Occupation Labour Market Analysis

The POMS produces information that can be used to help Labour Market Information (LMI) analysts to identify significant supply-demand gaps across the occupations and the possible sources of supply to remove these gaps. An example of how the LMI produced by POMS can be used is provided below. This example employs gap and source w analysis both within a province and across the country.

In the example a Human Resource Analyst wishes to assess the existing and future state of the labour market for heavy equipment operators as the analyst's firm is planning to expand its oil sands operations in Alberta. The company would prefer to hire workers with related experience in the oil and gas industry in Alberta, but accepts that it may need to look to other industries and other provinces to obtain the operators. The oil sands industry is a relatively new one and there is unlikely to be significant local supply available given the planned expansion of the oil sands industry in the province over the next 10 years.

Heavy equipment operators are found under NOC 7521. According to the NOC:

"Heavy equipment operators operate heavy equipment used in the construction and maintenance of roads, bridges, airports, gas and oil pipelines, tunnels, buildings and other structures; in surface mining and quarrying activities; and in material handling work. They are employed by construction companies, heavy equipment contractors, public works departments and pipeline, logging, cargo-handling and other companies."

The analysis illustrated below examines a broader category than the exact type of person required for the oil sands firm, but does provide an indication of the labour market situation for persons that possess similar qualifications. This issue is similar for other NOC occupations where the occupations are often broadly defined. In the case of carpenters, for example, organizations may be looking for framers that work in residential construction while the carpenter NOC includes framers and carpenters that work building scaffolding largely in non-residential construction.

Gap Analysis

Gap analysis is used to assess the state of tightness in the labour market for operators. If there is generally an excess supply of operators, it should be relatively easy to find them. Otherwise, more effort will be required in the search for them. The measures used to conduct gap analysis include quantitative ones that employ a measure of excess supply including the use of actual and normal unemployment rates and a qualitative one that uses a ranking system regarding the perceived degree of excess demand or supply.

Table 2 shows the information used for gap analysis for heavy equipment operators in the province. As can be seen from the table, a gap opens up between demand and supply in the medium term with supply falling below demand, this gap reaches 202 by 2019 – excess supply is negative at -202. To get an idea of how serious a problem this situation is – the degree of market tightness in the province – Figure 12 shows the actual and normal unemployment rates for operators over the period.

Table 2
Gap Analysis Information for Heavy Equipment Operators, Alberta

|	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Labour Force Demand	21562	22584	23069	23606	24171	24718	25251	25710	25804	25792	25816
Labour Force Supply	21542	22486	23073	23575	24081	24563	25050	25517	25672	25704	25770
Labour Force Excess Supply	-21	-97	4	-30	-90	-155	-202	-192	-133	-88	-45
Unemployment	1430	1422	1555	1557	1536	1508	1497	1537	1603	1647	1691
Unemployment Rate	6.6	6.3	6.7	6.6	6.4	6.1	6.0	6.0	6.2	6.4	6.6
Normal Unemployment Rate	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Labour Market Tightness Rank (1-3)	2	2	2	2	2	2	2	2	2	2	2

Figure 12
Actual and Normal Unemployment Rates for Heavy Equipment Operators, Alberta
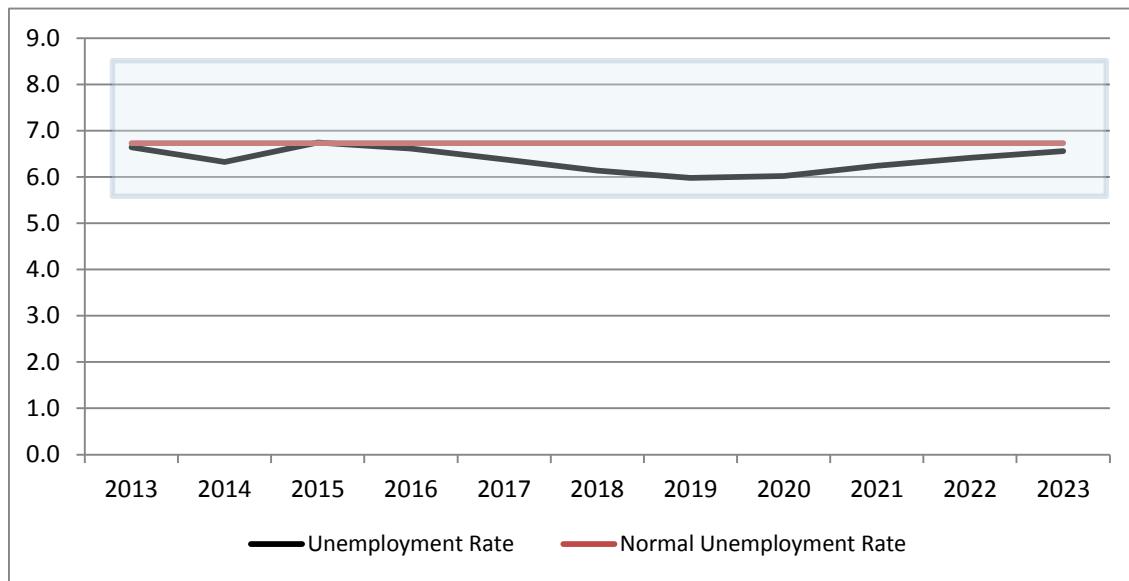
Unemployment rates near the normal unemployment rate – the value of the unemployment rate that is on average observed for operators in Alberta – suggests a normal labour market, while unemployment rates noticeably above or below the normal rate suggests either a loose or tight market, respectively. Figure 12 contains a band that defines the values of the unemployment rate that represent a normal labour market as defined by the POMS ranking system. The chart suggests a normal market situation. The actual unemployment rate drops below the normal rate over the medium term of the forecast, but not by a significant amount. The labour market tightness rank of 2 over the forecast along with the unemployment rate gap suggests a normal rate of difficulty in finding operators in Alberta during this period.

Given that it appears that the labour market for operators in Alberta will be normal it may not be necessary to go outside the province to find them. If they were to look outside the province however, the degree of difficulty in this effort will depend on the demand-supply situation in other provinces. To assess this situation it is necessary to create versions of Figure 12 for each province.

Rather than displaying the additional figures here, Table 3 shows the labour market tightness rankings for operators across the provinces. In addition to using the rank values, the table employs different colours to represent the values. Red represents excess demand, green a normal situation for the labour market, and blue (not seen in this occupation) a situation of excess supply. This approach allows decision makers and other observers to easily understand and comment on the analysis.

As can be seen from Table 3, most provinces will experience normal labour market tightness for heavy equipment operators in the future. The excess demand rankings in British Columbia, Manitoba, New Brunswick, Prince Edward Island and Newfoundland & Labrador in the short to medium term likely reflect upcoming major projects in these provinces, placing pressure on the demand for operators.

Table 3
Labour Market Tightness Rankings for Heavy Equipment Operators, All Provinces

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
British Columbia	2	2	3	3	3	2	2	2	2	2	2
Alberta	2	2	2	2	2	2	2	2	2	2	2
Saskatchewan	2	2	2	2	2	2	2	2	2	2	2
Manitoba	2	2	2	3	3	2	2	2	2	2	2
Ontario	2	2	2	2	2	2	2	2	2	2	2
Quebec	2	2	2	2	2	2	2	2	2	2	2
New Brunswick	2	2	2	3	3	3	2	2	2	2	2
Nova Scotia	2	2	2	2	2	2	2	2	2	2	2
Prince Edward Island	2	2	2	2	2	2	3	2	2	2	2
Newfoundland & Labrador	2	3	2	2	2	2	2	2	2	2	2

Source Analysis

The purpose of flow analysis is to identify the possible sources of supply and demand changes for the occupations in question. How much will demand and supply grow (decline) and what will be the sources of this growth (decline)? This analysis is illustrated below for the operators.

Table 4 shows the sources of demand and supply change for heavy equipment operators in Alberta over the 2013 to 2023 period.

Demand Flows

The sources of total demand change in POMS refer to expansion demand and retirements and deaths. Expansion demand measures the change in employment and the associated normal unemployment. It is often referred to as "new jobs" but can also refer to "lost jobs" as firms reduce their need for employees. Retirements and deaths are a measure of replacement demand.

Table 4
Demand and Supply Changes for Heavy Equipment Operators, Alberta

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Demand Change	482	1405	886	949	986	976	970	901	546	443	484
Expansion Demand	110	1021	485	537	565	547	534	458	95	-12	24
Deaths & Retirements	372	384	401	412	421	429	437	443	451	456	461
Total Supply Change	634	1328	987	915	927	911	924	911	605	488	527
New Entrants	462	480	479	477	477	485	495	504	512	524	537
Net In-Mobility	172	849	508	438	449	426	428	407	93	-36	-10
Net In-Migration	247	692	450	489	487	471	490	431	115	-51	-15
Net Other Mobility	-75	157	58	-51	-38	-45	-62	-25	-22	15	4

Figure 13 shows the two components of demand change for heavy equipment operators in Alberta. It can be seen that while expansion demand makes the largest contribution to demand change in the short term, retirements and deaths are an increasingly important source, contributing nearly the entire total demand change after 2020.

Figure 13
Sources of Total Demand Change for Heavy Equipment Operators, Alberta
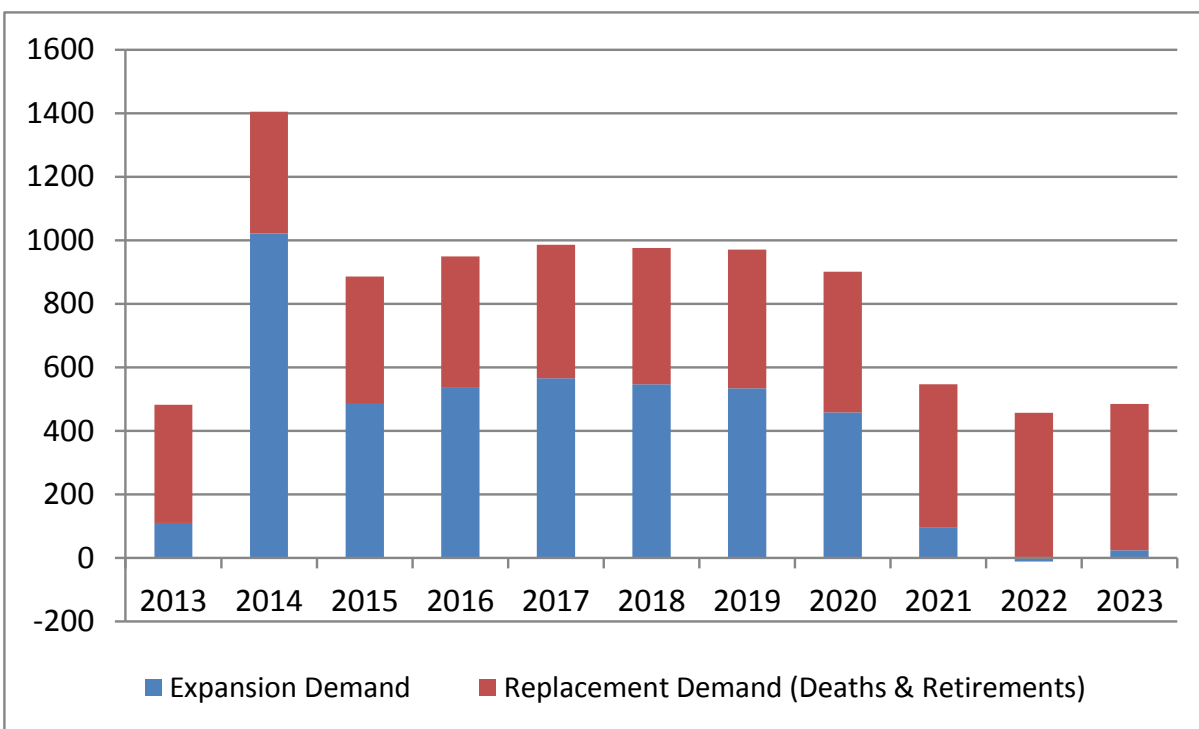
Figure 14 shows the sources of total demand change in the rest of Canada. As can be seen from this figure, replacement demand, as represented by retirements and deaths, accounts for almost all the change in demand for heavy equipment operators over the period. Expansion demand for operators is negative after 2020 across the rest of the country.

Figure 14
Sources of Total Demand Change for Heavy Equipment Operators, Rest of Canada
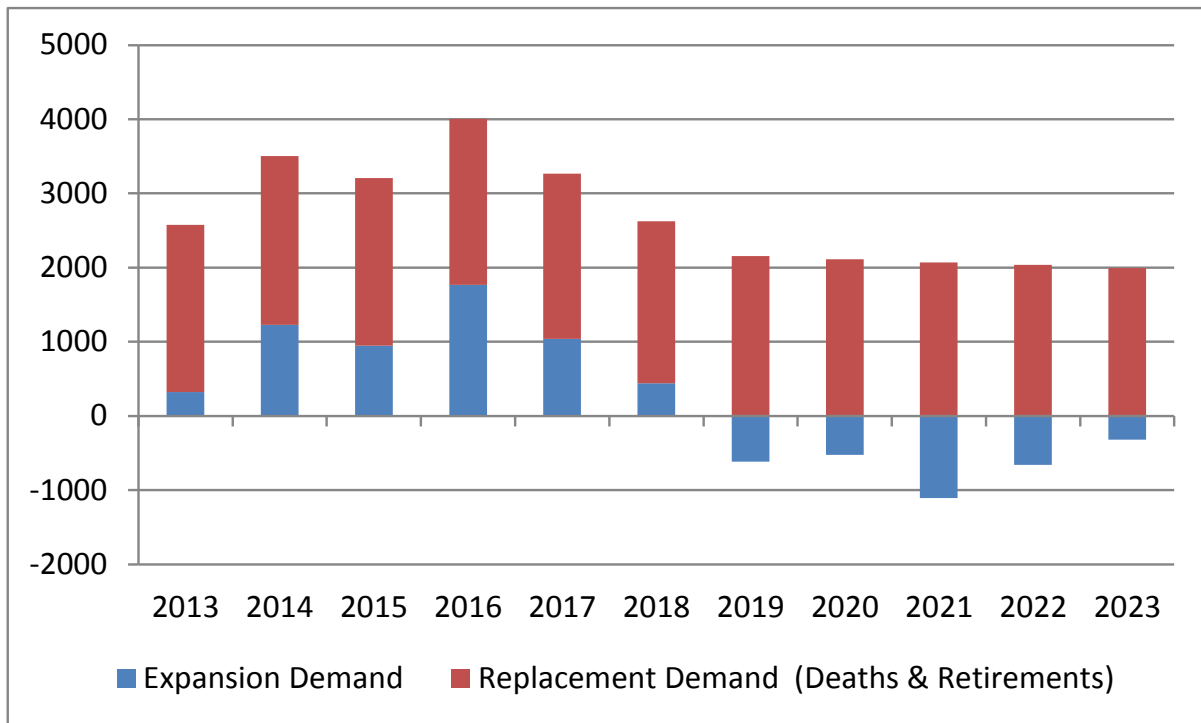
It is useful to examine the industry composition of expansion demand over the period to see what is accounting for the relatively strong expansion demand in Alberta. Table 5 shows the employment levels for operators in 2013 and 2023 along with the change over the period with a focus on heavy equipment operators working in the industrial sector for Alberta and the rest of Canada. More detail is available for the industries found under the private and public services, but is not presented here.

It is the industrial sector that employs the largest number of heavy equipment operators in Alberta, the largest portion of which works in the construction industry. In the rest of Canada the construction industry also dominates, with the largest proportion of operators also working in the other mining industry. Over the next 10 years the largest change in employment for this occupation observed in Alberta is dominated by the construction industry. This industry accounts for almost all of the increase in heavy equipment operator employment in the province. The rest of the industrial sector will show much smaller increases with some industries showing a decline in the number of workers.

The construction industry also accounts for the largest part of the increase in employment for operators in the rest of Canada, increasing by about 1400 over the 2013 to 2023 period. Private and public services employment increases almost 1400 over the same period.

Supply Sources

The sources of supply change shown in Table 4 are new entrants and net in-mobility, the latter consisting of net in-migration and net other mobility. Net other mobility includes workers moving from other occupations – inter-occupation mobility – and other factors that impact the participation rate of the population in the labour force such as the availability of higher wages and decisions to postpone retirement.

Figure 15 shows the supply change components for Alberta and Figure 16 the corresponding components for the rest of Canada. As can be seen from these figures the total supply changes generally follow those for demand shown in Figures 13 and 14. New entrants are a less volatile source of supply than the other two components. In the case of Alberta, strong demand for operators draws young people into the occupation over the period. For the rest of Canada the number of new entrants remains largely unchanged in line with the weak employment growth shown in Table 5.

Table 5
Employment of Heavy Equipment Operators, Alberta and Rest of Canada

| | BC | | | Rest of Canada | | |
| | | | Change | | | Change |
	2013	2023	2013-2023	2013	2023	2013-2023
Total	12015	13414	1399	77818	83404	5586
Industrial	10332	11476	1144	65180	69397	4217
Oil and gas extraction	358	365	7	4101	4509	408
Support activities for mining and oil and gas extraction	247	239	-8	419	409	-10
Mining	1503	1523	20	5270	6750	1480
Utilities	27	31	4	550	633	83
Construction	6650	7830	1180	43852	45963	2111
Wood product manufacturing	321	297	-24	1662	1666	4
Paper manufacturing	148	135	-13	638	613	-25
Petroleum and coal products manufacturing	0	0	0	446	369	-77
Chemical manufacturing	23	21	-2	313	324	11
Non-metallic mineral product manufacturing	113	143	30	806	804	-2
Primary metal manufacturing	56	53	-3	1110	1037	-73
Fabricated metal product manufacturing	17	18	1	338	362	24
Machinery manufacturing	0	0	0	387	456	69
Other Industrial	869	821	-48	5288	5502	214
Private & Public Services	1683	1939	256	12638	14006	1368

As the previously tight labour market in Alberta begins to ease, less net in-migration is required to meet the province's supply needs for operators.

Figure 15
Sources of Total Supply Change for Heavy Equipment Operators, Alberta
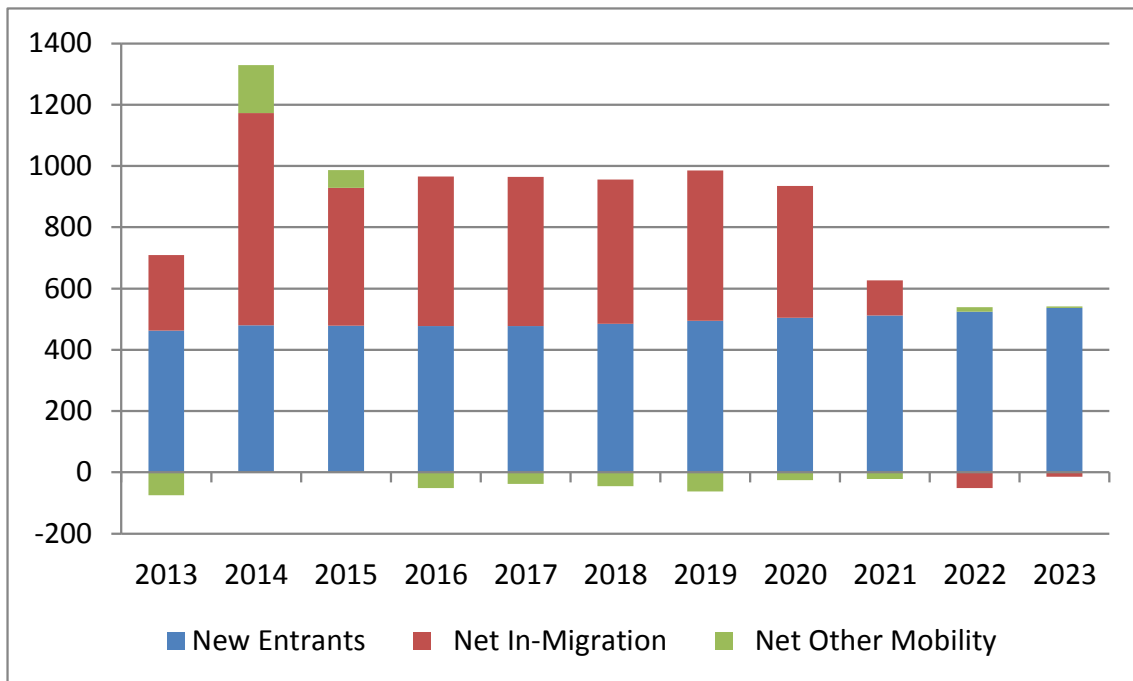
Figure 16

Sources of Total Supply Change for Heavy Equipment Operators, Rest of Canada
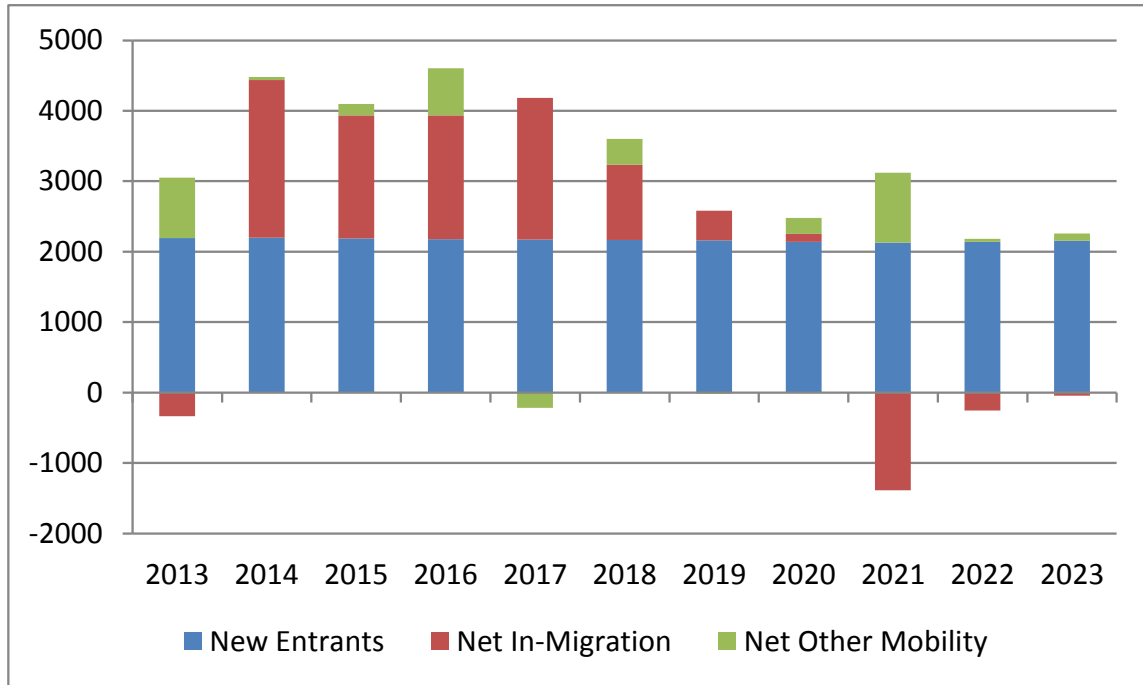
The number of new entrants is a more stable source of supply and easier to target. Table 6 shows the expected number of new entrants for operators across the county. As one would expect they are found in the larger provinces and with relatively large demands for operators. Ontario, Quebec, and British Columbia stand out as locations from which new entrants could be obtained.

Table 6
New Entrants, Heavy Equipment Operators

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Canada	2192	2199	2188	2178	2169	2167	2160	2139	2129	2138	2157
British Columbia	292	295	296	304	304	304	298	293	281	277	276
Alberta	462	480	479	477	477	485	495	504	512	524	537
Saskatchewan	147	142	145	142	139	142	140	138	134	134	136
Manitoba	93	92	93	96	99	97	95	94	95	93	92
Ontario	517	518	518	513	513	511	510	499	493	489	486
Quebec	431	424	414	408	405	400	396	391	394	400	409
New Brunswick	77	74	75	77	80	82	79	75	75	75	76
Nova Scotia	83	83	80	75	73	71	70	69	69	68	68
Prince Edward Island	12	12	11	11	11	11	11	11	11	12	12
Newfoundland & Labrador	77	79	77	74	68	66	65	65	65	65	65

Another source of labour force supply is one that results because labour force supply and demand do not always match. It is the amount of excess supply in an occupation, which is shown in Table 7 below for all provinces and was displayed in Table 2 for Alberta. Excess supply is the difference between unemployment and normal unemployment. This unemployment is a measure of cyclical unemployment that arises as the economy goes through economic cycles.

Cells in the table where excess supply is positive are highlighted. The provinces where positive excess supply is observed are places from which organizations could attract operators. There is significant excess supply to 2015 reflecting slower growth in the economy. Nevertheless, there is some excess supply in most provinces that can be accessed in the medium term as well. This situation is particularly the case in Quebec where excess supply remains a strong positive over the forecast. While organizations can attempt to attract part of an occupation's normal unemployment, it will likely be more difficult to do so than for those unemployed in excess of normal levels. This is particularly the case for seasonal occupations where workers are only temporarily without work and are expecting to start work again in the near future.

Table 7
Excess Labour Supply, Heavy Equipment Operators

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Canada	621	190	194	-160	-441	-442	-388	-398	-173	-70	-18
British Columbia	178	62	0	-28	-115	22	36	9	65	46	23
Alberta	-21	-97	4	-30	-90	-155	-202	-192	-133	-88	-45
Saskatchewan	-61	12	17	12	20	-20	-1	1	37	20	12
Manitoba	38	30	14	-30	-32	-1	21	12	10	26	28
Ontario	179	37	-86	-220	-308	-320	-261	-189	-103	-29	2
Quebec	223	100	154	92	54	62	78	51	39	8	-8
New Brunswick	74	88	46	-11	-47	-61	-32	-25	-29	-19	-12
Nova Scotia	70	24	30	27	10	-6	-17	-22	-19	-14	-14
Prince Edward Island	16	15	15	9	10	8	5	6	7	9	10
Newfoundland & Labrador	-74	-80	1	19	56	29	-14	-48	-47	-30	-16

The information shown above suggests that there will be challenges in obtaining operators over the next few years for the oil sands organization in question as the major source of supply of workers will be from outside the province. This sourcing will be difficult in the medium term as other provinces also face this situation. In the long term sufficient workers will be available as expansion demand weakens across the country.

It will be necessary to attract new entrants to the occupation in Alberta – and obtain some from other provinces through inter-provincial migration. The POMS assumes that an occupation will get its share of total new entrants to the provincial economy based on its share of employment in the provincial economy as a whole. This is only an assumption and it is important for organizations requiring operators to try their best to attract young people into the occupation. There are not enough young people coming into the labour force as a whole to meet expansion and replacement demand through new entrants to the occupation.

This example illustrates the type of information produced by POMS that can serve as a starting point in an occupation analysis for organizations. It is available for 500 occupations in each province where those occupations exist. In the smaller provinces there are fewer occupations because of the size of the labour force and diversity of occupations.