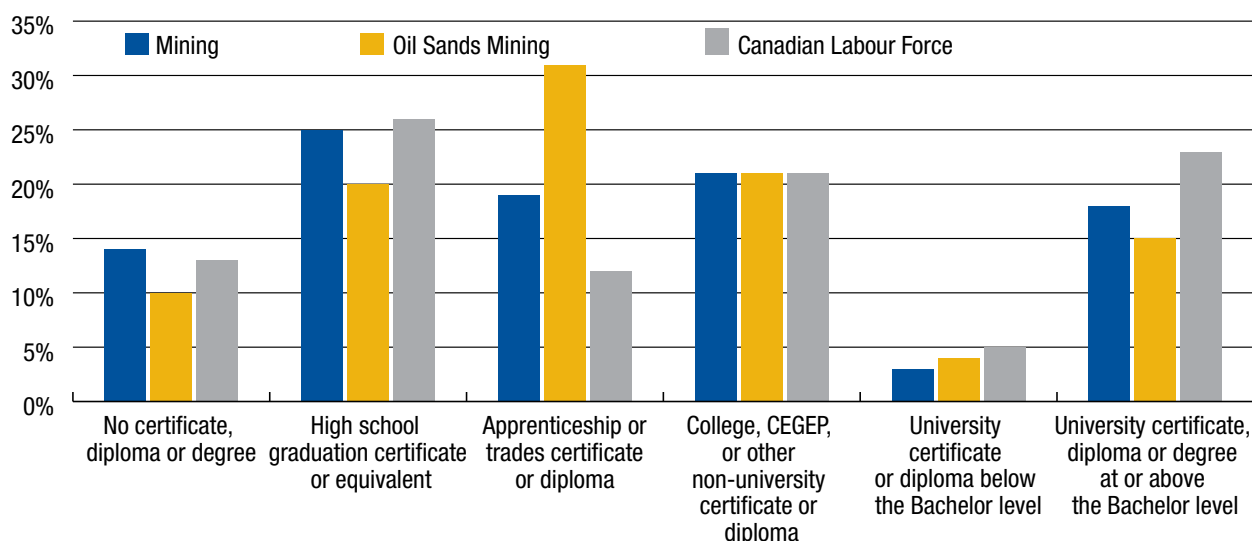


Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

Educational Attainment

Figure 4 illustrates the educational profile of the overall mining industry, oil sands mining and Canada's labour force overall. Educational attainment in mining in the oil sands is similar to the mining industry overall; however, the mining labour force in the oil sands shows a higher proportion of persons with apprenticeships or trade certificates.

Figure 4
Educational Attainment — Mining, Oil Sands Mining and Overall



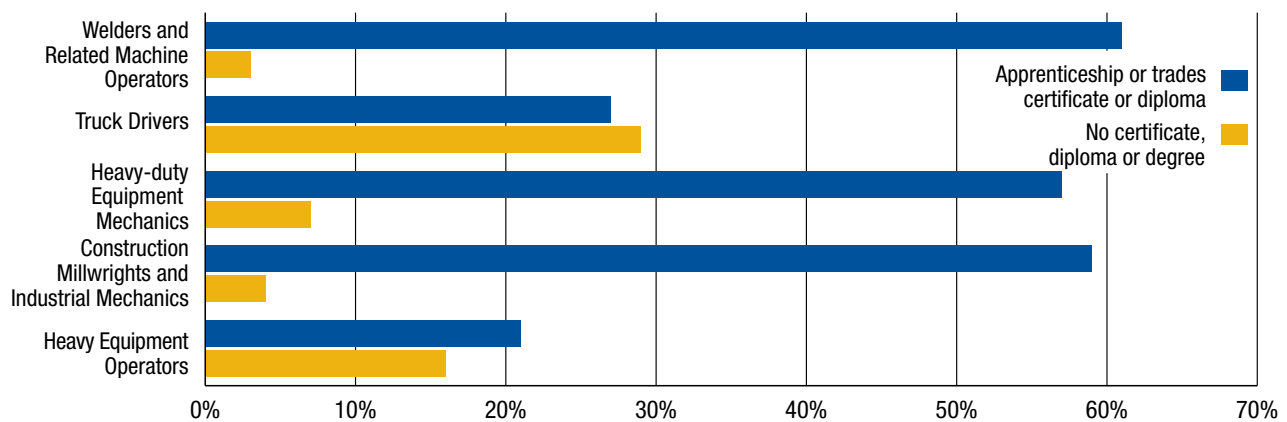
Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

Education-attainment levels vary among oil sands mining occupations. As shown in Figure 5, in the case of five major oil sands mining occupations, the proportion of workers (1) with no certificate, diploma or degree and (2) with an apprenticeship or trades certificate or diploma. These two education categories highlight notable differences among the selected occupations. Nearly 30 per cent of *truck drivers* and over 15 per cent of *heavy equipment operators* had no certificate, degree or diploma. In contrast, more than half the workforce in the other three occupations (*welders*, *construction millwrights* and *heavy-duty equipment mechanics*) had an apprenticeship or trade certificate.

These results largely reflect the different skill requirements for performing these occupations. According to HRSDC, *heavy-equipment operators* and *truck drivers* are occupations that tend to require a high school graduation certificate and occupation-specific training. The other three occupations — *construction millwrights* and *industrial mechanics*, *heavy-duty equipment mechanics*, *welders* and *related machine operators* — tend to require a college education or apprenticeship training.

Figure 5

Educational Attainment for Selected Occupations — Oil Sands Mining



Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

Due to technological advancements and high demand for skilled workers, the skill sets of the oil sands labour force are constantly adapting. Primary research with key informants showed that high demand for skilled workers in the region is putting pressure on post-secondary education institutions to shorten program length, eliminate soft skills and restrict training to very specific job functions. This may result in growing opportunities for workers planning to specialize in professionalized fields such as health and safety, environmental management and regulatory affairs.

Diversity in the Oil Sands

The future strength of Canada's mining labour force will depend greatly on the participation of diverse groups, such as Aboriginal peoples, women and immigrants. These groups have historically been underrepresented or under-utilized in the mining industry. Many of these patterns are also observed in mining in the oil sands. This section provides an analysis of diversity in oil sands mining, and highlights key similarities and differences observed in the overall mining labour force.

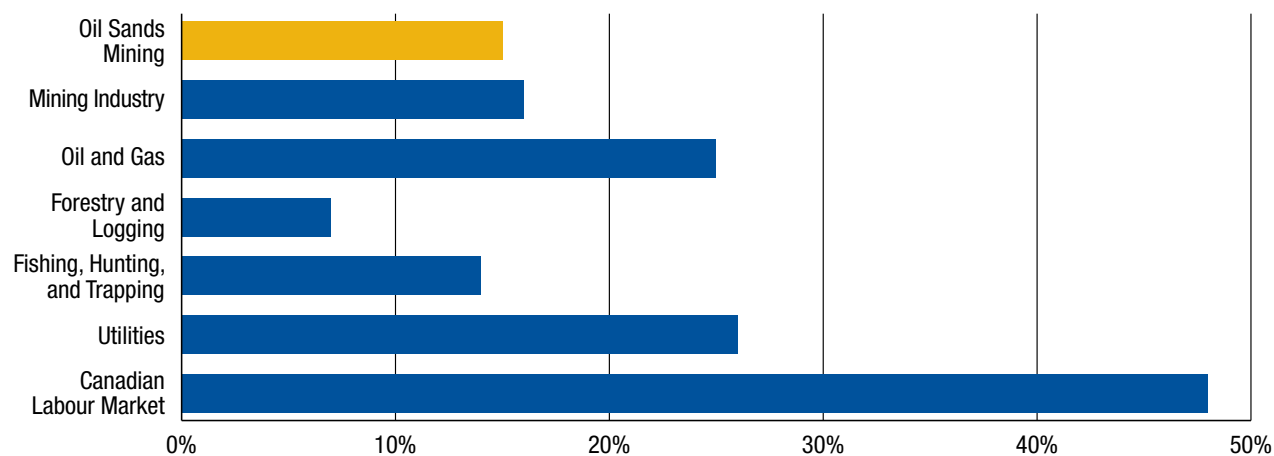
Women

Women are commonly recognized as an underrepresented segment of Canada's mining labour force. According to MiHR's 2013 National Outlook report,¹⁰ women make up about 48 per cent of the overall labour force — but only 16 per cent of the mining labour force. Figure 6 illustrates a similar trend in mining in the oil sands, where women account for about 15 per cent of the labour force. This trend is also observed in other resource sectors.

¹⁰ MiHR, *Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook*, 2013.

Figure 6

Female Participation — Mining, Oil Sands Mining and Other Industry Sectors



Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

* Note that the percentage for oil sands mining is estimated using Statistics Canada's 2006 Census data; all other estimates are based on the Statistic's Canada's 2012 Labour Force Survey data, and are found in MiHR's report: *2013 Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook*.

A 2010 report on women's participation in mining,¹¹ produced by Women in Mining (WIM) Canada in partnership with MiHR, reveals that certain barriers are more likely to prevent women from entering the mining labour force. These include:

- Limited organizational flexibility in work practices, schedules and career paths;
- Difficulties integrating into male-dominated work cultures; and
- Limited role models in senior positions.

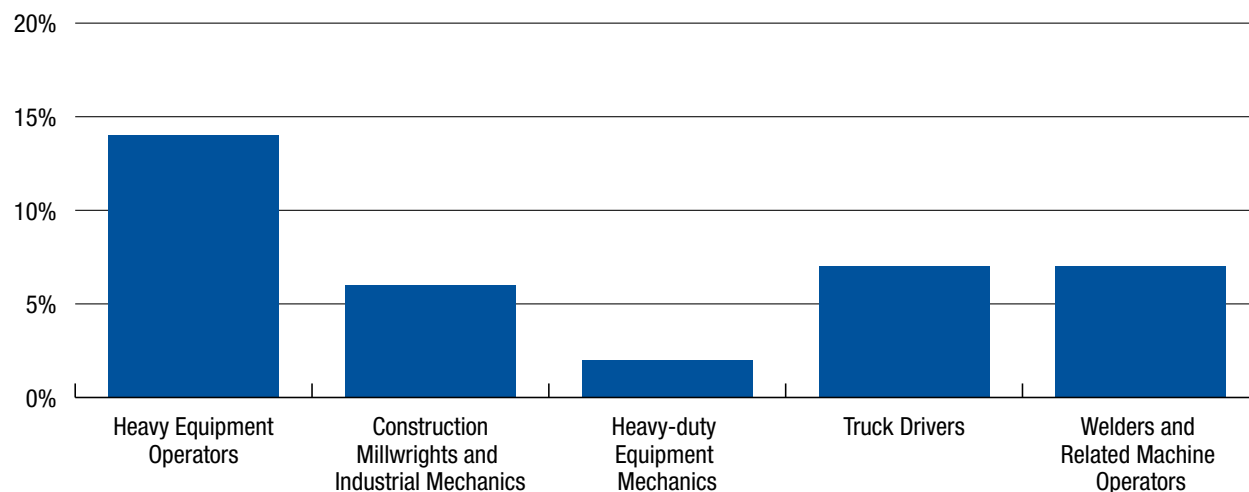
These barriers may also exist in oil sands mining, given that many mining occupations share a similar working environment across different industry sectors.

Participation of Women by Occupation

Figure 7 highlights the female representation in five major occupations in mining in the oil sands. *Heavy equipment operators* have the greatest proportion of women in their ranks, while *heavy-duty equipment mechanics* have a noticeably smaller share of women. None of the occupations depicted in Figure 7 has female representation above 15 per cent, which is the overall representation of women in oil sands mining.

11 Women in Mining (WIM), *Ramp-Up: A Study on the Status of Women in Canada's Mining and Exploration Sector*, 2010. This report provides bench-marking statistics to measure improvements in the status of women in mining. It also provides employers with information on the barriers to engagement of female workers, and suggestions on how to increase their participation. The report reveals discrepancies between what employers perceive as barriers for women in the workforce and those barriers described by female workers, and provides a foundation for developing targeted initiatives.

Figure 7
Female Participation in Selected Occupations — Oil Sands Mining



Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

Aboriginal Peoples

Participation in Canada's mining industry is strong among Aboriginal peoples. MiHR's 2013 National Outlook report¹² finds that while Aboriginal peoples represent about 3 per cent of the overall labour force, they make up about 5 per cent of the mining labour force. Aboriginal participation in mining in the oil sands is even greater. As illustrated in Figure 8, Aboriginal participation in oil sands mining is estimated at about 12 per cent, which exceeds the overall mining industry as well as other resource sectors.

High rates of Aboriginal participation in mining in the oil sands is not surprising; the Wood Buffalo-Cold Lake region is home to a relatively large population of Aboriginal people compared to the country as a whole (about 12 per cent in the Wood Buffalo-Cold Lake region versus 4 per cent in Canada). The share of Aboriginal peoples in the oil sands mining labour force was found to be almost identical to their share of the overall population in the Wood Buffalo-Cold Lake region.

Strong Aboriginal participation is also the result of robust partnerships between oil sands mining employers and Aboriginal communities. Participants in the primary research (both from within and outside the oil sands region) emphasized the importance of maintaining strong relationships with the Aboriginal communities around their work sites.

Aboriginal peoples are often considered to be under-utilized, in spite of being well-represented in Canada's mining labour force. MiHR has identified potential barriers that can restrict this group's entry into certain mining occupations:¹³

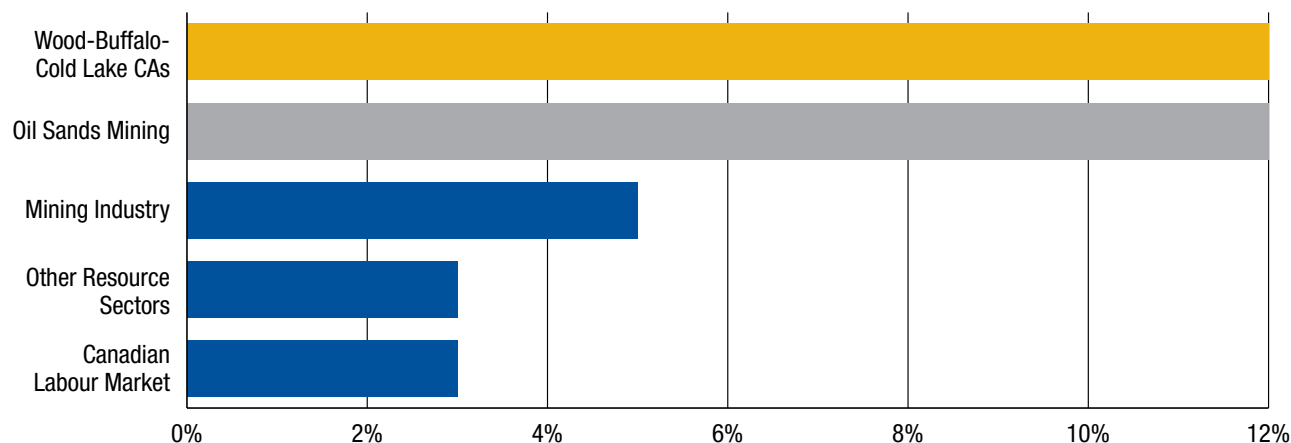
- Employer and potential employee concerns that educational and skills levels do not meet entry requirements; and
- Limited employer awareness of how to find and recruit Métis, First Nations and Inuit candidates, and how to incorporate Aboriginal cultural norms into their hiring processes.

¹² MiHR, *Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook*, 2013.

¹³ MiHR, *Take Action for Diversity*, 2011.

Figure 8

Aboriginal Participation — Mining, Oil Sands Mining, and Other Industry Sectors



Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

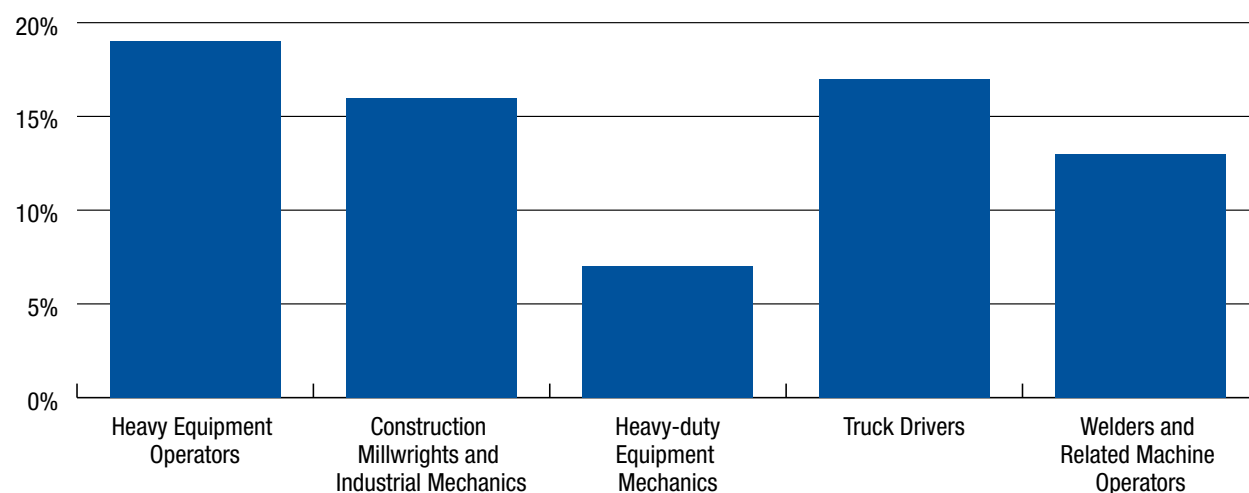
* Note that the percentages for the Wood Buffalo-Cold Lake census agglomerations (CAs) and oil sands mining are estimated using Statistics Canada's 2006 Census data; all other estimates are based on the Statistic's Canada's 2012 Labour Force Survey data, and are found in MiHR's report: *2013 Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook*.

Participation of Aboriginal Peoples by Occupation

Figure 9 displays the proportion of Aboriginal workers in five key occupations in oil sands mining operations. The highest proportion was found among *heavy equipment operators*; the lowest was in *heavy-duty equipment mechanics*.

Figure 9

Aboriginal Participation in Selected Occupations — Oil Sands Mining



Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

Immigrants

More than ever, Canadian businesses are turning to immigrants as a source of skilled labour. Immigration levels are anticipated to gradually rise in the long term, amid the growing need to replace retiring workers. However, immigrants remain an underrepresented group in Canada's mining industry. According to MiHR's 2013 National Outlook report,¹⁴ immigrants accounted for 12 per cent of the mining labour force, compared to 21 per cent of the overall labour force. Note that MiHR's research considered permanently landed immigrants only; therefore, the impact of temporary foreign workers is not considered in this report.

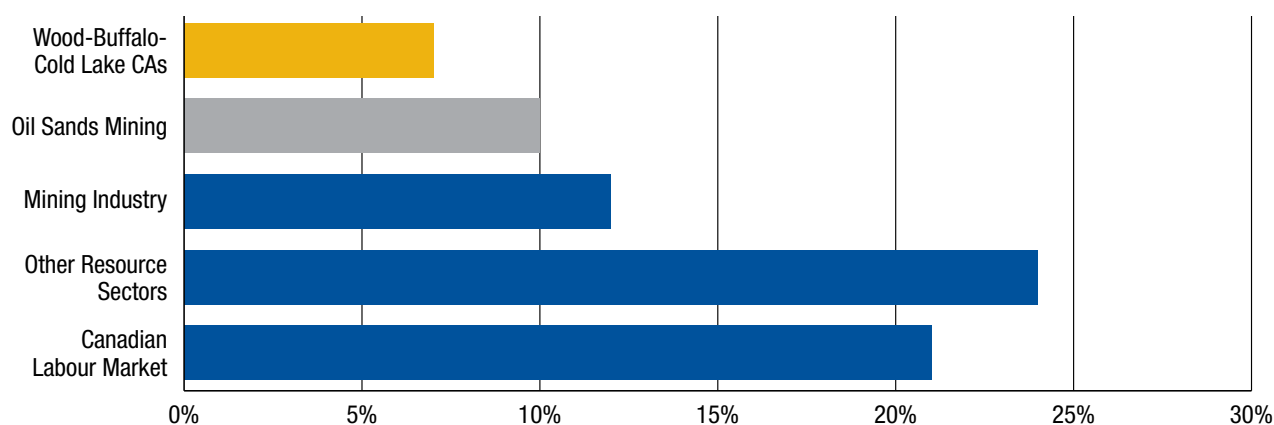
Figure 10 shows that immigrants represent about 10 per cent of the oil sands mining labour force. This representation is relatively strong, given that the share of immigrants in the region's population is estimated at 7 per cent. However, the share of immigrants in the Wood Buffalo-Cold Lake region remains low compared to other regions in Canada. Immigrants' participation in the oil sands may be inhibited, as they are less likely to settle in the region. Primary research indicated that immigrants strongly prefer to move to and settle in urban centres with established immigrant populations.

Certain barriers may limit immigrants' access to the oil sands mining labour force, including:¹⁵

- Complex and unfamiliar processes for immigration, credential recognition and recruitment;
- Difficulties in meeting industry hiring requirements such as language skills and Canadian experience;
- Challenges in adapting to Canadian workplace cultures and norms; and
- Remote locations presenting particular barriers to the successful integration of the workers.

Figure 10

Immigrant Participation — Mining, Oil Sands Mining, and Other Industry Sectors



Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

* Note that the percentages for the Wood Buffalo-Cold Lake CAs and oil sands mining are estimated using Statistics Canada's 2006 Census data; all other estimates are based on the Statistic's Canada's 2012 Labour Force Survey data, and are found in MiHR's report: *2013 Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook*.

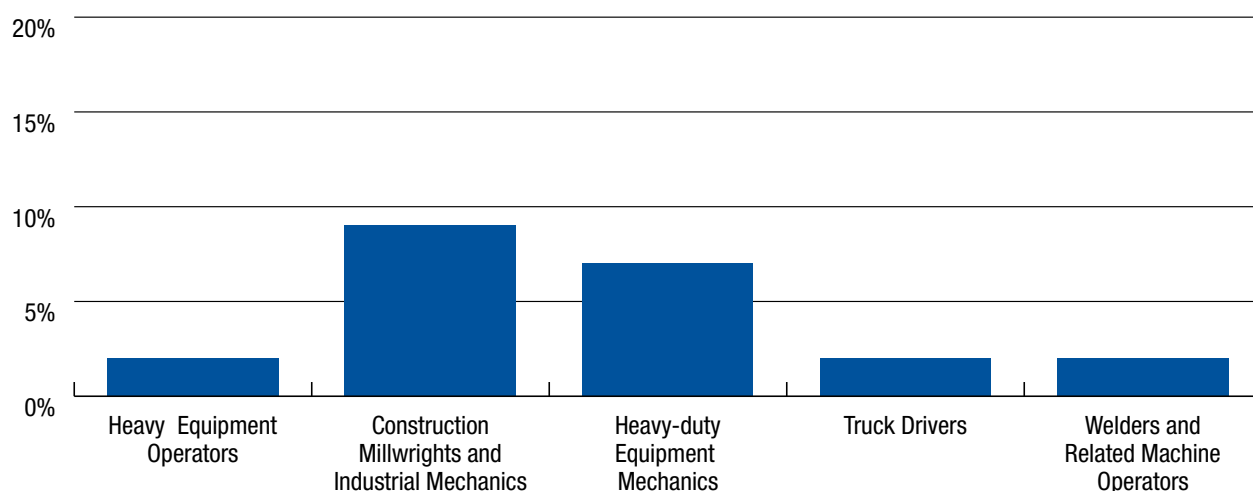
14 MiHR, *Canadian Mining Industry Employment, Hiring Requirements and Available Talent 10-year Outlook*, 2013.

15 MiHR, *Take Action for Diversity*, 2011.

Participation of Immigrants by Occupation

Figure 11 displays the proportion of immigrants in five key occupations in mining in the oil sands. *Construction millwrights and industrial mechanics* and *heavy-duty equipment mechanics* capture the highest percentage, while *heavy-equipment operators*, *truck drivers* and *welders & related machine operators* have relatively smaller shares of immigrants.

Figure 11
Immigrant Participation in Selected Occupations — Oil Sands Mining



Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

Wages

A common perception is that the oil sands sector offers lucrative wages to compete for talent. Increased competition among relatively fewer regional employers has been thought to increase wages, as skilled workers become harder to find. In a region where a single industry sector is dominant (and certain skill sets are highly demanded), prospective employees are able to demand higher wages compared to other regions where competition for labour is less intense.

Figure 12 shows the average annual salaries for major oil sands mining occupations — based on data from the *2011 Alberta Wage and Salary Survey*.¹⁶ This survey provides wage and salary information for a range of occupations, and is further broken down by economic region and industry. Figure 12 depicts the average salaries in the Wood Buffalo-Cold Lake region (all industries), in Alberta (oil and gas extraction) and in Alberta (all industries).¹⁷

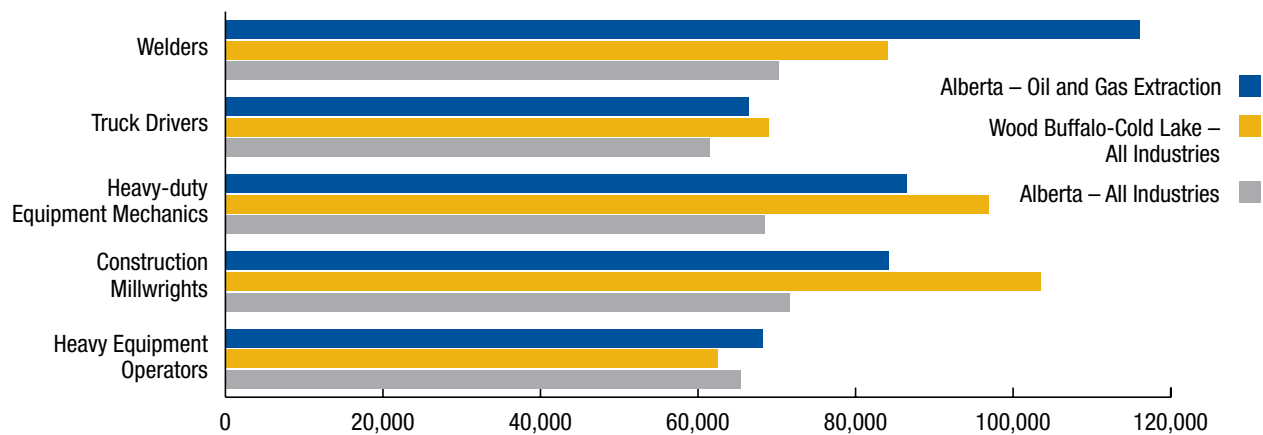
¹⁶ Alberta Human Services, *2011 Alberta Wage and Salary Survey*, 2011.

(<http://alis.alberta.ca/wageinfo/Content/RequestAction.asp?format=html&aspAction=GetWageHomePage&Page=Home>).

¹⁷ Note that data for the Wood Buffalo-Cold Lake region (Oil and Gas Extraction) was available, but was incomplete for the major occupations, and thus is not shown in Figure 12.

Figure 12

*Average Annual Salaries for Selected Occupations — Alberta and the Wood Buffalo-Cold Lake Region (2011)**



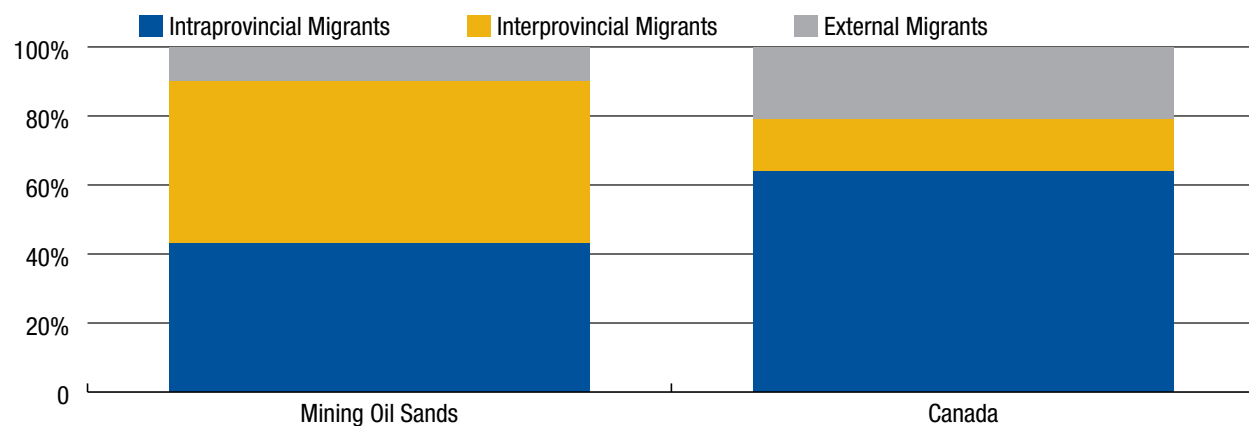
Source: Alberta Human Services

*Salaries reflect base wages and do not include overtime hours, tips, benefits, profit shares, bonuses (unrelated to production) and other forms of compensation.

Generally, for the highlighted occupations, the Wood Buffalo-Cold Lake region (all industries) and Alberta (oil and gas extraction) pay relatively higher salaries compared to Alberta (all industries). It should be noted that these salaries do not account for cost of living, which would affect the real wages in each region. The graph illustrates that wages in the oil sands region are higher than outside the region, giving weight to the claim that compensation is a competitive advantage. Primary research also supported the perception that heavy competition in the oil sands labour market has contributed to escalating wages.

Mobility and the Commuter Workforce

Due to the recent expansion of the oil sands, the Wood Buffalo-Cold Lake economic region has experienced an influx of people looking for work opportunities. Not surprisingly, the oil sands mining labour force was shown to be more mobile than the total Canadian population. Between the 2001 and 2006 Censuses, about one-third of the oil sands mining workforce migrated from outside Wood Buffalo-Cold Lake; for the Canadian labour force as a whole, 19 per cent of workers migrate from outside their region of work. Figure 13 shows that the share of migrants from out-of-province is higher in oil sands mining than in Canada as a whole. Conversely, the share of external immigrants is noticeably lower in mining in the oil sands.

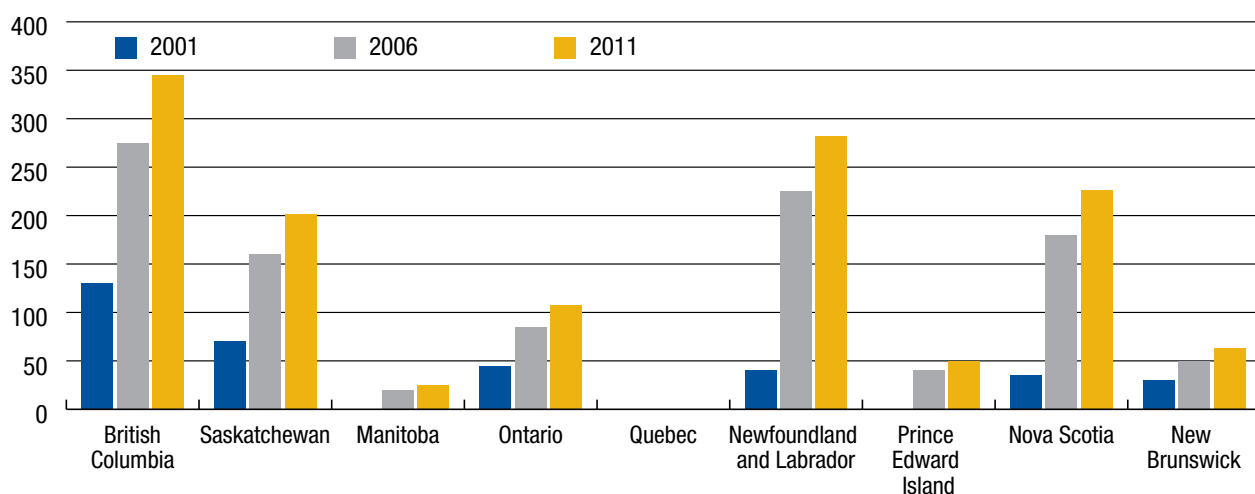
Figure 13*Migration to the Wood Buffalo-Cold Lake Region between 2001 and 2006*

Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

Employment by Place of Work

A significant number of people work in Alberta, but have a permanent home in another province. Thus, the Wood Buffalo-Cold Lake economic region is also home to a large “shadow population” — people with no fixed address that live in the region temporarily and commute back home occasionally. Many of these people work in mining in the oil sands.

A profile of the commuter workforce is created by comparing Census data showing employment by “place of work” versus “place of residence.” Figure 14 shows the number of employees who work in the Wood Buffalo-Cold Lake economic region but live in another province. The figure considers employment in (1) the oil and gas extraction sector and (2) the support activities in mining, and oil and gas extraction; however, it considers all occupations in those industry sectors (not just oil sands mining-related occupations). Thus, Figure 14 includes employees engaged in both in situ and upgrading activities. More information on the data sources and methodology in this section can be found in the Appendix.

Figure 14*Out-of-Province Canadian Commuter-Workforce in Wood Buffalo-Cold Lake — Oil and Gas Extraction and Support Activities in Mining*

Source: Mining Industry Human Resources Council, 2013; Statistics Canada, 2006–2012; Conference Board of Canada, 2012

* This data is reported from the Census for 2001 and 2006; note that there were no commuters from Quebec — this may be due to data suppression and a few individuals from this province may indeed work in the oil sands region.

According to the 2001 Census, among the 9,565 people that worked in Wood Buffalo-Cold Lake's oil and gas extraction and support for mining sectors, 350 (4 per cent) commuted from outside Alberta. British Columbia was home to the largest contingent of these workers, followed by Saskatchewan and Ontario.

Employment in these two industries grew rapidly between 2001 and 2006. According to the 2006 Census — of the 13,830 people that worked in these two industries in the region, 1,035 (about 7 per cent) commuted from outside Alberta. British Columbia remained home to the largest contingent of these commuters, while Newfoundland and Labrador, and Nova Scotia moved up to second and third, respectively. The increase in workers from the two Atlantic provinces likely stems from the combination of above-average unemployment rates in Newfoundland and Labrador, and Nova Scotia, and an increase in workers with experience in offshore oil and gas projects in those provinces. It was further estimated that 17,360 people worked in these two industries in 2011, including about 1,300 from outside of Alberta.¹⁸

In addition, many people who work in the Wood Buffalo-Cold Lake region commute from another part of Alberta. There are even some people who commute to the region from outside the country. Indeed, the Regional Municipality of Wood Buffalo's shadow population was estimated to be above 34,000 in 2011 — more than half the size of the permanent population.¹⁹

Summary of Demographic Trends

The demographic profile of the oil sands mining workforce identifies the following key characteristics:

- An aging workforce is an issue in both the overall mining industry and oil sands mining. Compared to the mining industry, oil sands mining has a relatively higher proportion of younger workers (especially in the 25 to 34 age category) and a lower proportion of workers in the older age categories (55 and older). In recent years, the oil sands labour force has shown signs of attrition in the mid-career age range (35 to 54).
- Educational attainment in mining in the oil sands is similar to that of the mining industry overall; however, the oil sands mining labour force has a higher proportion of workers with apprenticeships or trade certificates. Additionally, more than half of *welders*, *construction millwrights* and *heavy-duty equipment mechanics* (the major oil sands mining occupations) hold an apprenticeship or trade certificate. These occupations also tend to have relatively fewer workers with no certificate, diploma or degree.
- Women are recognized as an underrepresented segment of Canada's mining labour force. Mining in the oil sands is also largely male-dominant; women represent about 15 per cent of the labour force — similar to their participation in the overall mining industry and other resource sectors. Various barriers may be preventing women from entering the mining labour force and by extension, oil sands mining.
- Aboriginal participation is strong in Canada's mining industry and even greater in oil sands mining. Given that the Wood Buffalo-Cold Lake region is home to a relatively high proportion of Aboriginal peoples, this comparatively strong participation in oil sands mining is not surprising. The share of Aboriginal peoples in the oil sands mining labour force was almost identical to their share of the overall population in the region. However, it should be noted that Aboriginal workers are primarily in entry-level roles and that certain barriers have been recognized as restricting their career opportunities in the mining industry.

18 The 2011 level of employment was estimated using employment data from the labour force survey for Wood Buffalo-Cold Lake.

19 Ministry of Alberta Municipal Affairs, *2011 Municipal Affairs Population List*.

- In spite of the growing need for skilled workers, immigrants remain an underrepresented group in Canada's mining industry. In oil sands mining, participation among immigrants already settled in the region is relatively strong; however, the share of immigrants in the Wood Buffalo-Cold Lake region remains low compared to other regions in Canada. Given that immigrants are less likely to settle in the region, their participation in mining in the oil sands may be inhibited.
- The oil sands has a reputation for offering high wages to compete for talent. Wage increases may be the result of competition among regional employers for an increasingly limited pool of skilled workers. Wages and salary data suggest that the Wood Buffalo-Cold Lake region (all industries) and Alberta (oil and gas extraction) pay relatively higher salaries compared to Alberta (all industries) for major oil sands occupations. Note that this does not account for cost of living, which would affect the real wages in each region.
- With recent and rapid expansion, the Wood Buffalo-Cold Lake economic region has experienced an influx of people. Oil sands mining operations tend to employ more workers that have migrated from other provinces. Furthermore, the Wood Buffalo-Cold Lake economic region is also home to a large "shadow population" — people who work in Alberta, but live in another province. Many of these people work in mining in the oil sands. These workers commonly come from British Columbia, Saskatchewan and Ontario; in recent years, however, an increasing portion of the commuting workforce has come from Newfoundland and Labrador, and Nova Scotia.



2 HR Challenges and Opportunities

This section presents the insights of human resources leaders, key informants and stakeholders, who provide valuable, ground-level perspectives based on their experiences and direct observations of oil sands mining operations. These research participants identified a number of significant challenges facing mining in the oil sands and discussed their implications for HR strategy development.

First an overview of the broad issues and the need for further study into HR strategies and practices is presented, along with the gaps in the current intelligence on mining in the oil sands. The key HR issues are then broken down into three main categories: (1) career awareness and attraction, (2) retention and (3) education, training and development. This sub-section includes an overview of the key trends and challenges in these three areas. Finally, a set of recommendations is provided — based on the insights of industry stakeholders that participated in key-stakeholder interviews and focus group sessions.

Overview of Key Issues

The oil sands mining industry will continue to experience strong growth in the long term that may create HR challenges and opportunities. Key issues include the following:

- Challenges in terms of recruiting for positions that require advanced skills.
- Escalating labour costs as demand for skilled workers increases.
- Mobile work opportunities appeal to workers who hope to avoid the high cost of living in Fort McMurray or who appreciate flexibility in work schedules.
- Technological developments will improve productivity for oil sands projects but will require a more skilled workforce.

Human Resources Strategy and the Oil Sands Labour Market

Existing research reveals the need for further study into human resources strategies and practices in the oil sands mining industry. Among the most important research findings are forecasts for increasing oil demand, and accordingly, demand for more workers in the oil sands. The International Energy Agency estimates that global oil demand will rise

to 99 million barrels per day (MMbd) by 2035, up from 89.1 MMbd in 2011.²⁰ Despite the current economic downturn, Canada's natural resource industries must continue to invest for growth — and developing a labour strategy will be an essential component of this investment.

Significant investment is now occurring in the development of in situ projects: a method of extracting bitumen reserves with steam-assisted technology that foregoes traditional surface mining. Indeed, the Canadian Association of Petroleum Producers (CAPP) forecasts that in situ production will surpass surface mining production by 2015. Furthermore, between 2012 and 2022 a forecasted 71 per cent growth rate in total oil sands employment will be based largely on more workers at in situ projects.²¹ A doubling of in situ workers between 2012 and 2022 will see employment from in situ projects rising to half of all oil sands workers.

While current forecasts make the case for additional research on in situ-related issues, growth in mining cannot be overlooked. Employment in oil sands mining is forecast to grow in response to global demand for oil. Enform's Petroleum Human Resources Council (PHRC) division forecasts that mining-specific employment in the oil sands will add 4,480 new workers between 2012 and 2022 — and mining employers in Canada's oil sands region still face a significant challenge in terms of both retaining and expanding their workforce to meet demand.

From these broader forecasts, we can develop HR strategies to help companies manage their workforces. Accordingly, this report examines a number of critical HR issues that oil sands mining employers should consider as they develop their HR strategies in a growing industry.

Gaps in Current Intelligence

A large body of research exists on broader economic issues that are affecting the oil sands region. However, a number of key issues were identified that require further research. These include:

- Although wages are a critical factor for employee attraction and retention, it is not clear how organizations communicate the value of the total rewards mix (wages plus benefits, schedules etc.) to employees; whether there are generational differences in terms of total rewards preferences; and if better communication on total rewards could improve retention.
- Community development and quality of life in the oil sands are common concerns among employers, however, their role in addressing these concerns is not fully understood.
- Escalating wages risk creating unsustainable labour costs in the long term. More research is needed on attraction and retention strategies beyond increasing wages.
- Literature exists on different kinds of formal relationships between oil sands producers and industry stakeholders (such as Aboriginal communities, post-secondary institutions and labour unions) but it is unclear how employers assess the success and quality of these relationships.
- Further research is needed on managing the expectations of younger workers who have not experienced economic downturns in the oil sands region.

20 International Energy Agency, *World Energy Outlook 2011*, 2011.

21 Enform, *The Decade Ahead: Oil Sands Labour Market Outlook to 2022*, 2013.

Career Awareness and Attraction

In general, students are not sufficiently aware of the career opportunities in the mining industry. Many misperceptions and myths prevail about mining, including poor environmental stewardship, low-skilled employment and undesirable working conditions. Increasing awareness of mining among the general public is necessary to attracting the future workforce. However, these types of campaigns are costly, and most effective if coordinated on an industry level — as opposed to being executed through one-off, local company ad campaigns seeking applicants for specific vacancies.

Interviews conducted with oil sands employers, educational institutions, associations and community development experts identified several themes related to career awareness and attraction. These themes include: compensation, benefits and rewards, attracting underrepresented groups, and relationships and partnerships with Aboriginal communities. Coordinated efforts and cooperation among all stakeholders will be central to success in addressing these challenges.

Compensation

Trends and challenges include the following:

- Growing demand for labour is putting upward pressure on wages in the oil sands mining industry, as organizations compete for increasingly scarce workers.²²
- Start-up companies (including those not in mining, but competing for the same talent pool) contribute to escalating labour costs, as they quite often “buy” workers from established organizations using lucrative pay packages.²³
- Job vacancy rates and average wages in the Wood Buffalo-Cold Lake region — home to the majority of the Canadian oil sands — stand higher than provincial averages (see Table 1).

Table 1
Provincial and Regional Job Vacancy and Wage Rates (2011)

	Alberta	Wood Buffalo-Cold Lake Region
Job vacancy rate (%)	4	7
Average hourly wage (CAD)	\$24.84	\$27.94

Source: Alberta Human Services, 2011 Alberta Wage and Salary Survey, 2012.

Heavy competition for skilled workers

Oil sands producers offer very generous, competitive compensation and performance incentives to attract workers to their respective organizations. Oil sands-based stakeholders agreed that the compensation packages offered by oil sands employers were very similar among different employers. Interview participants also agreed that the oil

²² Enform (Petroleum Human Resources Council (PHRC)), *HR Trends and Insights: A Look at Current and Short-Term Workforce Trends within the Canadian Petroleum Industry*, 2011.

²³ Enform (PHRC), *HR Trends and Insights: A Look at Current and Short-Term Workforce Trends within the Canadian Petroleum Industry*, 2011.

sands labour market is very competitive, particularly with respect to skilled workers, and that this heavy competition contributes to escalating wages.

Focus group participants acknowledged that finding workers with specific skills and experience is the most significant challenge for employers. As one participant said: “There are certain skill sets in demand across the country. Sometimes it doesn’t matter what you pay... you’ll experience difficulty no matter what. It’s really those who have 8–12 years of experience that you’re trying to get into Fort McMurray.” Hiring the “people with the right skills” was emphasized over hiring “enough people.”

High expectations among the younger generation

Most stakeholders also believe that mining industry employees, especially younger workers, have high expectations for compensation. Starting salaries for some occupations are quite high and for the most part, younger workers’ expectations are not greatly out of line with what employers are willing to pay. One interview participant from a non-oil sands mining company, however, reported that managing compensation expectations for younger workers can be challenging because many expect to enter the industry at a high salary point (in excess of \$100,000). Another non-oil sands mining representative suggested that the oil sands mining industry has only itself to blame for increasingly unsustainable levels of compensation. Generally speaking, mining companies have been willing to match the compensation demands of younger workers — therefore, it is not realistic to expect that workers will reduce demands for higher wages.

Compensation as a tool to attract the mobile workforce

A common perception is that oil sands employers attract new workers to the region by offering generous compensation packages. This includes individuals transitioning from one career to another. As one interviewed stakeholder said: “If you are living somewhere else in Canada and wanted to better yourself, you can take the one-month haul truck program and, upon completion, easily get a job that pays \$100,000 a year. This happens a lot. Power-engineering graduates make even more money than haul truck operators at entry level in organizations. Lawyers, doctors, RCMP apply to get into any of those programs.”

Once employees get paid these significant wages, they tend not to migrate away from the region. In the words of one stakeholder: “Everybody says they are coming to the region for only a year or two. However, they end up staying for their whole career.” Oil sands employers use these generous wages to retain their employees in the region.

Focus group participants indicated that even if there were similar jobs being offered in a worker’s home province or region (e.g., mines opening in Labrador), the worker wouldn’t return home unless the job paid more than the oil sands position. Participants explained that oil sands workers not living permanently in the Wood Buffalo-Cold Lake region are compensated well enough that they can afford to keep their homes and families elsewhere. As one participant explained, “That’s why fly-in/fly out works so well for some people.”

Benefits and Rewards

Trends and challenges include the following:

- A 2011 study of oil sands employers identified industry competition for benefits and other rewards offerings as a leading concern for smaller organizations (less than 100 employees). Larger organizations (over 500 employees) were less concerned about the cost of rewards and benefits but indicated significant challenges with managing turnover as a consequence of poaching by smaller organizations.²⁴

Offering benefits in order to stay competitive

Oil sands mining industry employers offer employees very competitive health and benefit plans, as well as pensions. They also provide housing subsidies, retention bonuses and performance incentives. These employers also continually benchmark their compensation and benefits and make sure that employees are offered the opportunity to grow. One oil sands mining employer stated their company offers pension and benefits to stay competitive with other companies, but stressed these offers are based on industry practice rather than a response to specific employee demands. Interviews with stakeholders further suggested the need to “sell” benefits to employees, so that they understand what it means if they stay with the organization for the long term.

Different perspectives on benefits between older and younger workers

All employers agreed that benefits beyond wages play an important role in attracting and retaining workers, but there was a mixed response when asked if they believe employees understand the importance of total rewards. For example, two organizations reported that while older workers pay close attention to long-term benefits such as pensions, younger workers generally show less interest.

Attracting Underrepresented Groups to Oil Sands Mining

A preference for urban centres among immigrants

Focus group participants said several barriers prevent oil sands employers from attracting more newcomers to their workforces and ultimately, to the community. In particular, participants suggested that there is a strong preference for immigrants to settle in urban centres with established immigrant populations.

As one participant stated: “When immigrants come into the country, the question for our community is ‘How many do we attract them? How many are willing to work in the mining industry?’” Another participant identified the need to raise awareness around the jobs available in oil sands mining, “...[so immigrants] know where they could fit in and make a living...[and] make conscious decisions about moving to this region.” The focus group dialogue also brought attention to the fact that much of the immigrant representation in the regional workforce is in the retail and supporting industries — and not necessarily in oil sands companies.

24 Enform (PHRC), *HR Trends and Insights: A Look at Current and Short-Term Workforce Trends within the Canadian Petroleum Industry*, 2011.

Finally, the interviews revealed that oil sands mining employers' first strategy to fill any labour shortage in the future is to "grow their own talent." They prefer to hire local talent and develop them internally. International or migrant talent is considered only if these employers find it impossible to meet their labour needs with Canadian talent.

Relationships with Aboriginal Communities

Trends and challenges identified in the literature:

- In 2010, more than 1,700 Aboriginal employees were employed in oil sands industries. They represent 10 per cent of the total oil sands workforce.²⁵
- Many oil sands producers have formal relationships with Aboriginal communities, including for recruitment strategies and contracting. Between 1998 and 2010, a total of \$5 billion had been awarded to Aboriginal-owned companies in the oil sands region. This figure includes \$1.3 billion awarded in 2010.²⁶
- Each Aboriginal community in the region operates an Industry Relations Corporation (IRC). These IRCs receive funding from industry and government to evaluate and respond to issues related to the impacts of industrial development in the oil sands.²⁷
- Despite strong relationships between Aboriginal communities and oil sands producers, significant opportunities exist to recruit, develop, and retain greater numbers of Aboriginal workers. The labour participation rate of Aboriginals living off-reserve remains lower than the rate for other Albertans and the unemployment rate for Aboriginals living off-reserve is more than double the rate for other Albertans. These statistics make a case for enhanced recruitment and development efforts.²⁸
- At a national level, educational attainment is lower in the Aboriginal population than the non-Aboriginal population. The 2006 Census shows that 34 per cent of the Aboriginal population aged 25 to 64 had not completed high school, compared to 15 per cent in the non-Aboriginal population.²⁹
- A number of mining organizations have proactively addressed skills gaps in the Aboriginal workforce through on-site essential-skills training programs. BHP Billiton Diamonds Inc., for example, established a Workplace Learning Program that offered workers an opportunity to upgrade a variety of skills, from literacy to technical training.³⁰
- On-site training programs can offer significant opportunities but they can pose challenges. For example, De Beers operates on a 24-hour basis — with most shifts lasting 12 hours and with workers rotating on and off during two-week cycles. These factors were a challenge for the company when it came to planning course options for workers, as it was difficult to engage workers in training after 12-hour shifts.³¹

25 Government of Alberta, *Oil Sands — Aboriginal People*, 2012.

26 The Oil Sands Developers Group, *Aboriginal Peoples and Oil Sands Development in the Wood Buffalo Region Fact Sheet*, 2009.

27 *Ibid.*

28 Government of Alberta, *Aboriginals in the Labour Force*, 2011.

29 Howard, Alison and others, *Understanding the Value, Challenges and Opportunities of Engaging Métis, Inuit and First Nations Workers*, 2012.

30 The Conference Board of Canada, *Shaping Performance at BHP Billiton Diamonds Inc.*, 2005.

31 The Conference Board of Canada, *A Multi-Faceted Approach to Literacy Skills Development at De Beers Canada*, 2010.

Trends and challenges identified in the literature (*continued*):

- A survey completed by 136 business leaders across Canada asked organizations what kinds of programs, strategies and tools they use to motivate and retain Aboriginal workers. Categories with the highest responses were: learning and development opportunities (56.6 per cent); Aboriginal-friendly workplace programs and/or policies (56.6 per cent); competitive compensation packages (52.2 per cent); providing time for traditional seasonal activities (33.1 per cent); and mentorship programs (29.4 per cent).³²
- This survey also asked business leaders to identify the key positive impacts of employing Aboriginal workers. The leading impacts include: better relationship and integration with the local community (59.9 per cent); Aboriginal workers act as role models in their communities (58.4 per cent); community benefits of higher employment rates and income levels (46.7 per cent); and improved employee equity and inclusion (46.7 per cent).³³

Emphasis on healthy and positive partnerships with Aboriginal communities

Mining employers both within and outside of the oil sands region agreed that it is extremely important to maintain strong relationships with the Aboriginal communities around their work sites. Companies have dedicated employees who establish and maintain positive partnerships with Aboriginal communities.

Several employers stated they are very transparent in their approach to maintaining these relationships and publicly report on the related key performance indicators. They also develop specific agreements with Aboriginal communities that detail parameters for interactions and levels of commitment. As well, industry employers with camps often fund recreational activities that benefit both their employees and the local Aboriginal communities.

All the mining company representatives that participated in the interviews reported strong Aboriginal community relations — including oil sands and non-oil sands operations, and non-mining oil sands operations. Although a significant portion of formal relationships with Aboriginal communities and organizations is prescribed in provincial regulations, nearly all interview participants reported engagement initiatives that go beyond the requirements.

Aboriginal communities supply an important source of talent

Given that many mining companies report better retention successes by recruiting from local talent pools, residents of Aboriginal communities are an important source of talent. Although none of the employers interviewed created specialized pre-recruitment programs specifically targeted at this talent pool, they frequently went to the communities to discuss in detail what is required to become an employee of an oil sands producer.

³² Howard, Allison and others, *Understanding the Value, Challenges and Opportunities of Engaging Métis, Inuit and First Nations Workers*, 2012.

³³ *Ibid.*

There have been efforts at the community-level to engage Aboriginal peoples' interest in skilled trades. For example, *Steps Forward* is a community-based, culturally appropriate literacy program used by the Fort Mackay First Nation. Developed in consultation with Aboriginal groups across the country, the program provides prerequisite, work-readiness skills training to help prepare Aboriginal people for jobs and/or industry-relevant training (e.g., in the skilled trades). The program also offers career and education counselling.

Retention

Retention of the current workforce is an important part of a workforce plan for the future. Demographic-profile analysis revealed a trend of mid-career attrition in the oil sands. Future needs will be exacerbated by the loss of current workers. As labour shortages hit employers in all regions and sectors, competition for talent will create even more retention pressures for oil sands producers. To respond to pressure from other mining employers elsewhere in Canada where mining is being developed, and from other heavy-industry sectors in the local area, oil sands employers will need to develop strategies in several key areas: reducing turnover; retention of youth; work-life balance; the needs of the commuter workforce; and community development and sustainability.

Turnover

Trends and challenges include the following:

- As many as 8 per cent of workers in the oil sands industries are expected to retire within the next four years.³⁴
- In 2011, employers in the Wood Buffalo-Cold Lake region reported a higher percentage of unfilled vacancies (for four months or longer) for major oil sands mining occupations, compared to Alberta as a whole. For example, the percentage of unfilled vacancies for *Construction millwrights* was 31 percent in the region and 10 per cent for Alberta. Other oil sands mining-related occupations, such as *Heavy-duty equipment mechanics* and *Truck drivers*, also show a relatively high rate of unfilled vacancies.³⁵
- Individual company turnover has been reported to be, on average, 15 per cent.

Volatility presents challenges for workforce planning

Focus group participants outlined several factors that make workforce planning a challenging task for their companies, including: unpredictable changes in the global market; market access issues; technological developments; and process delays (e.g., environmental activism postponing approvals). As one participant explained, "Workforce planning gets pretty grey as you [consider all the factors]." Another participant expressed the view that the nature of the industry fosters a somewhat reactive and sometimes volatile workforce planning approach: "As an industry, it's either mass hiring or there is a hiring freeze."

³⁴ Enform (PHRC), *Canada's Oil and Gas Labour Market Outlook to 2015*, 2012.

³⁵ Alberta Human Services, 2011 *Alberta Wage and Salary Survey*, 2012.

Employee benefits as a tool to reduce turnover

Promoting benefits and other non-wage rewards can help reduce turnover, largely because benefits are an area where companies can more easily differentiate themselves. Information on pure compensation is easily available and most workers do not significantly increase their wages or salaries by changing employers. However, employers that provide superior benefits may be able to gain an edge over competing employers and boost their retention incentives. This strategy is only viable if employees are aware of their total compensation³⁶ when they consider leaving to join a competing company.

Some oil sands mining organizations offer defined-benefit pensions for employees as part of retention strategies. For employees who have the time to grow in an organization, a defined-benefit pension can offer considerable long-term advantages. Interviewees reported that many oil sands mining companies create “total-rewards statements” to help employees understand the investment their employer has made in them and their future within the organization. Communicating total rewards is critical for companies seeking to build employee engagement.

One non-oil sands mining company shared information about its total rewards statements for employees. For this company, the statement includes how much the company spends on continuing development and other benefits beyond pure compensation. Its purpose is to demonstrate the value the company places on employees’ long-term skills and career development.

Retention of Youth

Trends and challenges include the following:

- Engaging younger workers is seen as a critical challenge for oil sands producers, since turnover rates for 20- to 30-year-olds are among the highest in the industry and result in some of the sector’s most expensive replacement costs. These costs can vary between 25 per cent and 200 per cent of annual compensation for a job.³⁷
- Oil sands producers should develop knowledge-management strategies that allow younger workers to collaborate directly with senior workers. This ensures the transmission of skills and knowledge between generations, and demonstrates that younger workers are valued.³⁸
- Alberta has the highest levels of youth labour force participation in Canada, but 31 per cent of the youth workforce has not attained a high-school level diploma or postsecondary certificate, compared to 12 per cent for the rest of the labour force.³⁹

³⁶ Total compensation refers to the total value of salary, benefits and other incentives.

³⁷ Deloitte, *Gaining Ground in the Sands 2012*, 2011.

³⁸ *Ibid.*

³⁹ Government of Alberta, *Youth in the Labour Force*, 2011.

Positive outlook for younger generation in oil sands mining

All interview participants expressed the belief that career prospects are promising for young people in mining, especially in light of continued demand for labour in the oil sands region. The main challenge for young workers will be choosing a skills-training program that will allow them to pursue the most satisfying jobs and stay motivated to remain in the industry. As one non-mining oil sands participant noted, forecasts show that even if the rest of the country reaches depression-level unemployment rates, the oil sands will still experience a significant labour shortage. The reason for this disparity is not a lack of people, but a shortage of talent with needed skills. The main challenge for oil sands mining companies is ensuring workers remain engaged in the workplace and within their communities.

Some younger workers live pay-cheque to pay-cheque

An oil sands mining employer commented that many workers, particularly younger workers employed in operations and maintenance, essentially live pay-cheque-to-pay-cheque. Despite high levels of compensation, workers appear to pay little attention to long-term financial stability. One key informant mentioned that his organization provides training to oil sands workers on managing benefits, but none of the organizations interviewed have programs in place to help workers manage their money.

Turnover in oil sands mining not necessarily a generational issue

Oil sands employers suggested that younger workers did not seem to be more or less likely to leave their employment than their older counterparts. Retention is an issue, however, for certain specific skills sets, particularly in the professional and technical units. Competition for talent is increasing in these particular fields, intensifying retention challenges among these workers. Participants in the focus group sessions indicated that trades and labour, and technicians and technology, are the two occupational groups with the highest turnover rates.

Key informants from oil sands and non-oil sands organizations mentioned that generational differences were apparent in two particular areas: technology and work-life balance. Some younger workers become disengaged when they must do their work less efficiently due to a lack of technology. As well, since many younger workers have family obligations, they are much more concerned about maintaining work-life balance.

Finally, it should also be noted that older, experienced workers can't easily be replaced by a younger workers with less experience. Focus group participants recognized the need to transition younger workers by formal mentor and knowledge-transfer relationships with older workers.

Work-life Balance

Trends and challenges include the following:

- Flexible shift scheduling allows workers more options to realize work-life balance.⁴⁰
- Larger organizations tend to offer more diverse career opportunities, which appeals to younger workers looking to broaden their skill sets and develop their careers (particularly in technical engineering positions). Shift scheduling can accommodate rotations among different job sites and core work areas, helping workers to develop their careers more broadly within organizations.⁴¹
- Interviews with mining industry employees in the oil sands highlight the challenges of shift work for women with young children. It is quite common for mining workers to complete 12 hour shifts. One worker remarked that she had to leave young children with a babysitter at 4 a.m.⁴²

Work schedules greatly impact an employee's ability to balance their work and personal life

Work schedules are a crucial factor for some employees, as they often change employers for greater flexibility. Key informants and employers generally agreed that the majority of employees prefer a seven days-on/seven days-off work schedule or a similar arrangement. This type of schedule makes it easier for employees to plan family activities.

Flexible shift schedules can be challenging for employers to provide

Since mining operations in the oil sands are 24/7 businesses, it is often very hard for industry employers to offer flexible work hours. However, they can offer a variety of work schedules and regularly survey their employees to ensure that the schedule offered suits their needs.

The seven days-on/seven days-off shift schedule is the preferred model used at mining companies that participated in the interviews: including oil sands and non-oil sands operations, and non-mining oil sands operations. However, the variety of shift schedules that a company offers is heavily affected by long distances between airstrips, camps and the project sites. For example, workers at one oil sands mining company expressed interest in 12-hour shift schedules in order to maximize vacation time, but the significant travel time between the local community and the project site puts the company at risk of employees coming to work without sufficient sleep. Another oil sands-based mining company, which does offer 12 hour shifts because the distance between the camp and the project site is not significant, provides training on fatigue management to reduce workplace injuries.

Flexible work hours are more challenging to provide at an operations level, because many mining projects work on a 24-hour schedule and cannot easily accommodate shift changes. Mining employees based out of corporate offices enjoy greater opportunities for flexible hours and work-from-home arrangements.

40 Enform (PHRC), *Petroleum Labour Market Information Supply/Demand Analysis 2009–2020*, 2010.

41 Enform (PHRC), *HR Trends and Insights: A Look at Current and Short-Term Workforce Trends within the Canadian Petroleum Industry*, 2011.

42 MiHR, *Mining Industry Human Resources Guide for Aboriginal Communities*, 2009.

Flexible shift schedules can be challenging to employees

Work-life balance is of particular concern for employees who must “fly-in-fly-out” to their work sites and live in company camps. They must be away from home for extended periods of time, which can be very stressful, especially for employees with young families. Another stress for some employees is the long distance between their work site and their home base (whether they live in a camp or the community). The additional time spent commuting to and from work can also make it very difficult for these employees to maintain a healthy work-life balance.

In some operations, employees work both day and night shifts in a regular rotation. An additional concern for employers who operate under such a schedule is employee fatigue. Clearly, it is an employee’s responsibility to ensure they are fit for work; however, worker fatigue can be a serious safety concern that may cause accidents and other workplace incidents. In operations where day and night shifts are rotated, supervisors are trained to closely monitor workers for signs of fatigue and employees are trained in fatigue management. Focus group participants agreed these kinds of shift rotations may also affect family life and they highlighted the need to help workers balance their work and personal commitments.

Flexible schedules appealing to younger workers

Interview participants (including oil sands and non-oil sands operations, and non-mining oil sands operations) agreed that the seven days-on/seven days-off shift schedule has high appeal for younger employees who work on a fly-in/fly-out basis. Particularly, these types of arrangements offer flexibility and mobility to young workers with few logistical barriers and family commitments.

However, oil sands mining employers also commented that a change in everyday lifestyle can be a challenge for younger workers, who are generally accustomed to having easy access to digital communication and personal contact. Adapting to 12-hour shifts working alone in a haul truck without digital communication can be a challenge for younger workers. Companies with a 12-hour shift option did not report any marked generational differences among workers; both older and younger workers report both rewards and challenges with this option.

Preference for flexible work schedules among the Aboriginal workforce

One non-oil sands mining company noted that the proximity of Aboriginal communities to project sites makes the seven days-on/seven days-off and 12-hour shift schedules very appealing to Aboriginal workers. The company provides a shuttle between these communities and the project site.

Mobility and the Commuter Workforce

Trends and challenges include the following:

- Oil sands producers have traditionally offered a wide range of flexible work arrangements for their employees, including fly-in fly-out rotations, paid accommodations and moving allowances. This flexibility attracts employees who wish to be more mobile and/or require geographic relocation to consider working in the sector. However, the arrangement can prove difficult for workers who care for family members not based in the oil sands region.⁴³
- High prices and low availability of housing in Fort McMurray are obstacles to recruitment for oil sands companies. In order to address these issues, several companies have fly-in-fly-out arrangements. These arrangements allow employees to live in larger cities, such as Edmonton and Calgary, and commute to the worksite by plane.⁴⁴
- Younger workers see flexibility of work hours and work-life balance as key drivers of satisfaction in the oil sands industry, and opportunities for mobility can contribute to this appeal. However, younger workers (those who identify as Generation Y) hope to develop their careers in organizations that will also allow them to take advantage of work opportunities overseas and outside the oil sands region.⁴⁵ Employers face challenges in engaging workers with opportunities for mobility while at the same time, trying to encourage workers to remain in areas where labour needs are greater.
- Many employees who engage in mobile work do not consider moving to Fort McMurray due to factors such as cost of living, remote location and lack of community resources.⁴⁶
- Separation from family and friends is cited as the leading challenge associated with mobile work.⁴⁷
- Mobile workers from outside the oil sands region do not often participate in social activities generally associated with a rural lifestyle, indicating a cultural divide between workers not originally from the oil sands region and the more established members of the community.⁴⁸

Competition for the commuter workforce

Interview participants confirmed that workforce mobility is a significant factor for prospective mining employees. Fly-in/fly-out arrangements can appeal to non-local workers, who often do not express a desire to become permanent residents of Fort McMurray. For some, the option of living in a metropolitan area such as Calgary or Edmonton is more appealing than opting for a rural lifestyle. Despite the fact that Fort McMurray is not typical of most rural communities, insofar as it has a variety of stores found in urban centres and a variety of recreational facilities, there is still significant competition from other urban employers.

43 Enform (PHRC), *Petroleum Labour Market Information Supply/Demand Analysis 2009–2020*, 2010.

44 National Energy Board, *Canada's Oil Sands — Opportunities and Challenges to 2015: An Update*, 2006.

45 Deloitte, *Balancing the People Equation: How Enhanced Collaboration can Help Solve Labour Challenges in the Oil Sands*, 2012.

46 Athabasca Regional Issues Working Group, *Report on Mobile Workers in the Wood Buffalo Region of Alberta*, 2007.

47 *Ibid.*

48 *Ibid.*

Focus group participants described the competition for mobile workers as a complex issue, especially given that a person's decision to move may depend on many factors. According to one participant: "It depends on the demographic. If it's for someone from the community, it's [competition with other oil sands companies]. But for those commuting, it's where their skills can be applied in other areas or regions." The commuting workforce is less predictable, as these workers consider opportunities to work closer to home or live in bigger urban centres. However, some participants emphasized that over time, lifestyle and family choices are more significant determinants for individuals deciding where to work in terms of which company or geographic area.

Competition between Fort McMurray and other communities

The emergence of competition for skilled workers from other regions of the country that have traditionally supplied labour to the oil sands, such as the Maritimes, has the potential to reduce the number of workers willing to work remotely. Interviewees specifically noted that a significant percentage of the mining workforce in the oil sands is made up of residents of Newfoundland and Labrador. With new offshore and onshore developments in that province, these employees are beginning to see more advertisements in the oil sands region urging them to "Come home to Newfoundland!" Many employees might take the opportunity to return home if the compensation package is competitive enough. With mining labour capacity in the oil sands being strained, this could have a profound impact if employees choose to return home.

Generally, individuals from rural communities with a longstanding mining tradition will not quickly pursue mining opportunities in another part of the country. One non-oil sands participant argued this is why her company prefers to hire local talent, and develop skills and training programs for rural residents near its operations. Another non-oil sands mining representative made a similar statement, arguing that it is most effective to hire and develop local talent with longstanding community ties.

Competition among oil sand mining operations

All stakeholders agreed that retention means something very different in the oil sands, compared to elsewhere in Canada. Employees do not tend to leave the region but rather, tend to move from one oil sands employer to another in order to get the most from a total rewards package, including compensation. They also emphasized that compensation packages are comparable from one company to another. They believe employees change their employers more for perceived differences than real ones.

Interviewees offered another reason to explain why employees often jump from one oil sands producer to another. The key distinction is between whether the mining operation offers fly-in-fly-out arrangements versus a live-and-work arrangement. In a fly-in/fly-out operation, the employer covers the cost for employees to commute to and from the mine site. Usually, when on site, employees live in company camps. Employers who operate a live-and-work model do not cover costs for employees to travel to outside hubs such as Calgary and Edmonton. Instead, they expect employees to live in the communities where they work. In the oil sands region, there are two major operators that offer fly-in-fly-out arrangements and two operators that provide a live-and-work model. Depending on their life stage or preferences, employees alternate between employers — based on whether they want to fly-in/fly-out or whether they want to live and work in the community. It is interesting to note that, in live- and-work operations, employees sometimes use their retention bonuses to self-fund the cost of commuting to and from the work sites.

Competition among industry sectors


A non-oil sands mining employer claimed to have a competitive advantage when they were the only mining company offering a fly-in/fly-out option for employees working on a site outside of Alberta. When an oil sands mining company introduced a flight to Fort McMurray from the same departure point, the non-oil sands mining company felt the effects of the competition and feared they could face stiff ongoing retention challenges. Interestingly, the overall loss of employees to the oil sands was not as great as feared. Although the company did indeed lose a significant number of employees who took advantage of the fly-in/fly-out option, nearly 50 per cent of its remote mining workforce is native to that rural part of the province. Workers felt little incentive to leave home for the chance to live in a competing rural community.

Mobility among different age groups

The willingness of people to move in pursuit of employment greatly depends on their age. Younger workers, with relatively few logistical barriers (e.g., family obligations) to stop them from switching employers, typically find appeal in fly-in-fly-out arrangements and camp life. On the other hand, focus group participants suggested that workers in the 35- to 44-year age range often struggle to decide whether to move their families to the region (as opposed to opting for a fly-in-fly-out arrangement).

Stakeholder interviews further indicated that older workers who are permanent residents of the oil sands region have an incentive to leave rural communities. Given the high cost of real estate in the oil sands, many retire to warmer destinations that offer a lower cost of living. These older workers may then choose to return to work on a fly-in-fly-out basis. One key stakeholder mentioned the potential for the parents of younger oil sand miners to be a source of community development. If older non-residents can be attracted to Fort McMurray as a retirement destination, their children may be more willing to make the community a home for a growing family.

Community Development and Sustainability



“It is really like the United Nations working at Fort McMurray. Individuals from at least 30 to 40 identified nations are living and working there. That makes for an interesting community, as well. People are moving here and making it their home.”

Oil sands communities rapidly changing in recent years

Oil sands stakeholders unanimously stressed the importance of ensuring the sustainability of the oil sands communities. Due to the explosive growth of the industry, Fort McMurray, for example, has undergone dramatic changes in the past decade. The community has experienced a 7 per cent annual growth of its population for the past 12 years — and this growth is projected to continue for the next 12 years. As well, the diversity of its population has also dramatically increased.

Even amid all of these changes, oil sands stakeholders are emphatic that the community is vibrant. Industry employers invest millions of dollars every year to improve community infrastructure so that families will move into and flourish in the community. They donate to local sports organizations and sit on not-for-profit boards. In fact, many stakeholders stressed that the quality of life in Fort McMurray is excellent — with an abundance of recreational activities, outdoor activities, community activities and other services of value to employees.

Perceptions of Fort McMurray

A common belief among stakeholders in mining in the oil sands is that there is a persistent, negative public perception of Fort McMurray. In their opinion, the region is unfairly represented in the media — often described as a remote, desolate community with problems related to drug and alcohol abuse. Stakeholders argued that Fort McMurray is no different from other areas in Canada. Nonetheless, employers have a difficult time attracting workers to the region.

Dialogue from the focus group session revealed that the emergence of fly-in-fly-out schedules may perpetuate negative perceptions: One participant observed that fly-in-fly out workers themselves often have a negative view of Fort McMurray. As one focus group participant said: “Fort McMurray is irrelevant if you’re flying in and flying out.” Additionally, some participants discussed how the reputation of “the mining life” also acts as a barrier for workers: “Part of the problem is that some people find it difficult to live in the camps.” Many agreed that the industry needs to think about how it can support fly-in fly-out workers to live successfully in mine camps (e.g. implement optimal shift scheduling).

Perceptions of Fort McMurray can extend to perceptions of the oil sands’ impact on the environment. Focus group participants argued that public communication and education strategies need to be more proactive, rather than reactive. For example, one participant described industry responses to pipeline incidents as being overly defensive in tone, rather than focused on educating the public on what the industry is doing well.

Lack of secondary industries for family members

Oil sands mining employers stressed that attracting workers to live in the region also means attracting their families to come with them. Interview participants believe that the lifestyle challenges of rural mining careers present a significant obstacle for long-term community development in the oil sands region. While younger workers often have the personal flexibility to travel for work, retention becomes more challenging as they age, begin families and take a critical look at community resources. For example, it can be difficult for a mining employee’s spouse to find meaningful career choices in a rural community if they are not also employed in mining. This is a disincentive for making Fort McMurray a permanent home. Perceptions of limited community development feed lack of community development — creating a vicious cycle that must be broken in order to improve employee retention.

Focus group participants also emphasized the need for greater diversification of the local economy to provide a wider range of job opportunities for family members. One participant explained that it’s difficult to find employment for a worker’s spouse/partner “if he or she isn’t connected to the industry.”

It should be noted that, while developing secondary industries was seen as a way to promote the long-term sustainability of the region, high wages offered by the oil producers pose a threat to the development of these secondary industries — to the extent that local community employers cannot compete for this talent.

Cost of living, housing and infrastructure concerns

The high cost of living in Fort McMurray and the oil sands region is a challenge. The major cost difference is in housing accommodations. In the focus group session, participants identified the lack of affordable housing as a significant

barrier to attracting more families to Fort McMurray. Many agreed that demand is too high: “[Property developers] are really playing catch up. There are big communities being developed as we speak but [the region] grew so fast that they couldn’t accommodate the influx of people. You can’t construct things that quickly.” It was also suggested that the prevalence of Crown land around Fort McMurray presents significant difficulties for further development.

On the other hand, oil sands employers have been known to help their employees with their housing costs through housing bonuses or subsidies. Moreover, in terms of everyday expenses (e.g., food, gas, heating and taxes), prices are very reasonable in Fort McMurray compared to other Northern communities. The cost of groceries, for example, is very comparable to that found in Calgary or Edmonton.

Focus group participants noted that the community needs to support industry’s rapid pace of growth in the region by investing in infrastructure. Factors such as housing shortages, traffic jams, serious vehicle accidents, the need for an improved highway between Edmonton and Fort McMurray, the lack of childcare options, and underemployed sectors (e.g., retail and hospitality) are all factors that could limit potential growth. For example, participants discussed services that are lacking in Fort McMurray, especially childcare options: “We have a lot of employees who can’t come back to work because they’re waiting for their kids to get into all-day school, which isn’t enough over the long term [i.e., the need for after-school programs as well].”

Industry partners have come forward to finance significant public infrastructure projects, such as the Syncrude Aquatic Centre. Projects like this are notable for their open community access (i.e., not just employees may access the services).

Sensitivities to economic cycles

A major tendency among mining industry employers is to over-react to changing market conditions; rather than being proactive in their workforce planning approach, mining industry employers often start numerous projects when commodity prices are high, then promptly scale back their workforce after commodity prices drop. These fluctuations can have negative consequences for the long-term development of oil sands communities as they generate uncertainty for prospective workers. According to one key informant, the community is being built to sustain 200,000 workers (a number that fluctuates wildly) when the focus should be on building a community for 100,000 permanent workers.

Education, Training and Development

Due to the rapid growth in the industry, training in the oil sands is very different from other mining areas in Canada. Within the oil sands region, high demand for skilled workers is putting pressure on post-secondary educational institutions to shorten program length, eliminate soft skills and restrict training to very specific job functions. There will be fewer opportunities in the future for semi-skilled and uncertified labourers, but growing opportunities for workers specializing in professionalized fields such as health and safety, environmental management and regulatory affairs.

Trends and challenges include the following:

- The growing role of high technology to improve productivity and meet market demand for oil sands products will put pressure on the job market for better educated and qualified workers.⁴⁹
- New mining practices such as Suncor's mobile ore-preparation equipment (which largely replaces the existing truck and shovel-mining system widely used in the oil sands), will generate significant overhead savings through reduced capital maintenance expenses. The workforce needed to operate this new technology will be smaller than for traditional mining methods, but a greater proportion of the reduced workforce will require higher educational attainment.⁵⁰
- Both growing public demands for cleaner oil sands extraction methods and industry's focus on reducing waste as a means of becoming more efficient are encouraging the development of clean technology. However, changes in oil sands mining technologies will require an increasingly educated workforce.⁵¹
- Retention becomes a more significant problem as worker education levels increase. Workers with advanced post-secondary degrees are the most difficult to retain in organizations and in the oil sands region in general.⁵²

Movement toward a skilled and specialized workforce

In response to the growing need for specialized skills, educational institutions have segregated the more complex job categories into more targeted job skills, and have shortened a three-year program into a 15-week delivery model. They teach only the required technical skills, not any soft skills. The benefit of rapid training programs is that employers can fill positions on short notice. For example, an individual with no prior mining experience can take a one-month haul truck course and reasonably expect to secure a position at a lucrative salary.

There are potential long-term challenges with this program and other highly specific training models. It remains unclear what effect this will have for long-term job design, career planning or broader employee development. For example, training for such specific skill sets will limit the career options of new workers — a situation that may not seem problematic initially, given high demand, but which could result in long-term employment challenges in the face of rapidly changing technologies and evolving labour market needs. Furthermore, the emergence of narrower job “families” (i.e., sets of tasks that an employee is trained for), makes it harder for employers to move workers between projects and over the longer term, to undertake strategic workforce planning.

49 Enform (PHRC), *HR Trends and Insights: A Look at Current and Short-Term Workforce Trends within the Canadian Petroleum Industry*, 2011.

50 Engineering and Mining Journal, *Suncor to Expand its Oil Shale Mining by Using New Technology*, 2007.

51 Deloitte, *Gaining Ground in the Sands 2012: A Deeper Look at Major Trends and Opportunities in the Oil Sands Sector*, 2011.

52 Government of Alberta, *Retention Rates of Migrants*, 2009.

Technology influencing training programs

Changing technology is influencing the demand for skilled labour across the mining industry, both inside and outside the oil sands. In the future, these new technologies will have a significant impact on mining employees' training and development needs, including in the oil sands. Mining operations and oil sands mining operations can be capital-intensive, and equipment in the region can be extremely expensive. Consequently, oil sands companies must be aware of the future technological capabilities of their organizations, and what effects this will have on the training and development needs of their workforce.

For example, certain educational institutions have moved to a simulated training environment for all entry-level operators. The significant need for operators has led to “green” operators (who have never operated real equipment) being hired at entry-level positions. This would never have been done in the past. Furthermore, new technologies such as driverless trucks will allow for more offsite technical positions, allowing specially trained employees to work from urban centres.

Partnerships with post-secondary institutions

Industry employers maintain strong relationships with post-secondary institutions. Focus group participants said their companies partner with universities, colleges and/or institutes of technology. It is also common for senior executives sit on the boards of post-secondary institutions and contribute to curriculum development.

Participants pointed to targeted, industry-relevant training as an important factor in successful partnerships between companies and education providers: “[it’s about] a partnership focused on results. . . It’s not generic. It’s skills required in our workplace. That’s when you get results.” Similarly, one participant indicated that companies need to understand and clearly articulate their goals: “It’s easy to say you want to partner — but unless you have a clear strategy, it’s easy [for the partnership] to dissipate.”

Companies said it would be valuable to have more information from the education sector to support employer workforce planning, such as information on barriers to program access. One participant said, “Not qualifications but wait lists, lack of instructors. . . these are significant issues for lots of technical schools.”) Employers would also benefit from more information on which schools teach the types of skills programs they need.

Changing requirements for oil sands mining employees

Companies in the focus group session indicated they generally require a minimum of Grade 12 for all employees; they further stated that they accept, or are willing to accept, a validated Essential Skills (ES) program as an alternative. Participants highlighted the importance of this type of training for their workforce, as it can help increase employee productivity, retention and job satisfaction (i.e., it helps build confidence). Some related success stories in the oil sands region, such as the Northern Alberta Institute of Technology’s (NAIT) work with an Aboriginal apprenticeship program, which includes a significant ES component.

Participants generally saw value in implementing a certification program that assesses and recognizes a worker’s skills and experience against a mining National Occupational Standard (NOS).⁵³ Many of them expressed belief that this type of program could help attract and retain workers. On the other hand, one participant observed that it might increase the mobility of workers at the expense of the company.

53 For instance, MiHR’s Canadian Mining Certification Program (CMCP) has been implemented to certify workers in mining in the oil sands.

Awareness of oil sands mining in the education system

Focus group participants stressed the need for career awareness among prospective students. Education providers suggested that younger students tended to be unaware of the opportunities available to them, which in turn makes it challenging to find work for first- and second-year apprentices: “When we [education providers] go to career fairs, one of the biggest things we hear is, ‘how do I get in?’” However, some mining participants reported that their companies have begun to bring in more workers through the apprenticeship process. One participant reported a high retention rate among these workers in their company. Another spoke about the challenge of attracting individuals who are not eligible for Alberta’s Registered Apprenticeship Program (RAP) and/or co-ops (i.e., those no longer attending high school).

Another comment was that the education sector generally places emphasis on university and college, which may discount the other options available to students: “It was eye opening to [the students] when we talked about the levels of income and job opportunities available in our industry. . . . If they had more knowledge to pick their own career paths, I think our success rates [in attracting workers] would be much higher.” Others agreed with the need to create greater career awareness at the high-school level, particularly among teachers and guidance counsellors.

The focus group discussed the fact that roughly 20 per cent of apprentices produced in Canada come from Alberta. This highlights the need for trained, skilled workers to stay in the province. One participant argued that all the local skills needs would be met, if all these apprentices stayed in the province.



3

Recommendations

The purpose of this report is to provide key insights for stakeholders seeking to develop HR strategies that respond to the most important issues facing the industry. The findings can be incorporated into long-term workforce plans, at the organization, industry, education system and government levels to address the significant forecast demand for skilled labour for mining in the oil sands. The next step for research on human resources trends and challenges in the oil sands is to gather insights from employees, and to monitor the impact of the new attraction and retention programs that employers introduce.

Career Awareness and Attraction

Compensation: Look beyond higher wages as a means to attract and retain skilled workers. Wages rise at an industry level in response to the demand for labour; therefore, at an organizational level, employers have an opportunity to develop non-wage incentives for workers, such as enhanced benefits and other rewards.

Benefits and Rewards: Work to communicate the value and importance of long-term benefits to employees, especially younger workers who may not be aware of the total investment that their employers make in their development. Annual total rewards statements and financial planning sessions can help workers focus on the benefits of long-term employment with one employer. Employees will better understand the tangible value of tenure, if they learn more about the long-term future earnings that comes with long service and employers' growing contribution, even to defined-contribution pensions.

Engagement of Aboriginal Peoples: Evaluate how cooperation with Aboriginal communities can be incorporated into local engagement strategies. Local talent pools are excellent sources for stable, long-term employees. Effective practices in this regard are clearly linked to both organizational and business success.

Retention

Retaining Young Workers: Develop workplace programs to demonstrate that the company values the contributions of younger workers. For example, including younger workers in strategic conversations with senior workers can improve engagement and facilitate knowledge transfer.

Shift Scheduling: Plan shift scheduling in conjunction with a workplace health and safety specialist, to ensure that employee shift preferences do not contribute to fatigue and other safety issues.

Workforce Mobility: Monitor workers regularly to track changing preferences for fly-in-fly-out and permanent living arrangements. Employers should look for trends in employee preferences over time — based on factors such as age and family needs, to determine which lifestyle options should be offered.

Community Development as Human Resources Development: Continue to seek partnerships with community economic-development agencies and other groups, to develop community resources and promote the diverse work and lifestyle opportunities available in the region. Economic diversity is essential to the sustainable growth of a community. As noted in the research findings, the high demand for labour in the oil sands industries makes it harder for other community organizations to attract skilled workers. In turn, this makes it difficult for individuals not looking for work in the oil sands industries to find meaningful employment opportunities in the region. Although fly-in-fly-out work arrangements are popular with workers who enjoy that lifestyle, they also make it challenging to build community resources that can attract long-term residents. A survey of current workers'/residents' needs could help ensure that resources are devoted to the highest-demand services, for example, day care and other social services. An industry-community partnership could also look to promote other aspects of the oil sands region that are not well known — for example, the fact that Fort McMurray is significantly diverse. One key informant estimated that over 40 nationalities are represented in the community.

The Development of Infrastructure: Ensure that community infrastructure keeps pace with the rapid development of the oil sands, to ensure that workers and their families have proper accommodations and services.

Education, Training and Development

Education/Skills Development: Work collaboratively with educational institutions. Due to the critical need for talent in specific work areas, industry is working with education providers to shorten program lengths and deliver training focused on very specific skill sets. Collaboration ensures that opportunities for short-term and specific job training do not come at the cost of long-term skills development and career-planning opportunities for students.

Conclusion

Growth in the oil sands mining industry presents a significant challenge for HR planning, today and in the future. Although forecasted increases in workers will bring economic benefits to the region as a whole, the problem for employers is ensuring that their larger workforces will have the skills to meet the demands of an increasingly complex production process. Engaging and retaining skilled workers is just as crucial as hiring new employees, and will require employers to consider the work and life issues that influence career choices. Employers should explore opportunities to recognize employees using strategies beyond wage increases, and take a leading role in developing communities where workers will want to live in for the long term.

Individual oil sands mining companies can do little to influence the global drivers for growth in the industry, such as demand for oil. However, companies do have a real opportunity to be proactive and forward-thinking, by developing sustainable human resources strategies. Growth is coming; now is the time to plan for success.



4

Appendix

This Appendix lists the North American Industry Classification Codes (NAICS) and National Occupational Classification for Statistics (NOC-S) codes used throughout this report to define (1) the mining industry and (2) mining in the oil sands.

Statistics Canada, the main source of Canada's labour market information, uses two different coding systems to classify data: the North American Industry Classification System (NAICS) and the National Occupational Classification for Statistics (NOC-S). Both the NAICS and the NOC-S classification systems are used extensively in Statistics Canada surveys and reporting on labour market information, including the Labour Force Survey (LFS); the Survey of Payroll, Employment and Hours (SEPH); the Canadian Business Patterns (CBP) database; and the Census. A full description of both classification systems can be found on Statistics Canada's website.

Industry Classifications for the Mining Industry

NAICS codes are used by statistical agencies throughout North America to describe economic and business activity at the industry level. The system features a production-oriented framework where assignment to a specific industry is based on primary activity, enabling it to group together establishments with similar activities. MiHR uses the following NAICS codes to define the mining industry:

- NAICS 2121: Coal mining. This industry group comprises establishments primarily engaged in mining bituminous coal, anthracite and lignite by underground mining, and auger mining, strip mining, culm bank mining and other surface mining.
- NAICS 2122: Metal ore mining. This industry group comprises establishments primarily engaged in mining metallic minerals (ores). Also included are establishments engaged in ore dressing and beneficiating operations, whether performed at mills operated in conjunction with the mines served or at mills, such as custom mills, operated separately.
- NAICS 2131: Support activities for mining and oil and gas extraction. This industry group comprises establishments primarily engaged in providing support services, on a contract or fee basis, required for the mining and quarrying of minerals and for the extraction of oil and gas. Establishments engaged in the exploration for minerals, other than oil or gas, are included. Exploration includes traditional prospecting methods, such as taking ore samples and making geological observations at prospective sites.

- NAICS 3311: Iron and Steel Mills and Ferro-Alloy Manufacturing. This industry group comprises establishments primarily engaged in smelting iron ore and steel scrap to produce pig iron in molten or solid form.
- NAICS 3313: Alumina and Aluminum Production and Processing. This industry group comprises establishments primarily engaged in extracting alumina.
- NAICS 3314: Non-Ferrous Metal (except Aluminum) Production and Processing. This industry group comprises establishments primarily engaged in smelting, refining, rolling, drawing, extruding and alloying non-ferrous metal (except aluminum).
- NAICS 2123: Non-metallic mineral mining and quarrying. This industry group comprises establishments primarily engaged in mining or quarrying non-metallic minerals, except coal. Primary preparation plants, such as those engaged in crushing, grinding and washing, are included.
- NAICS 5413: Architectural, engineering and related services. This industry group comprises establishments primarily engaged in providing architectural, engineering and related services, such as structure design, drafting, building inspection, landscape design, surveying and mapping, laboratory and on-site testing, and interior, industrial, graphic and other specialized design services. (Note that only a portion of this NAIC code relates to Geosciences, Surveying and Mapping, and Assay Laboratories.)

Industry Classifications for Mining in the Oil Sands

For the purpose of defining mining in the oil sands and providing labour market statistics in this report, MiHR used the following two NAICS codes:

- NAICS 211: Oil and gas extraction. This subsector comprises establishments primarily engaged in operating oil and gas field properties. Such activities may include exploration for crude petroleum and natural gas; drilling, completing and equipping wells; operating separators, emulsion breakers, desilting equipment and field gathering lines for crude petroleum; and all other activities in the preparation of oil and gas up to the point of shipment from the producing property. This subsector includes the production of oil, the mining and extraction of oil from oil shale and oil sands, and the production of gas and hydrocarbon liquids, through gasification, liquefaction and pyrolysis of coal at the mine site.
- NAICS 213: Support activities for mining, and oil and gas extraction. This subsector comprises establishments primarily engaged in providing support services, on a contract or fee basis, for the mining and quarrying of minerals and for the extraction of oil and gas. Establishments engaged in the exploration for minerals, other than oil or gas, are included. Exploration includes traditional prospecting methods, such as taking ore samples and making geological observations at prospective sites.

Occupation Classifications for the Mining Industry and Mining in the Oil Sands

The NOC-S system was developed by Statistics Canada and Human Resources and Skills Development Canada (HRSDC) to provide standardized descriptions of the work that Canadians perform in the labour market. NOC-S codes organize labour-force participants according to the nature of work they perform, thereby enabling similar occupations to be grouped. NOC-S codes are specific to Canada.

Table A1 lists the 66 NOC-S codes that MiHR uses to define the occupations that are essential to the mining industry. Often an occupation can have multiple titles and it can be difficult to interpret which label is the correct one. In that instance, Statistics Canada offers a means to map or connect job titles back to the proper NOC-S code. A resource to map NOC-S codes to job titles is found on the Human Resources and Skills Development Canada website (specifically the “Quick Search” box).

MiHR has identified 59 occupations that are relevant to mining in the oil sands. These occupations were chosen from MiHR’s list of 66 occupations. Occupations that are irrelevant to oil sands mining were excluded; these include seven occupations related to underground mining or mineral and metal processing.

Table A1

List of Occupations in the Mining Industry and Mining in the Oil Sands

NOC Code	Title	Included in the Oil Sands NOC-S List
A111	Financial managers	Yes
A112	Human resources managers	Yes
A121	Engineering managers	Yes
A371	Construction managers	Yes
A381	Primary production managers (except agriculture)	Yes
B011	Financial auditors and accountants	Yes
B012	Financial and investment analysts	Yes
B021	Specialists in human resources	Yes
B211	Secretaries (except legal and medical)	Yes
B541	Administrative clerks	Yes
B573	Production clerks	Yes
B575	Dispatchers and radio operators	Yes
B576	Transportation route and crew schedulers	Yes
C012	Chemists	Yes
C013	Geologists, geochemists and geophysicists	Yes
C015	Other professional occupations in physical sciences	Yes
C021	Biologists and related scientists	Yes
C031	Civil engineers	Yes
C032	Mechanical engineers	Yes
C033	Electrical and electronics engineers	Yes
C034	Chemical engineers	Yes
C041	Industrial and manufacturing engineers	Yes
C042	Metallurgical and materials engineers	Yes
C043	Mining engineers	Yes
C044	Geological engineers	Yes
C048	Other professional engineers	Yes
C054	Land surveyors	Yes
C111	Chemical technologists and technicians	Yes

NOC Code	Title	Included in the Oil Sands NOC-S List
C112	Geological and mineral technologists and technicians	Yes
C121	Biological technologists and technicians	Yes
C131	Civil engineering technologists and technicians	Yes
C132	Mechanical engineering technologists and technicians	Yes
C133	Industrial engineering and manufacturing technologists and technicians	Yes
C134	Construction estimators	Yes
C141	Electrical and electronics engineering technologists and technicians	Yes
C153	Drafting technologists and technicians	Yes
C154	Land survey technologists and technicians	Yes
C155	Mapping and related technologists and technicians	Yes
C162	Engineering inspectors and regulatory officers	Yes
C163	Inspectors in public and environmental health and occupational health and safety	Yes
G412	Cooks	Yes
H013	Contractors and supervisors, pipefitting trades	Yes
H016	Contractors and supervisors, mechanic trades	Yes
H111	Plumbers	Yes
H112	Steamfitters, pipefitters and sprinkler system installers	Yes
H121	Carpenters	Yes
H212	Industrial electricians	Yes
H326	Welders and related machine operators	Yes
H411	Construction millwrights and industrial mechanics (except textile)	Yes
H412	Heavy-duty equipment mechanics	Yes
H611	Heavy equipment operators (except crane)	Yes
H621	Crane operators	Yes
H622	Drillers and blasters — Surface mining, quarrying and construction	Yes
H711	Truck drivers	Yes
H812	Material handlers	Yes
H821	Construction trades helpers and workers	Yes
H822	Other trades helpers and workers	Yes
I121	Supervisors, mining and quarrying	Yes
I131	Underground production and development miners	No
I141	Underground mine service and support workers	No
I214	Mine workers	No
J011	Supervisors, mineral and metal processing	No
J111	Central control and process operators, mineral and metal processing	No
J121	Machine operators, mineral and metal processing	No
J125	Inspectors and testers, mineral and metal processing	No
J311	Workers in mineral and metal processing	No

Methodology for Employment by Place of Work

In order to create an estimate of the number of people who work in Alberta, but reside elsewhere, the analysis in found in this report examined commuting flow tables in Statistics Canada's 2001 and 2006 Censuses. These tables present data on employment and income by place of work versus place of residence for standard geographic areas. For the purposes of this analysis, we compiled commuting patterns data for all Canadians who worked in the Wood Buffalo-Cold Lake economic region in North eastern Alberta, where the oil sands are concentrated. The available data are broken down by industry. There are two industries that include oil sands activity: oil and gas extraction and support activities for mining and oil and gas extraction.

The 2011 level of employment was estimated using employment data from the labour force survey (LFS) for Wood Buffalo-Cold Lake. We also assumed that the share of employment in each industry that comes from other provinces has remained unchanged since 2006. Given that this share rose between 2001 and 2006, and the continued labour shortages in Alberta, it is likely that this share actually rose. Thus, we are likely underestimating the number of people working in the region who live outside of Alberta; however, this is a conservative assumption.



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