

Calgary Economic Development

INDUSTRY REPORT: MANUFACTURING

January 2008

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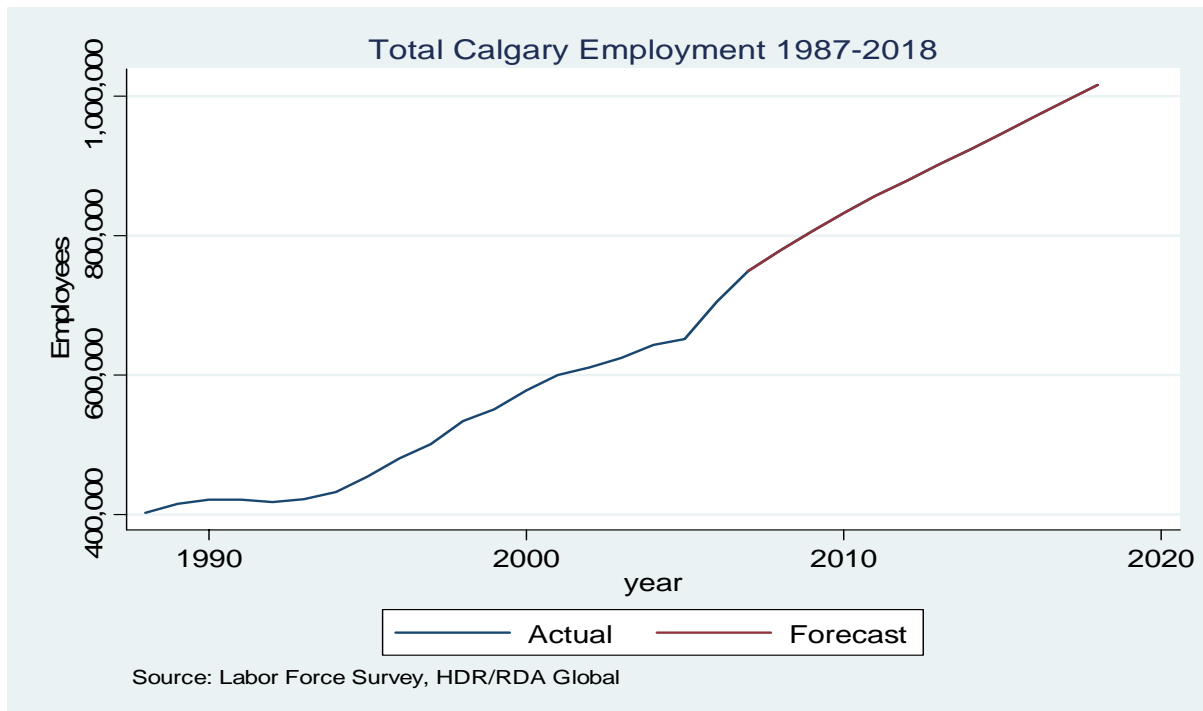
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Figure 1: Total Calgary Employment Forecast (All Industries)



The Calgary economy has seen tremendous growth in labour demand over the previous decade with employment growth reaching an all-time high of 8.1%¹ in 2006. The recent strong growth in the Calgary economy has been driven by a combination of economic factors spurring growth in specific sectors and generally throughout the Calgary economy. Energy prices are a significant driver with West Texas Intermediate oil price rising 17%² in 2006. Investment levels in major construction projects have risen significantly compared to historical levels. Housing starts have risen from 13,700³ starts in 2005 to 17,000 starts in 2006, an increase of 25%. Calgary GDP grew at 7.7% in 2006.

Recent increases in employment levels have been highest in sectors of the Calgary economy which are related to energy, in particular in the professional services sector. However, overall growth has been relatively balanced among industries with significant growth in most sectors of the economy.

As Figure 1 shows, labour demand in the Calgary Economic Region is expected to continue to grow at a healthy rate throughout the forecast, albeit at a lower, more sustainable level. The overall growth in employment in Calgary is expected to decline over the next several years settling at a more sustainable long-term employment growth rate of 2.4%, in line with historical average growth. However, this lower growth rate will continue to result in strong job creation. Over the previous ten years (1996-2006) Calgary employment increased adding 224,000 new

¹ Source: Labor Force Survey

² Source: US Energy Information Administration

³ Source for housing starts statistics and Metro GDP at basic prices was the Conference Board of Canada

jobs. Over the ten year forecast period (2007-2017) Calgary employment growth will result in the creation of an additional 244,000 new jobs. This growth in the Calgary economy will be driven by a number of factors including expectations that oil prices will remain at or near historically high levels. Energy prices are expected to be volatile in the near term, with possible spikes in prices, partially due to the declining value of the US dollar. However, for the long-term forecast, an average annual 1.7% growth rate in oil prices has been forecasted, which is consistent with conservative expectations of energy analysts⁴. Calgary GDP growth will moderate to a strong long term compound annual real growth rate of 3.8%.

Figure 2 Calgary Job Creation in Each Industry

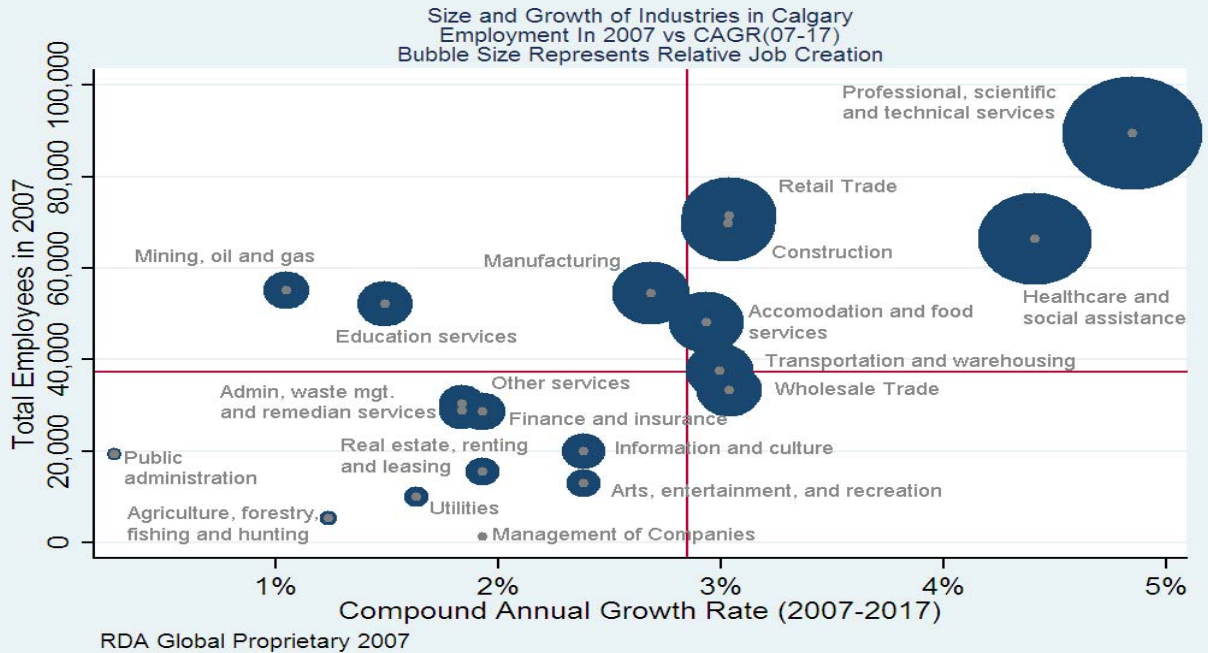


Figure 2 highlights the differences in job creation across industries in Calgary, with the larger circles representing industries with more job creations. Significant gains in employment will be somewhat distributed among economic sectors. However, there will be particularly strong expansion in the professional services sector, which is tied to continued demand for technical and engineering services in the energy sector. There will also be strong job growth in healthcare, driven by overall population growth and growth in the older segments of the population. Job expansion will also continue to be robust in retail, construction, accommodation & food services, transportation, manufacturing, and wholesale. Population growth is expected to drive up demand for education services. Most segments of the economy are expected to continue to see positive growth with employment growth rates in the 1% to 2.5% long-term growth range. However, total job creation in niche industries will be constrained by the relatively smaller size of these segments.

⁴ In development of this forecast, oil price forecasts of the Energy Information Administration and Sproule and Associates were consulted, however, final assumptions in the forecast model were based on a nominal annual growth rate of 1.7%.

MANUFACTURING INDUSTRY

The Manufacturing industry ranks sixth out of twenty industries for total employment. Historically, growth in this industry has not been as high as the overall regional growth. The industry will expand at a compound annual growth rate of 2.7% over the forecast period, just under the 2.9% growth for total Calgary employment. In terms of jobs created, the industry ranked eighth over the 1997-2007 period, creating nearly 11,500 jobs. The industry will move up to become the fifth largest contributor to job creation in the 2007-2017 forecast period, creating nearly 16,500 new jobs. One in every fifteen new jobs created in the next ten years will be in the Manufacturing industry.

Figure 3: Total Employment in the Manufacturing Industry 1987-2018

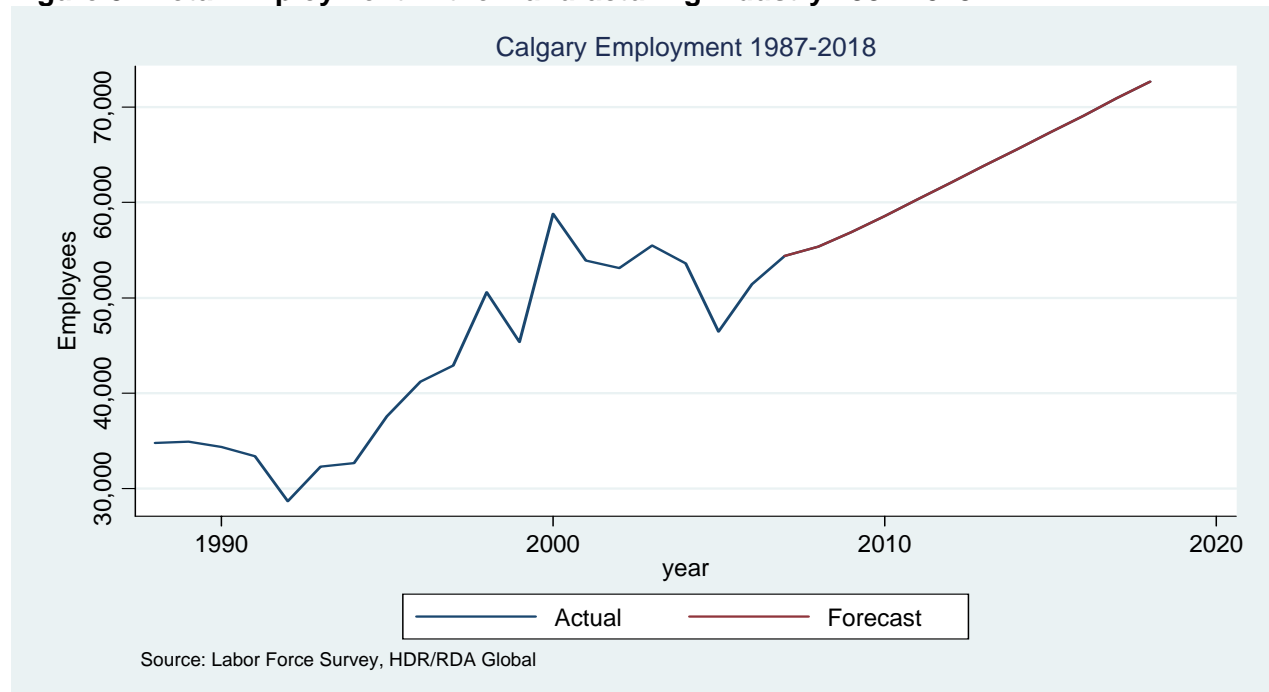


Table 1: Manufacturing Industry Compared with Other Industries

NAICS Industry	Total Employment				Compound Annual Growth			Jobs Added		
	1987	1997	2007	2017	1987-97	1997-07	2007-17	1987-97	1997-07	2007-17
11 Agriculture, forestry, fishing and hunting	10,357	8,230	5,262	5,951	-2.3%	-4.4%	1.2%	(2,127)	(2,968)	689
21 Mining and oil and gas extraction	34,043	32,970	55,092	61,154	-0.3%	5.3%	1.0%	(1,073)	22,122	6,062
22 Utilities	4,700	3,800	9,881	11,621	-2.1%	10.0%	1.6%	(900)	6,081	1,740
23 Construction	21,500	36,600	69,847	94,177	5.5%	6.7%	3.0%	15,100	33,247	24,331
31-33 Manufacturing	30,500	42,900	54,380	70,890	3.5%	2.4%	2.7%	12,400	11,480	16,510
41 Wholesale trade	21,375	22,041	33,228	44,815	0.3%	4.2%	3.0%	666	11,187	11,586
44-45 Retail trade	46,025	47,459	71,546	96,493	0.3%	4.2%	3.0%	1,434	24,087	24,948
48-49 Transportation and warehousing	21,300	30,400	37,452	50,295	3.6%	2.1%	3.0%	9,100	7,052	12,844
51 Information and cultural industries	11,317	16,489	19,961	25,271	3.8%	1.9%	2.4%	5,172	3,472	5,310
52 Finance and insurance	16,662	21,266	28,538	34,543	2.5%	3.0%	1.9%	4,603	7,272	6,006
53 Real estate and rental and leasing	9,038	11,534	15,479	18,736	2.5%	3.0%	1.9%	2,497	3,944	3,258
54 Professional, scientific and technical services	27,200	43,700	89,591	143,873	4.9%	7.4%	4.9%	16,500	45,891	54,282
55 Management of companies and enterprises	501	879	1,169	1,415	5.8%	2.9%	1.9%	378	289	246
56 Admin & support, waste mgmt & remediation svcs.	11,299	19,821	28,790	34,543	5.8%	3.8%	1.8%	8,522	8,969	5,753
61 Educational services	23,800	31,900	52,154	60,488	3.0%	5.0%	1.5%	8,100	20,254	8,334
62 Health care and social assistance	33,700	43,200	66,471	102,326	2.5%	4.4%	4.4%	9,500	23,271	35,855
71 Arts, entertainment and recreation	7,283	10,611	12,845	16,262	3.8%	1.9%	2.4%	3,328	2,234	3,417
72 Accommodation and food services	20,200	32,100	48,100	64,248	4.7%	4.1%	2.9%	11,900	16,000	16,148
81 Other services (except public administration)	17,800	21,900	30,408	36,484	2.1%	3.3%	1.8%	4,100	8,508	6,076
91 Public administration	21,200	22,900	19,176	19,712	0.8%	-1.8%	0.3%	1,700	(3,724)	536
Grand Total	389,800	500,700	749,368	993,298	2.5%	4.1%	2.9%	110,900	248,668	243,930

JOBS CREATED BY OCCUPATION – MANUFACTURING INDUSTRY

Figure 4: Total Jobs by Occupation 2007 and 2017 – Manufacturing Industry

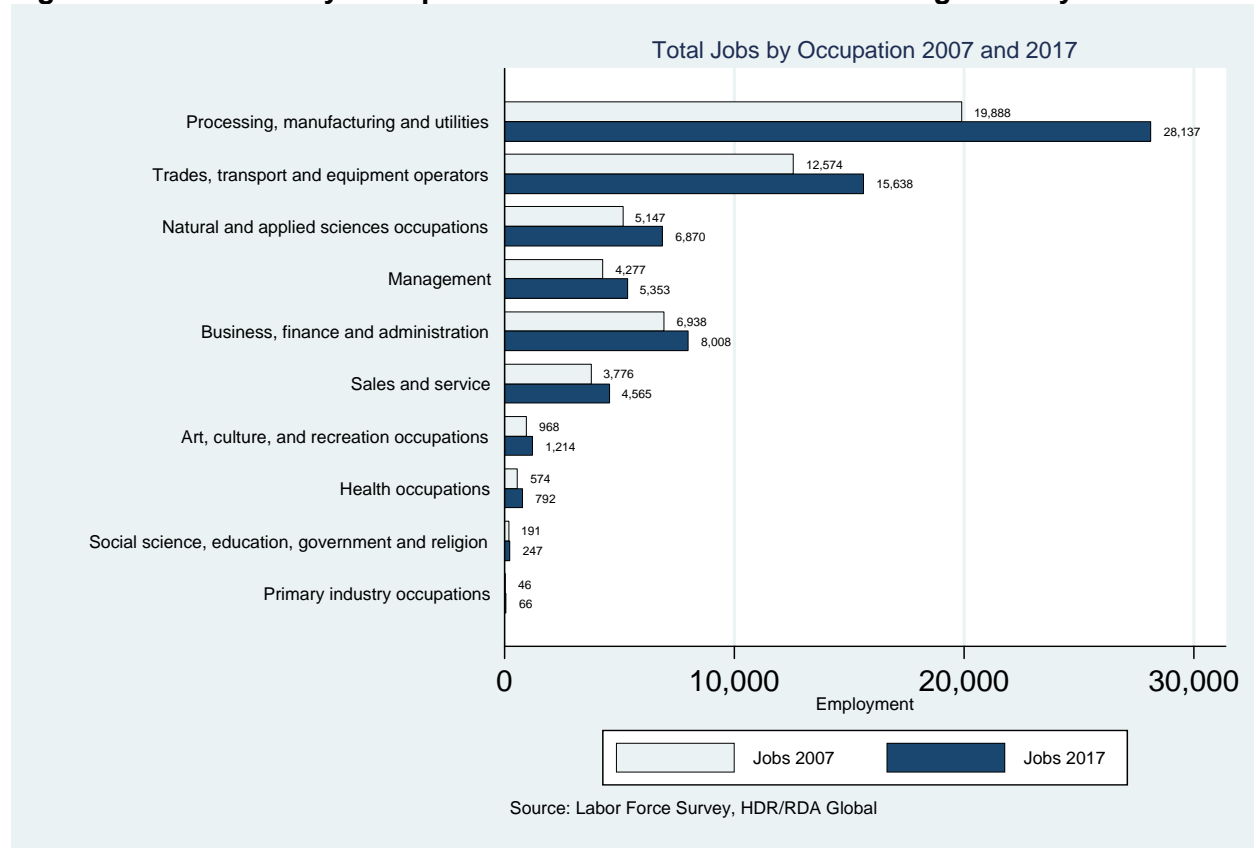
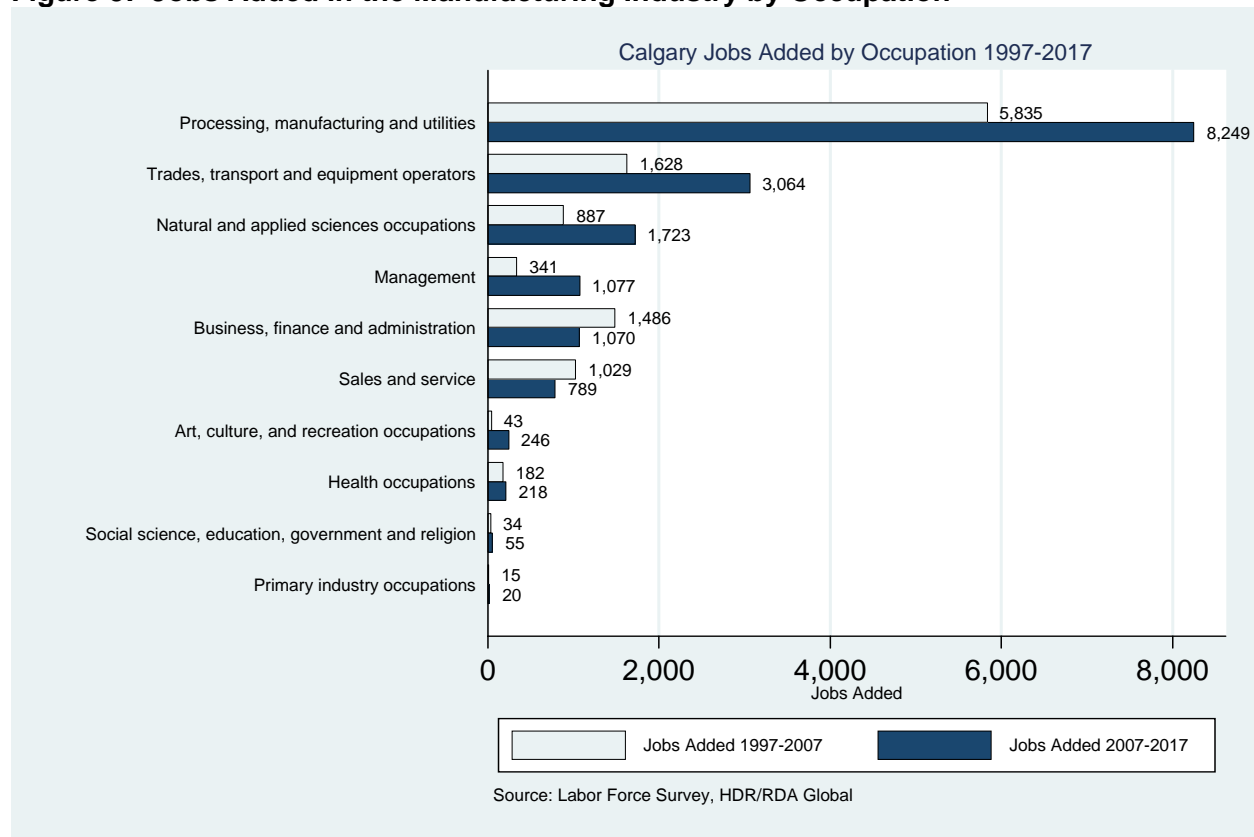


Table 2: 30-Year Occupational Growth for the Manufacturing Industry

Occupation (1 Digit NOC)	Total Employees				Compound Annual Growth		
	1987	1997	2007	2017	1987-97	1997-07	2007-17
A Management occupations	2,314	3,936	4,277	5,353	2.8%	2.4%	1.4%
B Business, finance and administration occupations	4,133	5,453	6,938	8,008	2.8%	2.4%	1.4%
C Natural and applied sciences and related occupations	2,864	4,260	5,147	6,870	4.1%	1.9%	2.9%
D Health occupations	253	392	574	792	4.5%	3.9%	3.3%
E Occupations in social science, education, government service and religion	97	157	191	247	5.0%	2.0%	2.6%
F Occupations in art, culture, recreation and sport	628	925	968	1,214	4.0%	0.5%	2.3%
G Sales and service occupations	1,911	2,747	3,776	4,565	3.7%	3.2%	1.9%
H Trades, transport and equipment operators and related occupations	7,768	10,946	12,574	15,638	3.5%	1.4%	2.2%
I Occupations unique to primary industry	12	31	46	66	9.4%	4.1%	3.7%
J Occupations unique to processing, manufacturing and utilities	10,520	14,053	19,888	28,137	2.9%	3.5%	3.5%
Grand Total	30,500	42,900	54,380	70,890	3.5%	2.4%	2.7%

There are nearly 54,400 employees in the Manufacturing industry today. Nearly 20,000 of these workers have occupations unique to processing, manufacturing and utilities, representing the largest share of occupations. Demand for these jobs will rise to over 28,000 over the forecast period. The next largest occupational category is trades occupations or work as transport and equipment operators, which currently employ about 12,600 workers and will employ about 15,600 workers in 2017. Business, finance, and administration occupations are the third largest category with over 6,900 employees today growing to 8,000 workers in 2017.

Figure 5: Jobs Added in the Manufacturing Industry by Occupation



About 40% of all jobs created in this industry will be occupations unique to processing, manufacturing and utilities, a total of about 8,250 new jobs by 2017. The industry will generate about 3,000 jobs for workers in trades, transport and equipment operators and related occupations and about 1,000 jobs for workers in business and finance occupations.

Table 3: Ten-Year Forecast of Jobs by Major Occupational Group – Manufacturing Industry

Occupation (1 Digit NOC)	Annual Employment											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
A Management occupations	4,023	4,277	4,370	4,468	4,593	4,717	4,833	4,940	5,048	5,151	5,252	5,353
B Business, finance and administration occupations	6,617	6,938	7,037	7,123	7,268	7,398	7,523	7,626	7,730	7,825	7,917	8,008
C Natural and applied sciences and related occupations	5,196	5,147	5,275	5,453	5,552	5,664	5,869	6,083	6,267	6,448	6,656	6,870
D Health occupations	576	574	577	584	602	621	645	671	699	728	759	792
E Occupations in social science, education, government service and religion	184	191	191	194	198	204	211	217	224	232	239	247
F Occupations in art, culture, recreation and sport	918	968	913	958	959	998	1,024	1,062	1,096	1,134	1,172	1,214
G Sales and service occupations	3,620	3,776	3,800	3,744	3,855	3,966	4,069	4,147	4,254	4,358	4,462	4,565
H Trades, transport and equipment operators and related occupations	11,963	12,574	12,591	12,826	13,132	13,470	13,822	14,188	14,562	14,923	15,281	15,638
I Occupations unique to primary industry	44	46	46	48	50	52	55	57	59	61	64	66
J Occupations unique to processing, manufacturing and utilities	18,259	19,888	20,566	21,466	22,362	23,210	24,020	24,824	25,648	26,472	27,301	28,137
Grand Total	51,400	54,380	55,367	56,863	58,572	60,301	62,071	63,815	65,587	67,332	69,103	70,890

Table 4: Top 50 Occupations Adding Jobs From 2007-2017⁵

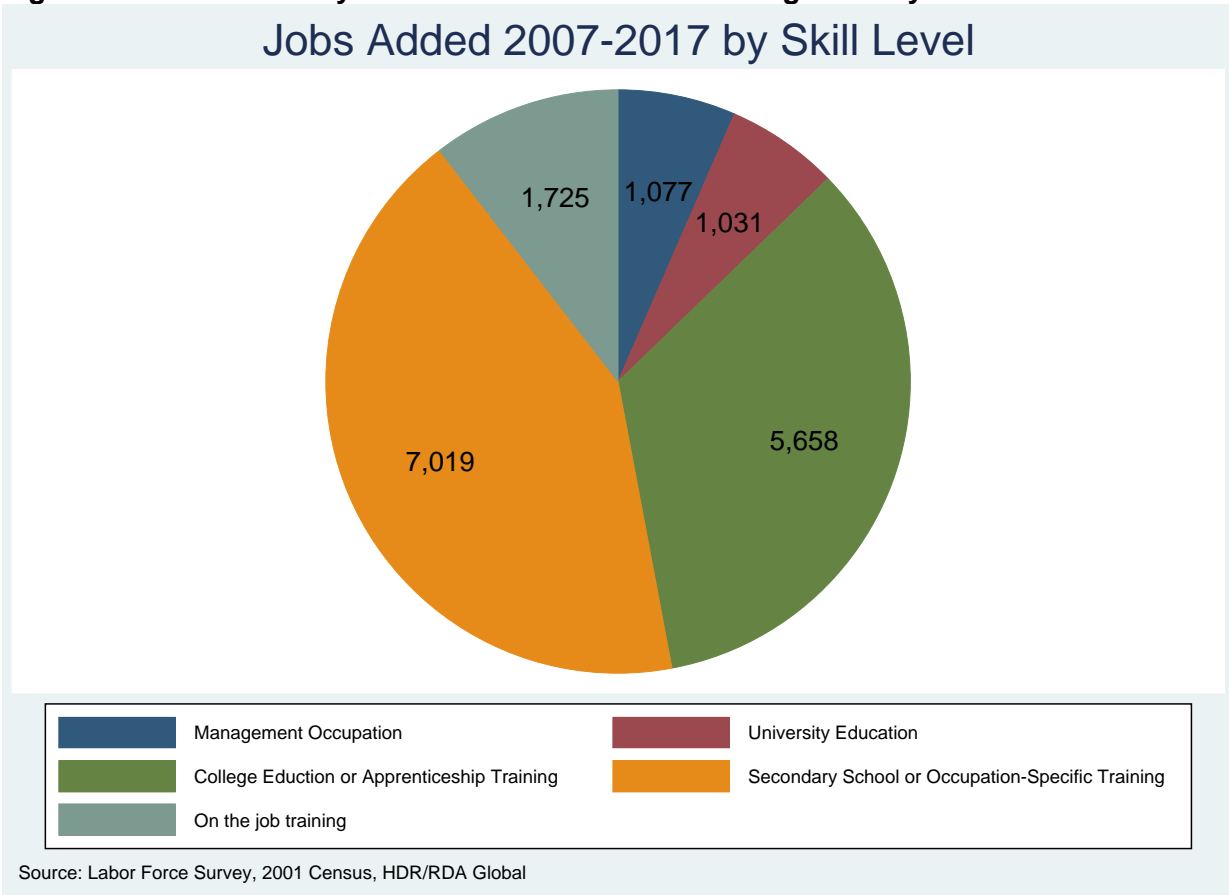
Rank	Occupation (4 Digit NOC)	Employees				Jobs Created 2007-2017
		1987	1997	2007	2017	
1	J213 Electronics assemblers, fabricators, inspectors and testers	954	1,200	1,818	2,568	750
2	J222 Furniture and fixture assemblers and inspectors	976	1,286	1,935	2,684	749
3	J317 Labourers in food, beverage and tobacco processing	925	1,365	1,467	2,069	602
4	H326 Welders and related machine operators	1,138	1,547	1,908	2,450	542
5	J172 Industrial butchers and meat cutters, poultry preparers and related workers	621	795	1,264	1,789	525
6	J319 Other labourers in processing, manufacturing and utilities	669	1,008	1,038	1,481	443
7	A391 Manufacturing managers	929	1,612	1,741	2,178	437
8	H311 Machinists and machining and tooling inspectors	572	779	983	1,238	254
9	H812 Material handlers	697	1,331	1,207	1,458	251
10	J171 Process control and machine operators, food and beverage processing	270	342	555	788	232
11	J161 Sewing machine operators	309	413	598	820	222
12	G121 Technical sales specialists, wholesale trade	453	676	1,001	1,221	220
13	J223 Other wood products assemblers and inspectors	259	334	522	737	214
14	J013 Supervisors, food, beverage and tobacco processing	242	308	496	700	204
15	J312 Labourers in metal fabrication	287	438	459	662	203
16	G111 Sales representatives, wholesale trade (non-technical)	460	689	1,024	1,224	200
17	H411 Construction millwrights and industrial mechanics (except textile)	419	559	696	889	193
18	A131 Sales, marketing and advertising managers	426	732	797	980	183
19	J214 Assemblers and inspectors, electrical appliance, apparatus and equipment manufacturing	217	278	427	609	182
20	J193 Woodworking machine operators	229	299	455	636	182
21	C141 Electrical and electronics engineering technologists and technicians	269	401	476	653	177
22	J194 Metalworking machine operators	203	266	417	593	176
23	J024 Supervisors, furniture and fixtures manufacturing	215	283	428	599	170
24	D223 Dental technologists, technicians and laboratory bench workers	190	294	432	596	164
25	J181 Printing machine operators	188	248	372	535	163
26	J132 Plastics processing machine operators	219	279	416	577	160
27	H521 Printing press operators	347	479	592	752	160
28	G211 Retail salespersons and sales clerks	441	601	766	921	154
29	H122 Cabinetmakers	486	725	739	886	146
30	J226 Painters and coaters, industrial	155	204	321	462	141
31	J123 Glass forming and finishing machine operators and glass cutters	151	192	316	451	136
32	J011 Supervisors, mineral and metal processing	152	195	314	449	135
33	J311 Labourers in mineral and metal processing	201	300	319	453	133
34	C033 Electrical and electronics engineers	257	384	441	571	130
35	B571 Shippers and receivers	510	668	904	1,031	127
36	J183 Binding and finishing machine operators	134	179	274	400	126
37	B531 Accounting and related clerks	387	500	677	793	116
38	J224 Furniture finishers and refinishers	137	181	269	380	112
39	J228 Other assemblers and inspectors	148	188	280	391	111
40	J026 Supervisors, other mechanical and metal products manufacturing	119	156	246	357	110
41	C047 Computer engineers (except software engineers)	214	318	380	488	109
42	B511 General office clerks	335	432	578	686	108
43	J215 Assemblers, fabricators and inspectors, industrial electrical motors and transformers	136	175	260	364	104
44	J145 Paper converting machine operators	122	156	242	341	99
45	C111 Chemical technologists and technicians	137	197	246	344	98
46	J022 Supervisors, electronics manufacturing	124	154	237	335	98
47	C032 Mechanical engineers	150	227	274	368	94
48	H321 Sheet metal workers	243	333	403	496	94
49	C143 Industrial instrument technicians and mechanics	117	176	213	306	93
50	J121 Machine operators, mineral and metal processing	100	131	206	298	93
	Others	12,865	17,883	21,952	27,833	5,882
	Grand Total	30,500	42,900	54,380	70,890	16,510

⁵ Note that these job creations in Figure 6 capture only jobs created in the Manufacturing industry and do not represent total job creations for all of Calgary. Jobs with these occupations will also be created in other industries.

EMPLOYMENT GROWTH BY SKILL LEVEL – MANUFACTURING INDUSTRY

From a skill level perspective, there will be about 1,100 new management occupations, 5,600 jobs requiring some college education or apprenticeship training, 7,000 jobs which require secondary school or occupation-specific training, 1,000 that require university training and about 1,700 that require only on the job training

Figure 6: Jobs Added by Skill Level in the Manufacturing Industry



APPENDIX 1: INDUSTRY DEFINITION – MANUFACTURING

This industry comprises establishments primarily engaged in the physical or chemical transformation of materials or substances into new products. These products may be finished, in the sense that they are ready to be used or consumed, or semi-finished, in the sense of becoming a raw material for an establishment to use in further manufacturing. Related activities, such as the assembly of the component parts of manufactured goods; the blending of materials; and the finishing of manufactured products by dyeing, heat-treating, plating and similar operations are also treated as manufacturing activities. Manufacturing establishments are known by a variety of trade designations, such as plants, factories or mills.

Manufacturing establishments may own the materials which they transform or they may transform materials owned by other establishments. Manufacturing may take place in factories or in workers' homes, using either machinery or hand tools.

Certain activities involving the transformation of goods are classified in other sectors. Some examples are post-harvest activities of agricultural establishments, such as crop drying; logging; the beneficiating of mineral ores; the production of structures by construction establishments; and various activities conducted by retailers, such as meat cutting and the assembly of products such as bicycles and computers.