

Calgary Economic Development

KEY SECTOR REPORT: MANUFACTURING

January 2008

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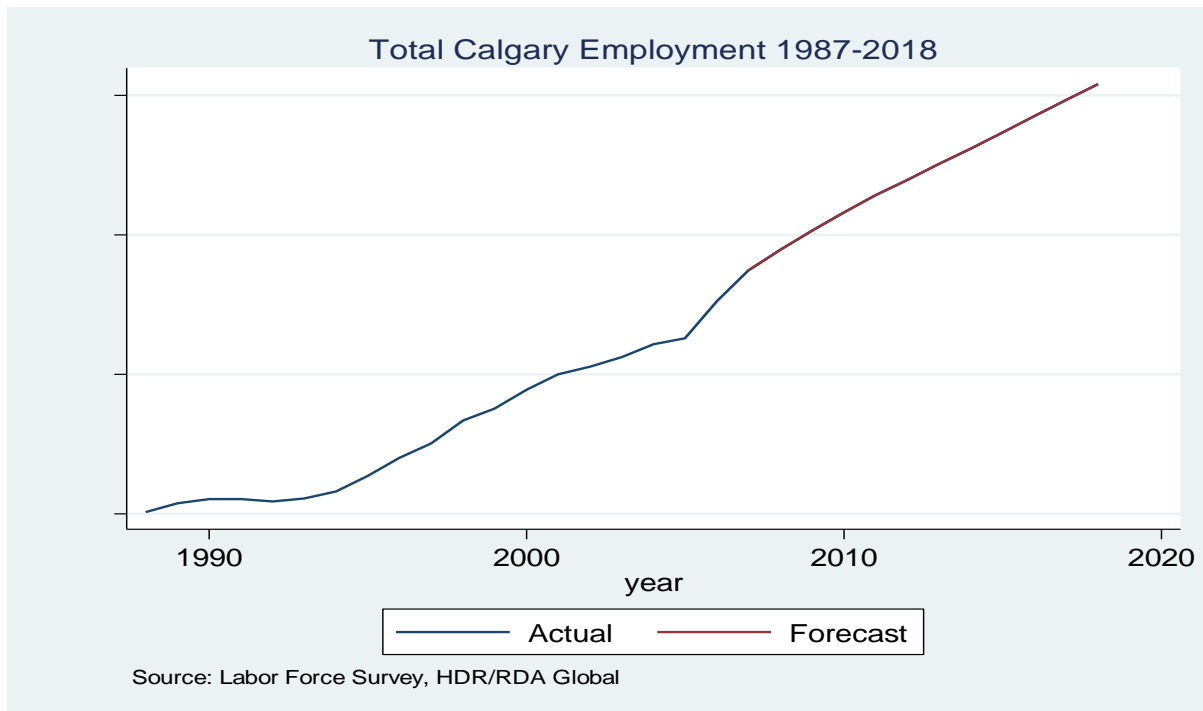
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Figure 1: Total Calgary Employment Forecast (All Industries)



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

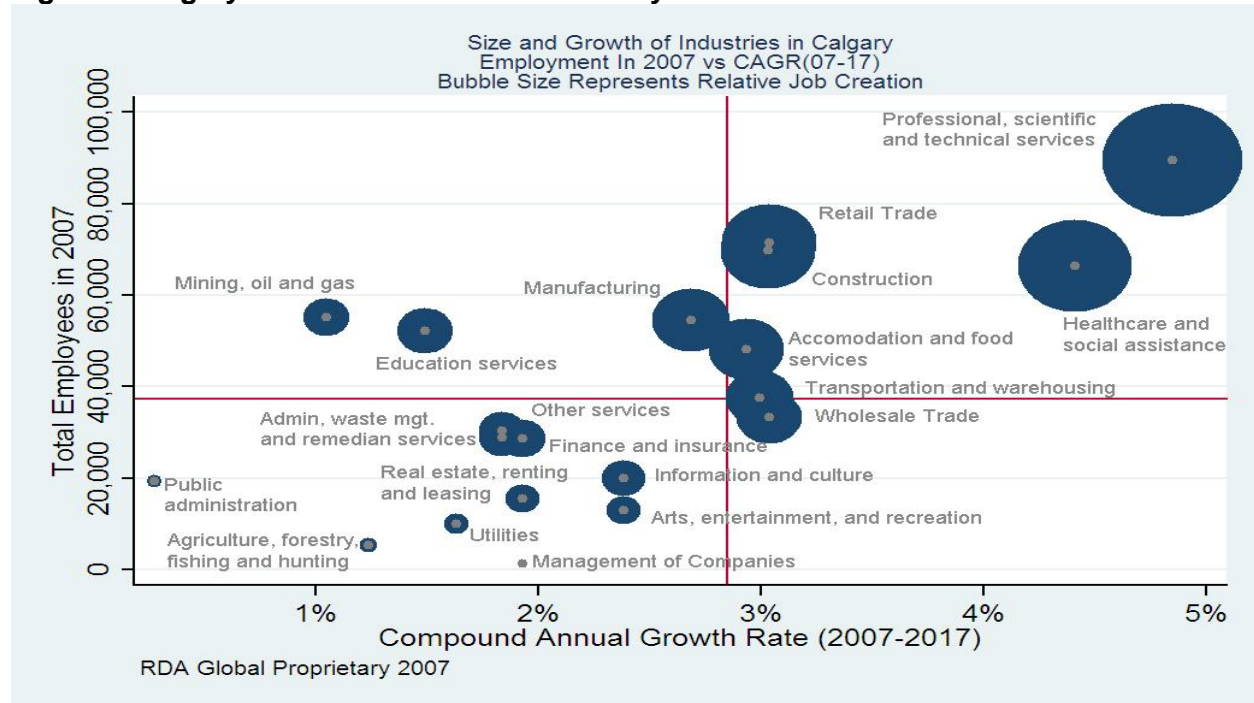


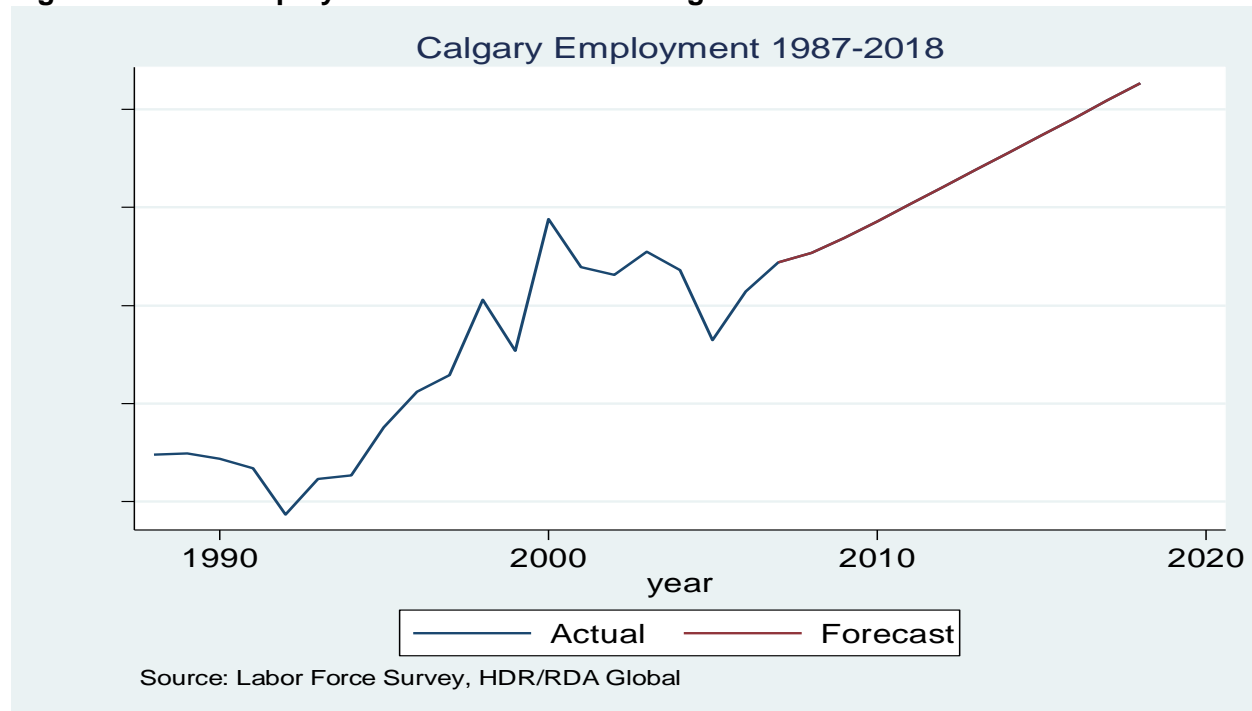
Figure 2 highlights the differences in job creation across industries in Calgary, with the larger circles representing industries with more job creations. Significant gains in employment will be somewhat distributed among economic sectors. However, there will be particularly strong expansion in the professional 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 KEY SECTOR

The Manufacturing Sector is expected to continue to expand at a compound annual growth rate of 2.7% over the next ten years. The sector will grow slightly slower than the overall employment growth in Calgary of 2.9% over the same forecast period. Growth in the key sector will result in nearly 14,500 new jobs added to the sector over the forecast period.

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



The Manufacturing Sector ranks sixth for total employment among the Calgary Economic Development Key Sectors. Historically, growth in this sector has underperformed compared to that of the region and will continue to grow at a rate that is slightly less than the regional growth rate. In terms of jobs created, the sector ranked eighth out of nine over the 1997-2007 period, creating nearly 10,100 jobs. The sector will move up to become the sixth largest contributor to job creation in the 2007-2017 forecast period, creating nearly 14,500 new jobs.

Table 1: Manufacturing Sector Compared with Other CED Key Sectors

Key Sector	Total Employment				Compound Annual Growth			Jobs Added		
	1987	1997	2007	2017	1987-97	1997-07	2007-17	1987-97	1997-07	2007-17
Creative Industries	19,048	29,408	51,459	78,309	4.4%	5.8%	4.3%	10,360	22,050	26,850
Energy	37,811	36,371	63,148	70,909	-0.4%	5.7%	1.2%	(1,440)	26,777	7,762
Film	1,949	2,837	3,438	4,354	3.8%	1.9%	2.4%	889	600	917
Financial Services	26,201	33,679	45,185	54,695	2.5%	3.0%	1.9%	7,478	11,506	9,509
Health & Wellness	47,734	68,830	116,345	177,895	3.7%	5.4%	4.3%	21,096	47,515	61,550
ICT	17,724	26,373	40,273	57,709	4.1%	4.3%	3.7%	8,649	13,900	17,435
Manufacturing	30,500	42,900	54,380	70,890	3.5%	2.4%	2.7%	12,400	11,480	16,510
Professional Services	24,200	39,494	76,610	118,726	5.0%	6.9%	4.5%	15,294	37,116	42,116
Transportation & Logistics	39,762	49,062	65,958	88,751	2.1%	3.0%	3.0%	9,300	16,896	22,793
Other (Not a Key Sector)	191,766	243,914	359,958	465,549	2.4%	4.0%	2.6%	52,148	116,044	105,591
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 KEY SECTOR

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

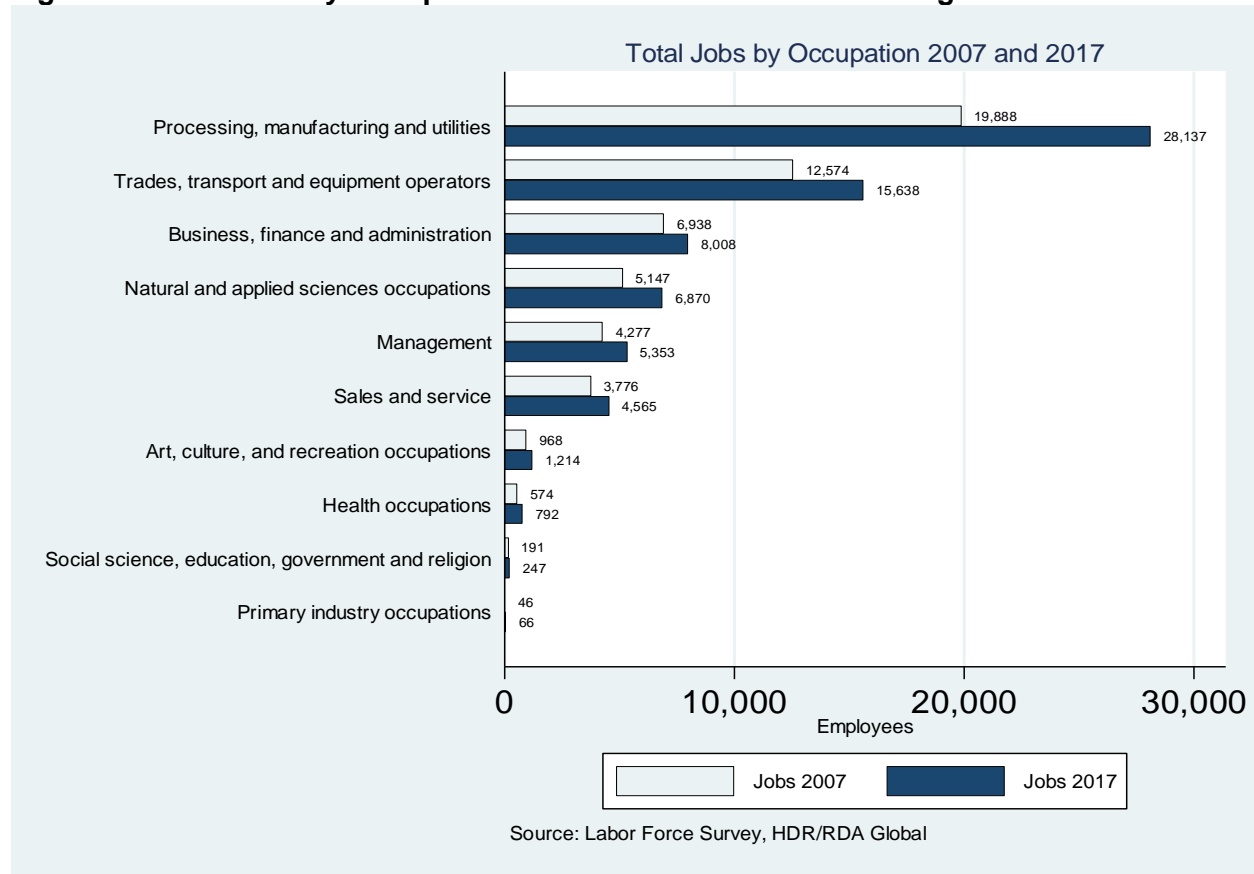
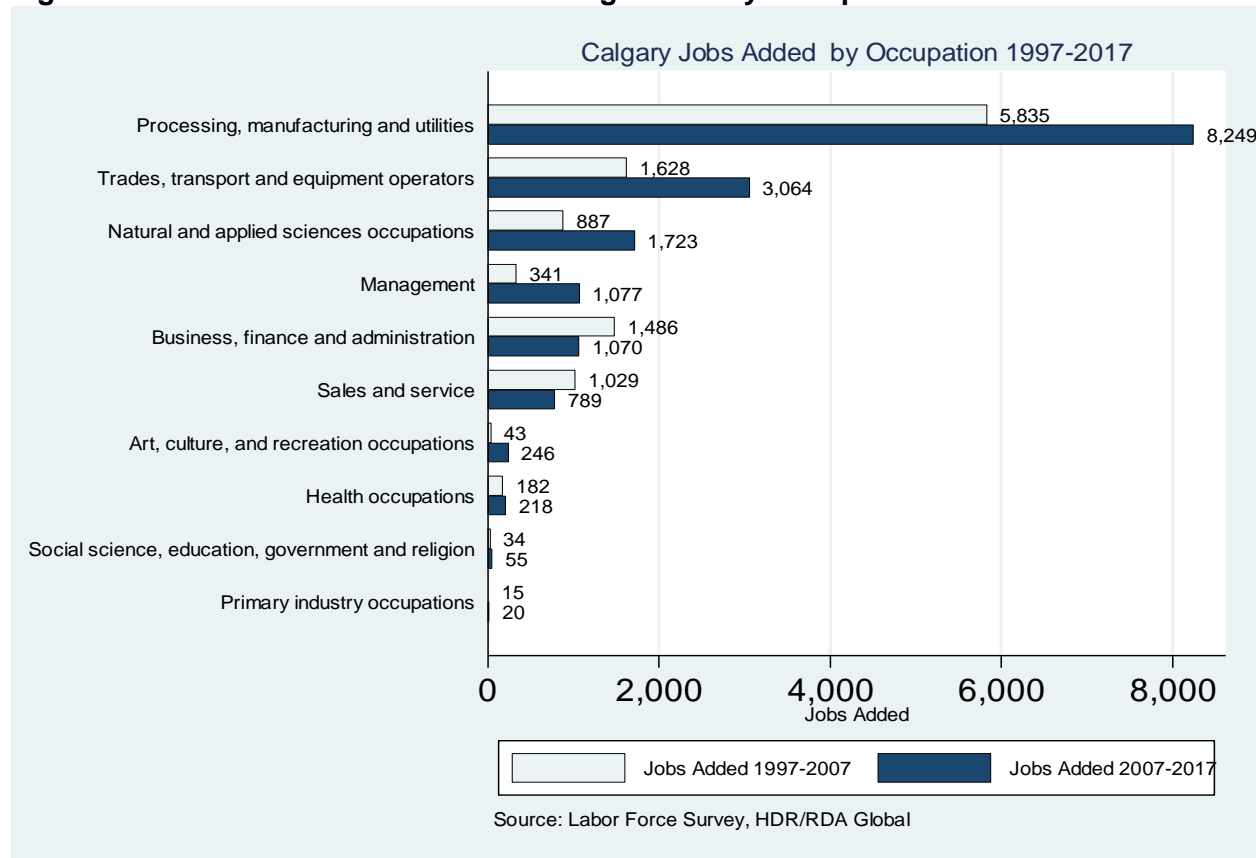


Table 2: 30-Year Occupational Growth for the Manufacturing Sector

Key Sector	Total Employment				Compound Annual Growth		
	1987	1997	2007	2017	1987-97	1997-07	2007-17
A Management occupations	2,314	3,936	4,277	5,353	5.5%	0.8%	2.3%
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 47,700 employees in the Manufacturing Sector today. About 18,000 of these workers have occupations unique to processing, manufacturing and utilities, representing the largest share of occupations. Demand for these jobs will rise to nearly 25,500 workers over the forecast period. The next largest occupational category is trades, transport and equipment operators and related occupations, which currently employs about 11,200 workers and will employ about 13,900 workers in 2017. Business, finance and administration occupations is the third largest category with nearly 5,900 employees today growing to about 6,800 workers in 2017.

Figure 5: Jobs Added in the Manufacturing Sector by Occupation



About 40% of all jobs created in this sector will be occupations unique to processing, manufacturing and utilities, a total of about 7,400 new jobs by 2017. The sector will generate about 2,700 jobs for workers in trades, transport and equipment operators and related occupations and about 1,500 jobs for workers in natural and applied sciences occupations.

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

National Occupational Classification	Total 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

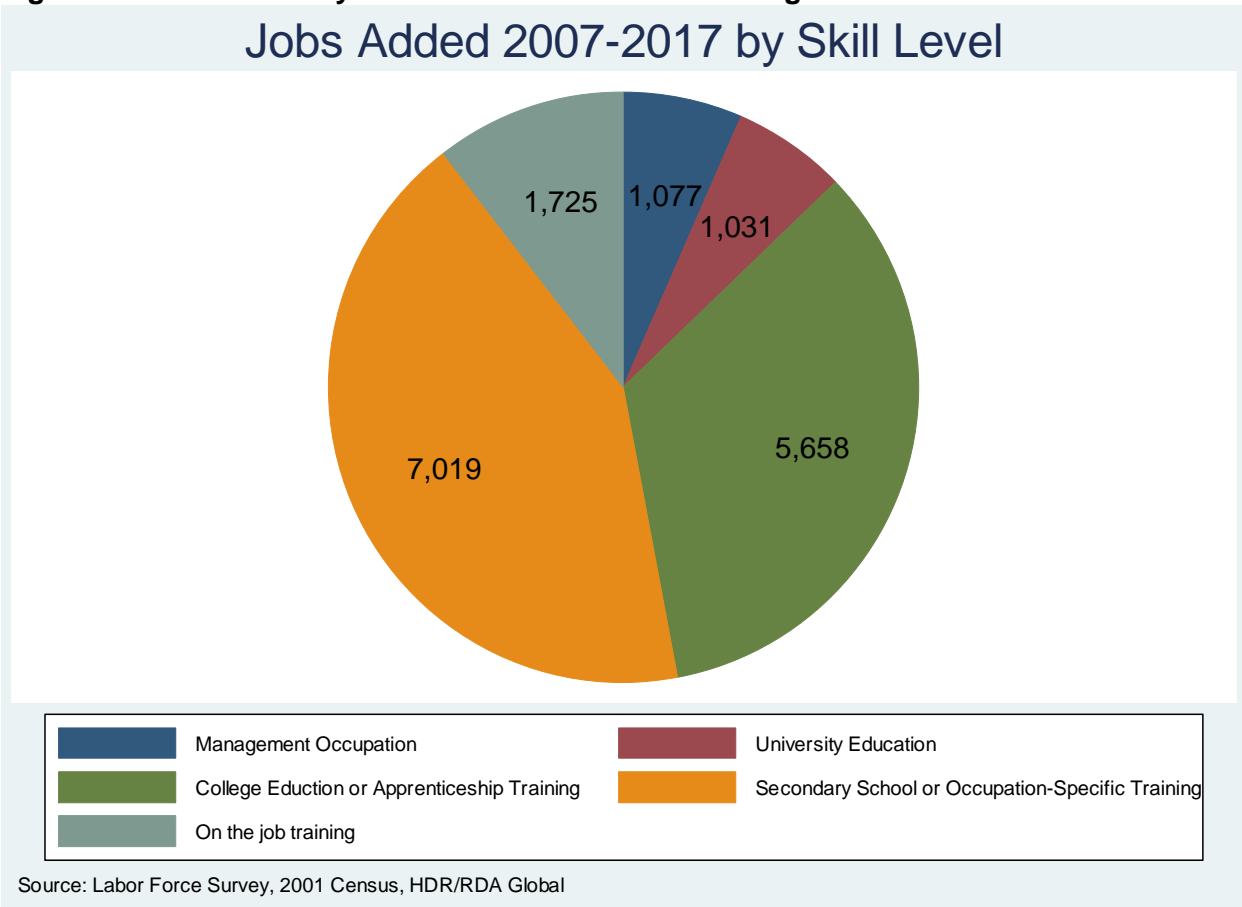
Rank	Occupation (4 Digit NOC)	Employees				Jobs Created 2007-2017
		1987	1997	2007	2017	
1	J213 Electronics assemblers, fabricators, inspectors and testers	954	1,200	1,818	2,568	750
2	J222 Furniture and fixture assemblers and inspectors	966	1,274	1,917	2,659	742
3	J317 Labourers in food, beverage and tobacco processing	925	1,365	1,467	2,069	602
4	H326 Welders and related machine operators	1,129	1,536	1,895	2,433	538
5	J172 Industrial butchers and meat cutters, poultry preparers and related workers	621	795	1,264	1,789	525
6	A391 Manufacturing managers	809	1,405	1,519	1,900	381
7	J319 Other labourers in processing, manufacturing and utilities	528	795	818	1,162	344
8	H311 Machinists and machining and tooling inspectors	569	775	978	1,231	253
9	J171 Process control and machine operators, food and beverage processing	270	342	555	788	232
10	H812 Material handlers	619	1,181	1,072	1,294	222
11	J161 Sewing machine operators	305	409	591	811	219
12	J223 Other wood products assemblers and inspectors	259	334	522	737	214
13	G121 Technical sales specialists, wholesale trade	418	628	928	1,133	205
14	J013 Supervisors, food, beverage and tobacco processing	242	308	496	700	204
15	J312 Labourers in metal fabrication	284	435	455	657	201
16	J193 Woodworking machine operators	228	298	453	634	181
17	C141 Electrical and electronics engineering technologists and technicians	268	400	474	650	177
18	J194 Metalworking machine operators	203	266	417	593	176
19	J214 Assemblers and inspectors, electrical appliance, apparatus and equipment manufacturing	204	263	403	576	173
20	J024 Supervisors, furniture and fixtures manufacturing	215	283	428	599	170
21	H411 Construction millwrights and industrial mechanics (except textile)	348	465	581	744	163
22	J132 Plastics processing machine operators	217	276	413	571	159
23	G111 Sales representatives, wholesale trade (non-technical)	371	554	827	985	159
24	A131 Sales, marketing and advertising managers	352	604	660	811	151
25	H122 Cabinetmakers	486	725	739	886	146
26	J226 Painters and coaters, industrial	155	204	321	462	141
27	J123 Glass forming and finishing machine operators and glass cutters	151	192	316	451	136
28	J011 Supervisors, mineral and metal processing	152	195	314	449	135
29	J311 Labourers in mineral and metal processing	201	300	319	453	133
30	C033 Electrical and electronics engineers	253	378	434	562	128
31	B571 Shippers and receivers	473	618	838	954	116
32	G211 Retail salespersons and sales clerks	341	461	591	707	116
33	J224 Furniture finishers and refinishers	137	181	269	380	112
34	J026 Supervisors, other mechanical and metal products manufacturing	119	156	246	357	110
35	C047 Computer engineers (except software engineers)	214	318	380	488	109
36	D223 Dental technologists, technicians and laboratory bench workers	125	194	285	393	108
37	B531 Accounting and related clerks	349	451	611	716	105
38	J215 Assemblers, fabricators and inspectors, industrial electrical motors and transformers	136	175	260	364	104
39	J022 Supervisors, electronics manufacturing	124	154	237	335	98
40	H321 Sheet metal workers	243	333	403	496	94
41	J121 Machine operators, mineral and metal processing	100	131	206	298	93
42	B511 General office clerks	277	358	480	570	90
43	C143 Industrial instrument technicians and mechanics	107	162	195	282	86
44	H011 Supervisors, machinists and related occupations	195	226	314	400	86
45	J216 Mechanical assemblers and inspectors	87	114	181	266	85
46	J027 Supervisors, other products manufacturing and assembly	96	124	196	280	85
47	C032 Mechanical engineers	130	200	241	325	84
48	H014 Contractors and supervisors, metal forming, shaping and erecting trades	210	243	326	408	83
49	G942 Bakers	253	354	440	523	83
50	H121 Carpenters	290	427	432	514	82
	Others	10,040	14,056	17,168	21,758	4,590
	Grand Total	26,750	37,625	47,693	62,173	14,480

⁵ Note that these job creations in Table 4 capture only jobs created in the Manufacturing Sector 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 SECTOR

From a skill level perspective, there will be about 900 new management occupations, nearly 5,000 jobs requiring some college education or apprenticeship training, about 6,200 jobs which require secondary school or occupation-specific training, 800 that require university training and about 1,600 that require only on-the-job training.

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



APPENDIX 1: SECTOR DEFINITION – MANUFACTURING

The Manufacturing Sector is comprised of selected industry segments from the NAICS 33 Manufacturing. All portions of the Manufacturing Industry are included. A definition of this industry is listed below.

Manufacturing (NAICS 31-33)

This sector 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.