

## Calgary Economic Development

### SKILL LEVEL REPORT: JOBS REQUIRING COLLEGE EDUCATION OR APPRENTICESHIP TRAINING

January 2008

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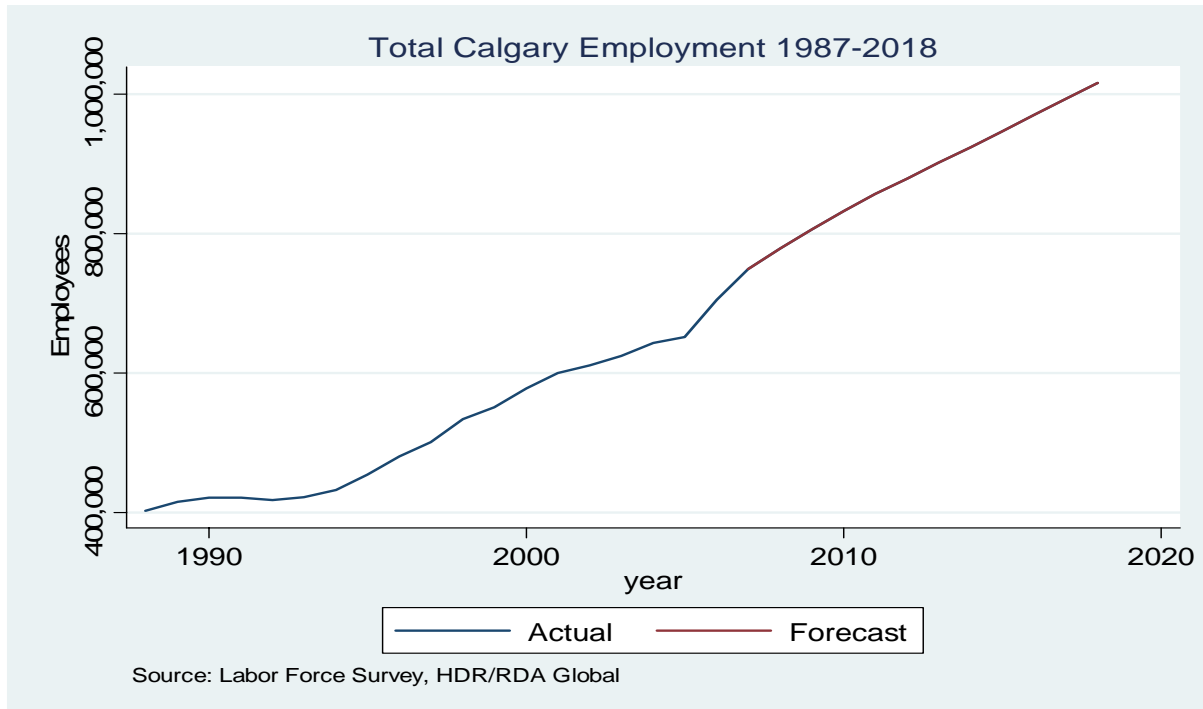


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## CALGARY LABOR MARKET

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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%<sup>1</sup> 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%<sup>2</sup> in 2006. Investment levels in major construction projects have risen significantly compared to historical levels. Housing starts have risen from 13,700<sup>3</sup> 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

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<sup>1</sup> Source: Labor Force Survey

<sup>2</sup> Source: US Energy Information Administration

<sup>3</sup> 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 analysts<sup>4</sup>. 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**

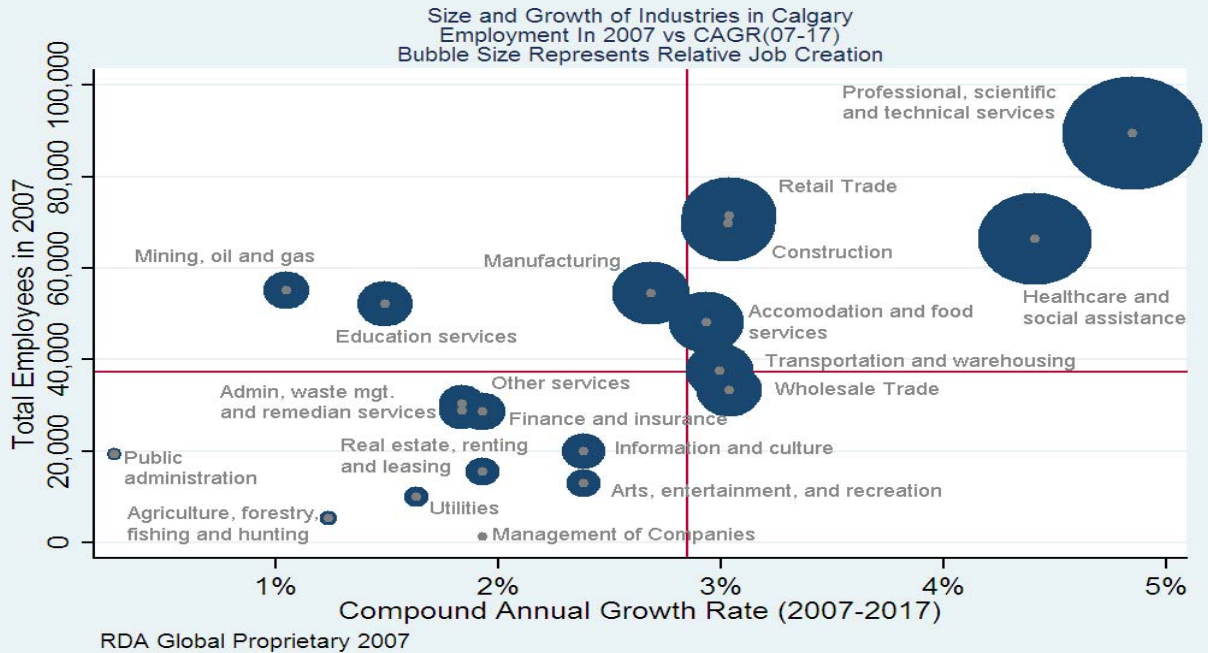


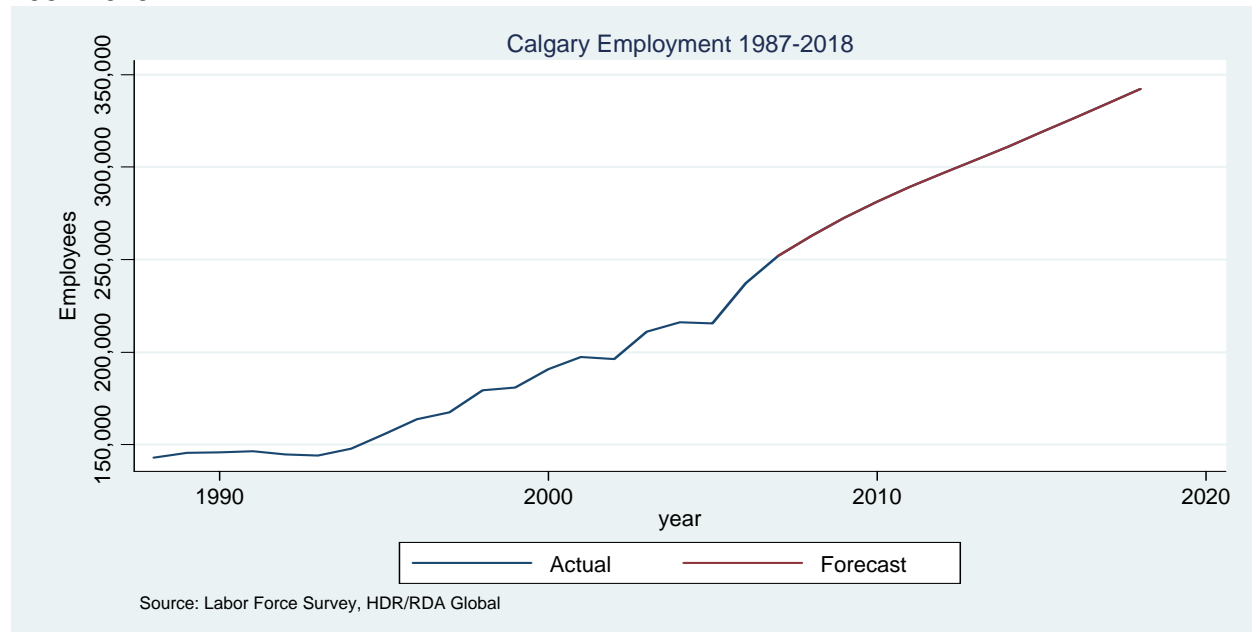
Figure 2 highlights the differences in job creation across industries in Calgary, with the larger circles representing industries with more job creations. Significant gains in employment will be somewhat distributed among economic sectors. However, there will be particularly strong expansion in the professional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

<sup>4</sup> 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%.

## JOBS REQUIRING COLLEGE EDUCATION OR APPRENTICESHIP TRAINING

One third of workers in Calgary have job occupations which require a college education or apprenticeship training. Jobs requiring a college education or apprenticeship training are expected to continue to expand at a compound annual growth rate of 2.9% over the next ten years. This will grow in step with the overall employment growth in Calgary of 2.9% over the same forecast period. Growth in demand for jobs requiring a college education or apprenticeship training will result in the creation of an additional 82,200 jobs in Calgary over the forecast period.

**Figure 3: Total Jobs in Calgary Requiring College Education or Apprenticeship Training 1987-2018**



Jobs requiring a college education or apprenticeship training are the largest segment out of five skill level categories representing nearly 252,000 workers in 2007. Historically, growth in demand for these jobs has roughly matched that of the region. In terms of jobs created, the segment ranked first over the 1997-2007 period, expanding by about 84,700 jobs. The sector will continue to be the largest contributor to job creation in the 2007-2017 forecast period, and will represent 334,200 workers in 2017.

**Table 1: Comparison of Calgary Jobs in Five Skill Levels**

Skill Level	Total Employment				Compound Annual Growth			Jobs Added		
	1987	1997	2007	2017	1987-97	1997-07	2007-17	1987-97	1997-07	2007-17
College Education or Apprenticeship Training	135,696	167,297	251,999	334,246	2.1%	4.2%	2.9%	31,601	84,702	82,247
Secondary School or Occupation-Specific Training	111,354	132,719	197,176	254,599	1.8%	4.0%	2.6%	21,366	64,457	57,422
University Education	74,946	102,054	164,811	226,964	3.1%	4.9%	3.3%	27,107	62,757	62,153
Management Occupation	36,858	55,680	74,819	98,676	4.2%	3.0%	2.8%	18,822	19,138	23,857
On the job training	30,946	42,950	60,563	78,814	3.3%	3.5%	2.7%	12,004	17,613	18,251
<b>Grand Total</b>	<b>389,800</b>	<b>500,700</b>	<b>749,368</b>	<b>993,298</b>	<b>2.5%</b>	<b>4.1%</b>	<b>2.9%</b>	<b>110,90</b>	<b>248,668</b>	<b>243,93</b>

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## JOBS CREATED BY OCCUPATION – JOBS REQUIRING COLLEGE EDUCATION OR APPRENTICESHIP TRAINING

Figure 4 illustrates the jobs that require a college education or apprenticeship training in each occupational group. In 2007, about 74,700 of these workers in this skill level work in trades and transport occupations or as equipment operators. Demand for these workers will grow to about 97,100 workers by the end of the forecast period. About 48,200 of these workers have jobs in sales and service. Demand for these workers will grow to 62,200 by 2017. There are about 46,700 of these workers in business, finance and administration occupations and this figure will grow to 56,200 workers by 2017.

**Figure 4: Total Jobs by Occupation between 2007 and 2017 that Require College Education or Apprenticeship Training**

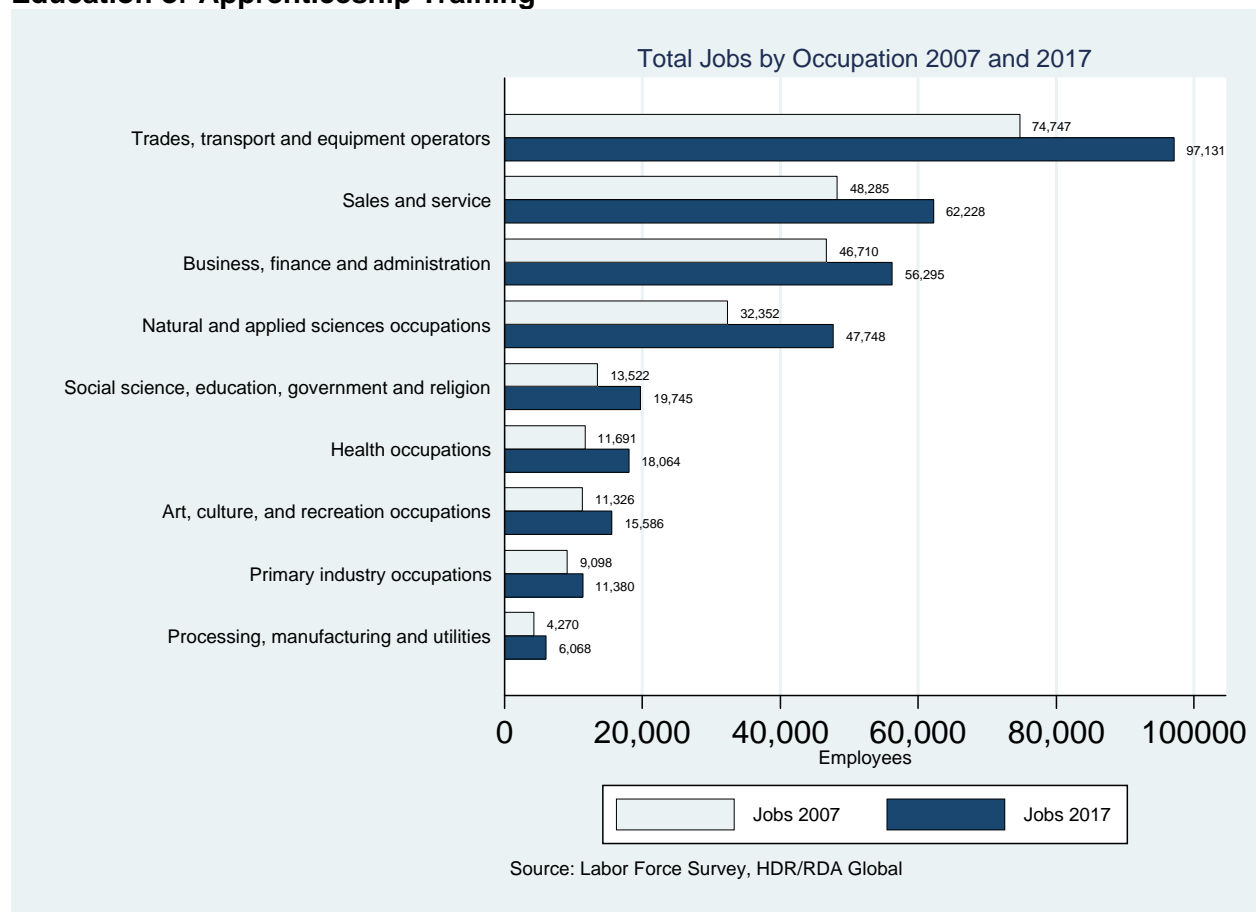
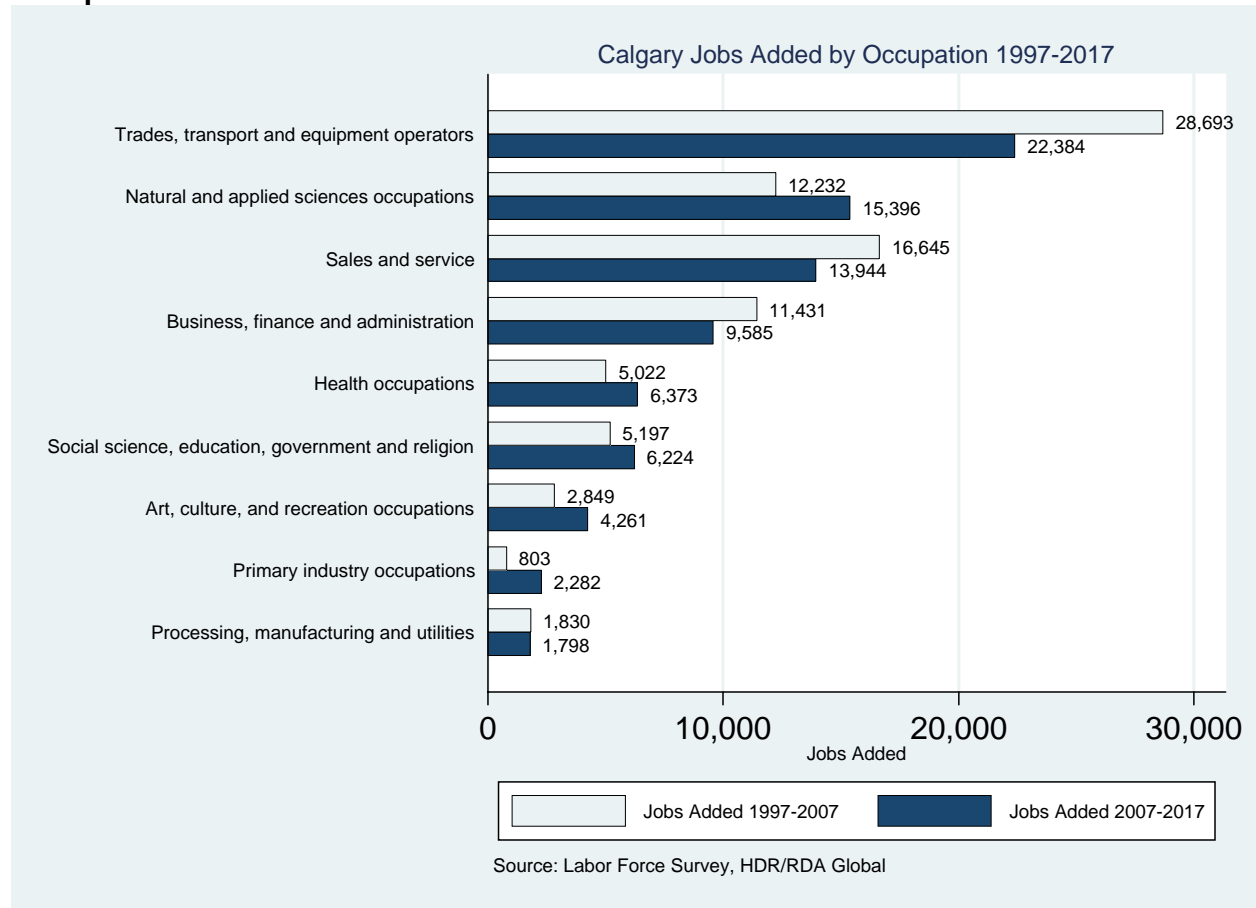


Figure 5 illustrates the jobs requiring college education or apprenticeship training that were added in the 1997-2007 time period compared with the job creation expected for the 2007-2017 forecast period. The figure pertains only to the jobs created with a skill level that requires college education or apprenticeship training. For this skill level, there will be about 22,400 new trades, transport and equipment operator jobs created, about 15,400 natural and applied sciences jobs created and about 13,900 sales and service jobs created in the 2007-2017 time period.

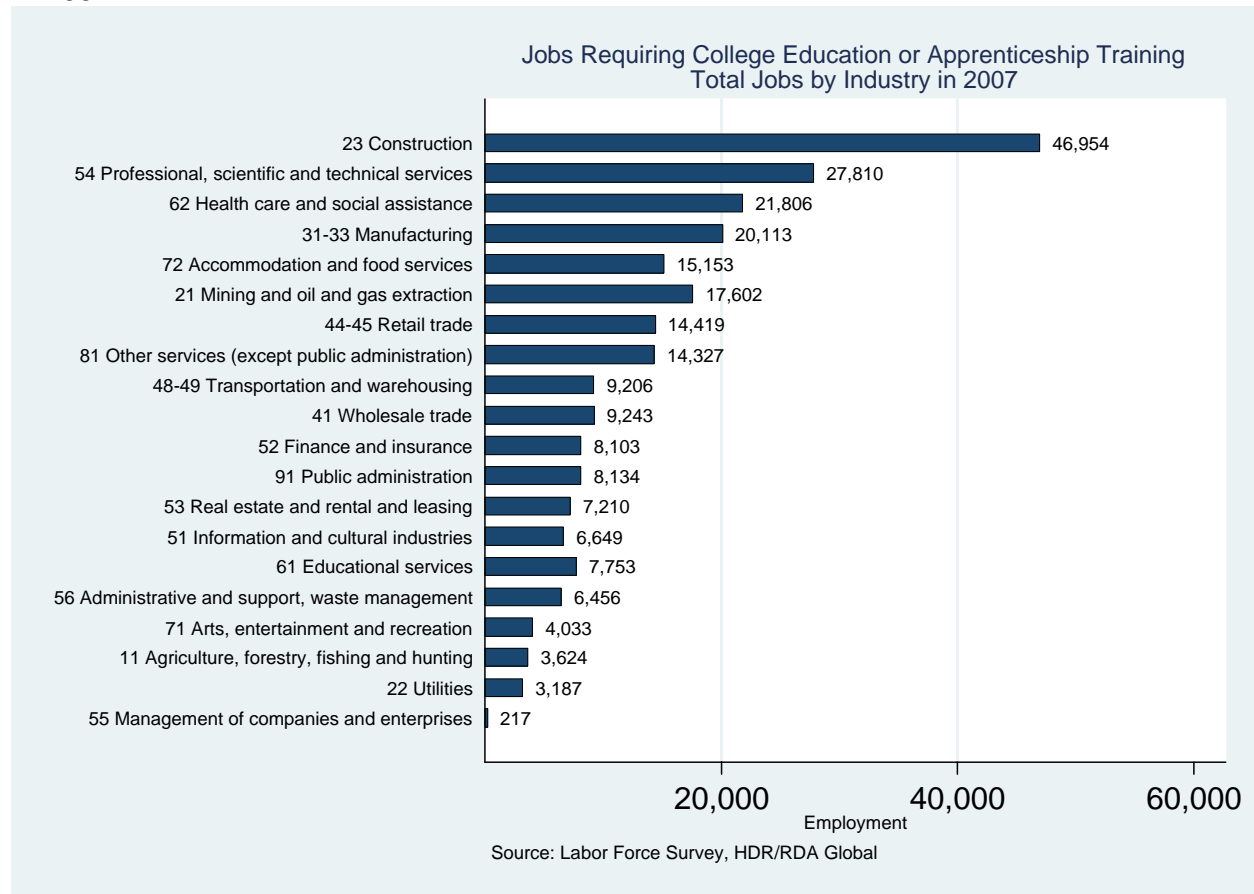
**Figure 5: Jobs Created that Require College Education or Apprenticeship Training by Occupation**



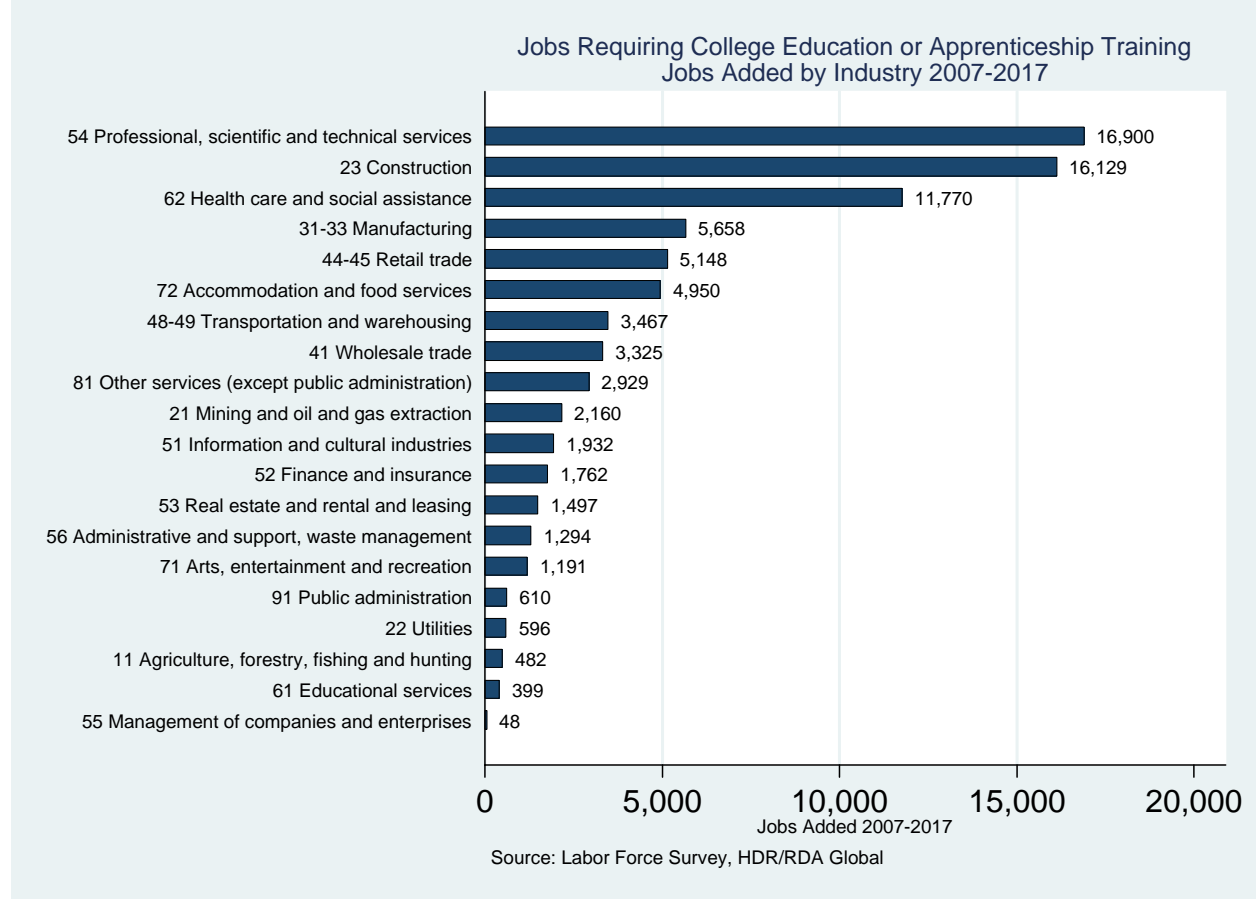
## JOBS CREATED IN EACH INDUSTRY REQUIRING COLLEGE EDUCATION OR APPRENTICESHIP TRAINING

In 2007, the construction industry employed the largest percentage of workers who require college education or apprenticeship training, employing nearly 47,000 workers. The professional, scientific and technical services industry is the second largest employer of workers requiring college education or apprenticeship training, with about 27,800 workers. The health care and social assistance industry ranks third with 21,800 workers and manufacturing ranks fourth with 20,100 workers.

**Figure 6: Jobs Requiring College Education or Apprenticeship Training in Each Industry in 2007**



**Figure 7: New Job Creation Requiring College Education or Apprenticeship Training in each industry—2007-2017**



The professional, scientific and technical services industry will add about 16,900 new jobs over the forecast period that require college education or apprenticeship training. The construction industry will remain the largest employer of workers in this skill level, but will create the second most new jobs, adding about 16,100 new workers. The health care industry will add about 11,800 new workers in this skill level over the forecast period.

**Table 2: Ten-Year Forecast of Jobs by Skill Level – Jobs Requiring College Education or Apprenticeship Training**

Occupation (1 Digit NOC)	Annual Employment											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
College Education or Apprenticeship Training	237,075	251,999	262,777	272,510	281,163	289,145	296,520	303,831	311,210	318,761	326,451	334,246
Secondary School or Occupation-Specific Training	186,560	197,176	204,108	209,328	215,853	221,902	227,505	232,746	238,275	243,773	249,207	254,599
University Education	155,684	164,811	171,384	178,975	185,143	190,768	196,569	202,625	208,562	214,567	220,735	226,964
Management Occupation	69,138	74,819	78,368	81,827	84,515	86,879	88,947	90,999	92,944	94,882	96,780	98,676
On the job training	56,443	60,563	62,512	63,730	65,801	67,753	69,581	71,273	73,159	75,051	76,938	78,814
<b>Grand Total</b>	<b>704,900</b>	<b>749,368</b>	<b>779,149</b>	<b>806,370</b>	<b>832,474</b>	<b>856,447</b>	<b>879,122</b>	<b>901,474</b>	<b>924,150</b>	<b>947,035</b>	<b>970,110</b>	<b>993,298</b>

**Table 3: Top 50 Occupations Adding Jobs From 2007-2017<sup>5</sup>**

Rank	Occupation (4 Digit NOC)	Employees				Jobs Created
		1987	1997	2007	2017	2007-2017
1	G412 Cooks	3,879	5,462	8,774	11,624	2,851
2	E217 Early childhood educators and assistants	2,370	3,322	5,359	8,026	2,667
3	B311 Administrative officers	7,918	8,133	10,809	13,059	2,250
4	H121 Carpenters	2,614	4,281	7,087	9,292	2,205
5	C181 Computer and network operators and web technicians	2,024	2,746	4,405	6,483	2,078
6	G121 Technical sales specialists, wholesale trade	3,130	3,767	6,874	8,813	1,940
7	C112 Geological and mineral technologists and technicians	1,977	2,180	3,791	5,502	1,711
8	B211 Secretaries (except legal and medical)	6,574	6,685	8,711	10,394	1,683
9	G011 Retail trade supervisors	3,342	3,345	5,191	6,870	1,679
10	C153 Drafting technologists and technicians	1,236	1,834	3,359	5,038	1,679
11	H211 Electricians (except industrial and power system)	1,819	2,724	5,212	6,860	1,648
12	E211 Paralegal and related occupations	1,179	1,926	3,538	5,129	1,591
13	H421 Automotive service technicians, truck mechanics and mechanical repairers	3,003	3,472	4,902	6,325	1,423
14	C182 User support technicians	1,360	1,868	2,982	4,402	1,420
15	C142 Electronic service technicians (household and business equipment)	1,325	1,793	2,695	4,001	1,306
16	F141 Graphic designers and illustrators	1,429	2,075	3,045	4,296	1,251
17	H326 Welders and related machine operators	2,455	3,077	4,370	5,559	1,188
18	E212 Community and social service workers	1,143	1,624	2,424	3,576	1,152
19	H017 Contractors and supervisors, heavy construction equipment crews	1,577	1,767	3,647	4,767	1,120
20	G132 Real estate agents and salespersons	1,655	2,276	3,957	5,027	1,070
21	H144 Painters and decorators	1,111	1,925	3,303	4,362	1,059
22	G411 Chefs	1,416	2,030	3,240	4,280	1,040
23	H111 Plumbers	1,172	1,956	3,303	4,342	1,039
24	C141 Electrical and electronics engineering technologists and technicians	1,028	1,393	2,098	3,091	994
25	H019 Contractors and supervisors, other construction trades, installers, repairers and servicers	965	1,284	2,797	3,692	895
26	G911 Hairstylists and barbers	2,373	2,875	3,911	4,790	879
27	D212 Medical laboratory technicians	608	886	1,599	2,466	867
28	D233 Licensed practical nurses	586	850	1,523	2,382	859
29	G012 Food service supervisors	1,104	1,616	2,602	3,459	857
30	B111 Bookkeepers	2,872	2,707	3,684	4,497	813
31	D211 Medical laboratory technologists and pathologists' assistants	546	797	1,432	2,216	784
32	G942 Bakers	1,387	1,676	2,410	3,162	753
33	H015 Contractors and supervisors, carpentry trades	768	1,009	2,214	2,916	702
34	H134 Plasterers, drywall installers, finishers and lathers	696	1,225	2,151	2,847	695
35	H122 Supervisors, oil and gas drilling and service	741	1,213	2,406	3,091	685
36	G131 Insurance agents and brokers	1,090	1,515	2,440	3,115	675
37	H412 Heavy-duty equipment mechanics	1,412	1,583	2,309	2,969	660
38	B314 Property administrators	2,207	2,310	2,903	3,492	589
39	B212 Legal secretaries	1,401	1,603	2,594	3,175	581
40	D215 Medical radiation technologists	382	562	1,002	1,564	562
41	C134 Construction estimators	331	560	1,074	1,632	558
42	G133 Retail and wholesale buyers	902	995	1,784	2,339	556
43	C111 Chemical technologists and technicians	604	749	1,210	1,760	549
44	C171 Air pilots, flight engineers and flying instructors	584	874	1,179	1,727	548
45	D234 Ambulance attendants and other paramedical occupations	446	605	907	1,398	491
46	D222 Dental hygienists and dental therapists	329	479	843	1,318	476
47	H321 Sheet metal workers	602	895	1,546	2,021	475
48	B312 Executive assistants	1,854	1,781	2,422	2,896	474
49	F142 Interior designers	469	656	1,085	1,559	474
50	B315 Purchasing agents and officers	1,862	1,748	2,361	2,827	466
	Others	51,839	62,583	86,535	113,817	27,282
	Grand Total	135,696	167,297	251,999	334,246	82,247

<sup>5</sup> Note that these job creations in Table 3 capture only jobs created requiring college education or apprenticeship training and do not represent total job creations for all of Calgary.