CALGARY ECONOMIC DEVELOPMENT

Calgary Heart of the New West

# Calgary Economic Development

## Calgary Employment Demand Forecast 2007 - 2017
## EXECUTIVE SUMMARY

**January 2008**

CalgaryWorks
BUILDING CALGARY'S TALENT

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# OBJECTIVE

## Understanding the Problem

The province of Alberta has witnessed unprecedented economic growth in recent years led by the oil and gas sector. Increasingly, the relative shortage of skilled labour in Alberta and in the Calgary region threatens to limit future growth opportunities. Calgary Economic Development (CED) has recognized the need for detailed employment forecasts in order to develop market strategies aimed at increasing the availability of skilled labour. Through its CalgaryWorks program, CED is collaborating with industry, educational institutions, government and other stakeholders in developing strategies to address current and future labour shortages in key sectors.

The development of targeted initiatives requires a comprehensive understanding of labour market trends and forecasts by industry and occupation. As a result, CED commissioned an Employment Demand Forecast. This model will be used to generate detailed employment demand forecasts by industry and major occupation categories over ten years.

## The Project Team

HDR Decision Economics (HDR) in partnership with RDA Global (RDA) formed a team of experienced professionals to address the unique needs of this project. HDR is a consultancy firm that specializes in applied economic analysis offering consulting services to industry and governments across Canada and the United States. RDA Global provides ongoing economic analysis and strategic planning services based on primary market survey research, applied economics, and risk analytics. RDA Global specializes in economic forecasts and industry analysis of employment, business establishments, and gross metro product (GDP) at the local metro level. RDA's current and previous metro studies have covered over 600 metro areas in Canada, the US and Europe.

## Principal Forecast Team

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## Objective

Calgary Economic Development commissioned HDR|RDA to develop a 10-year forecast of employment demand. More specifically, a forecast model was to be developed in order to generate a forecast of employment demand for the next ten years, for each major occupation within each industry and key sector in Calgary. The model was to be developed such that CED analysts would be able to run certain scenarios, updating employment demand projections by varying key drivers such as changes in oil prices.

The forecast covers twenty (20) industries included in the 2002 version of the North American Industrial Classification System (NAICS). It also covers nine (9) Key Sectors of the Calgary economy as defined by Calgary Economic Development in its business development activities as the key sectors of sustainable economic growth. The key sectors represent interconnected industry clusters. Within each industry and key sector, we also provide forecasts of occupational demand. These occupations are classified within ten (10) occupational categories defined in the National Occupational Classification for Statistics (NOC-S). All four levels of NOC are included, covering 478 active occupations in Calgary. Finally, forecasts of demand were developed for each of five skill and training levels. Brief definitions for each of the classification systems are summarized in the tables below.

**Table 1.1: CED Key Sectors**

| Calgary Economic Development Key Sectors |
|---|
| Creative Industries |
| Energy |
| Film |
| Financial Services |
| Health & Wellness |
| ICT |
| Manufacturing |
| Professional Services |
| Transportation & Logistics |

**Table 1.2: NAICS Industries**

| Industry (NAICS 2002) |
|---|
| 11 Agriculture, forestry, fishing and hunting |
| 21 Mining and oil and gas extraction |
| 22 Utilities |
| 23 Construction |
| 31-33 Manufacturing |
| 41 Wholesale trade |
| 44-45 Retail trade |
| 48-49 Transportation and warehousing |
| 51 Information and cultural industries |
| 52 Finance and insurance |
| 53 Real estate and rental and leasing |
| 54 Professional, scientific and technical services |
| 55 Management of companies and enterprises |
| 56 Administrative and support, waste management and remediation services |
| 61 Educational services |
| 62 Health care and social assistance |
| 71 Arts, entertainment and recreation |
| 72 Accommodation and food services |
| 81 Other services (except public administration) |
| 91 Public administration |

**Table 1.3: National Occupational Classifications**

| Occupational Categories (1 Digit NOC) |
|---|
| A Management occupations |
| B Business, finance and administration occupations |
| C Natural and applied sciences and related occupations |
| D Health occupations |
| E Occupations in social science, education, government service and religion |
| F Occupations in art, culture, recreation and sport |
| G Sales and service occupations |
| H Trades, transport and equipment operators and related occupations |
| I Occupations unique to primary industry |
| J Occupations unique to processing, manufacturing and utilities |

**Table 1.4: Skill Levels**

| Skill Levels (based NOC) |
|---|
| College Education or Apprenticeship Training |
| Secondary School or Occupation-Specific Training |
| University Education |
| Management Occupation |
| On the job training |

# METHODOLOGY

## The Economic Theory

The forecasting process begins with a thorough review of all the economic data currently available on the labour market in Calgary and the collection of statistics on key drivers of industrial segments of the Calgary economy. This includes a review of historical time-series employment data which is segmented by both industry and occupation. The consulting team's experience in modeling and forecasting labor demand in different industry segments has produced one particularly salient conclusion: employment in each industry responds in very diverse fashions to a set of economic conditions. For example in developed economies the manufacturing industry generally has a negative temporal trend – job creation in this segment is declining. But there are other industry segments, such as health, that typically have positive trends because of demographic trends in most developed countries. This diversity becomes even more pronounced when we model employment trends in more micro-jurisdictions such as metro areas as opposed to provinces or countries.

Since each labour market has distinct dynamics separate forecast models were developed for each industry segment. Incorporating this dynamic into the models of the Calgary labour market represents one of the principal building blocks for our forecast. In many employment markets this represents the most important component of the trajectory of a jurisdiction's employment growth, at least in the medium term. This model is an auto-regressive dynamic effect which means that the employment levels at period t+1, i.e., the next quarter or the next year, will be strongly determined by the level we observed at period t. The auto-regressive coefficient informs us of how strongly related the observation at t+1 is to its value at time t. Getting this core part of the dynamic correct provides the most important building block for our forecasts of employment in each industry sector. The advantage of modelling each industry separately is that we get a unique estimate of the auto-regressive dynamic for employment in each industry segment.

Employment in these different industry segments responds, by a greater or lesser extent, to macro-economic conditions. Hence the model incorporates these responses along with the auto-regressive dynamic noted above. This simply means that employment levels in the health industry in 2008 are strongly related to employment levels in 2007 but in addition its levels in 2008 may be determined to some extent by variations in overall economic conditions such as changes in the metro Gross Domestic Product (GDP). In selecting other variables that might affect employment levels we look to the local conditions in a particular geographic jurisdiction plus economic theory to inform our choice of the variables to add to the auto-regressive specification. In Calgary, the model looks to energy prices as an important factor that might have an independent effect on employment levels in a particular industry sector. And here basic labour market theories direct the researchers to which sectors should be more or less impacted by energy prices. The professional services industry, an industry that tends to have jobs directly tied to servicing the energy sector, would be highly impacted by fluctuations in energy prices. By contrast, health employment is not in the least directly linked to energy and hence should be less affected by fluctuations in energy prices.

More generally the model incorporates a set of theoretical and empirical based expectations as to how employment should be affected by other macro-economic

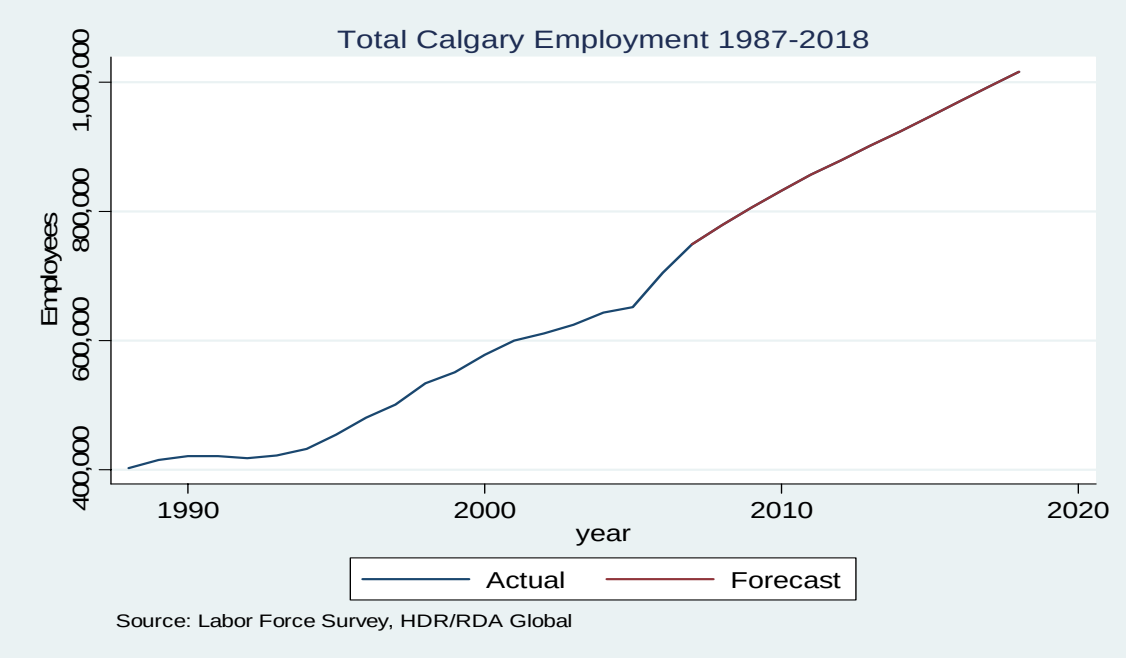
conditions. The model draws on basic labour market theories and empirical findings suggesting, for example, that demographic and income trends should impact employment in the health sector; that currency fluctuations affect the trade sector; that changes in real disposable income should impact retail and wholesale particularly significantly. The model also anticipates construction employment being positively associated with both population trends and real disposable income per capita. In addition to those theoretical insights, decisions in identifying the key macro-economic conditions that affect employment in specific industry segments are guided by the researchers' experience in estimating employment models for hundreds of metro jurisdictions world-wide. This ensures that the models includes considerable insight into which industry segments are most likely to be affected by which macro-economic conditions.

Using the Labor Force Survey and Census of Population the changing incidence of occupations within each industry is estimated. This incidence is simply the demand for certain types of jobs in each industry. Building on the industry forecast, the model considers both the long-run change in labour demand based on industry growth and the changing needs for workers in particular occupations. Differences in industry growth are used to determine the changing demand for occupations. For instance, as the professional services industry expands, there will be growing demand for engineers. Conversely, as the agricultural industry slowly declines, there will be less demand for farmers.

The model also includes a simple naïve forecast of changing demand for occupations, generally felt throughout the economy and generally present in all industries. There are a number of social, technical, and organizational forces which shape the demand for certain occupations. For instance, it is well documented that management occupations have been generally in decline in North America for the past seven years. The gradual declines in management occupations have been offset by growth in specialized business and financial roles. This represents a gradual trend toward workforce specialization and less need for managerial oversight. These trends tend to occur at a gradual rate and the effect of these changes is marginal in comparison to changes in occupational demand which are driven by industrial expansion. However, take into consideration these trends in developing the forecast model. At the end of the forecast process, the employment forecasts are combined into a scenario tool which allows for additional further analysis of the employment forecast. The scenario tool allows Calgary Economic Development to make changes to the external economic drivers which affect local labour demand and see in real time how demand for workers changes in response to these drivers. For instance, the analyst can see what the forecast demand for workers will be if oil prices go to $120 per barrel.

# CALGARY LABOUR MARKET

**Figure 1: Total Calgary Employment Demand Forecast (All Industries)**




Source: Labor Force Survey, HDR/RDA Global

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 13,700[3] 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 jobs. Over the ten year forecast period (2007-2017) Calgary employment demand is expected to result in the

[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

requirement for 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[4]. 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**

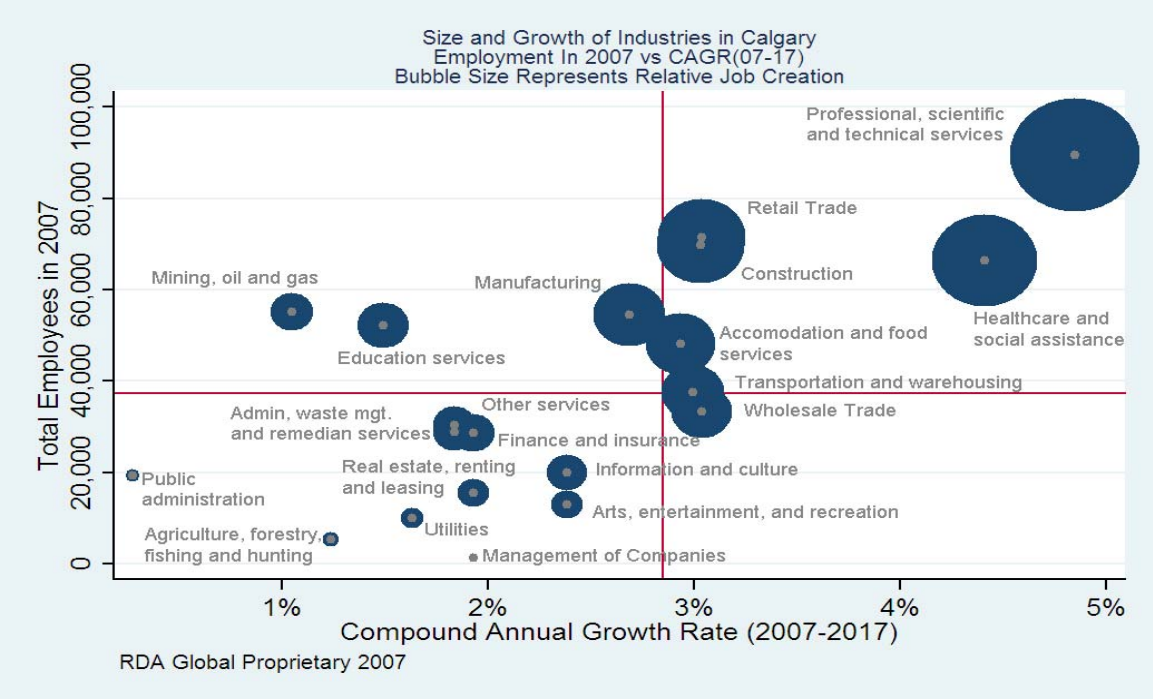



Figure 2 highlights the differences in job demand across industries in Calgary, with the larger circles representing industries with more job demand. Significant gains in employment demand will be somewhat distributed among economic sectors. However, there should be particularly strong demand in the professional services sector, which is tied to continued demand for technical and engineering services in the energy sector. There will also be strong job demand in healthcare, driven by overall population growth and growth in the older segments of the population. Job demand is also expected 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 demand 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%.

# HIGH GROWTH OCCUPATIONS

In the long term, the top twelve high-growth occupations[5] in Calgary in the ten year outlook of 2007-2017 are forecasted to be entirely health workers. Historically, health workers have never been in the top ten occupations in Calgary, but by 2017, registered nurses are expected to be the ninth largest job occupation in Calgary. Over the long term, nurse aids, dentists, dental assistants, licensed practical nurses, and general practitioners/family physicians are expected to be the top five growth occupations in Calgary. The growth in demand for these occupations is expected to be strong both in the near term and in the later years of the forecast as both population growth and aging population results in increased demand for these workers. These top five growth occupations should represent a total demand of about 6,100 of the 243,900 new jobs demanded in Calgary, or about 2.5% of all new jobs. Specialist physicians, medical radiation technologists, health assistants, medical laboratory assistants and technicians and pharmacists together are forecasted to comprise the next seven top growth occupations over the 10-year forecast period. Together these seven occupations should represent demand of about 9,200 new jobs or about 3.8% of all new jobs demanded.

Over the 2007-2017 period, the top ten occupations with the highest total number of new jobs demanded are expected to be (in order) retail salespersons, retail managers, registered nurses, information systems analysts, financial auditors and accountants, petroleum engineers, elementary school teachers, geologists geochemists and geophysicists, computer programmers and wholesale sales representatives. Together these ten occupations should represent demand of about 42,700 new jobs in Calgary or about 18% of all new jobs by 2017.

As the city grows, retail sales jobs are forecasted to remain the top occupation and financial auditors and accountants are expected to remain the second largest set of workers. Retail managers are forecasted to move up one notch to become the third largest occupation and general office clerks should drop a notch to become the fourth largest occupation. Elementary school and kindergarten teachers are expected to remain the fifth largest occupation. Information systems analysts and consultants are expected to move up four slots to become the sixth largest occupation. Non-technical wholesale trade representatives are believed to move up one slot to be the seventh largest occupation. Accounting clerks should drop two notches to be the eight largest occupation, registered nurses are expected to move up five notches to be the ninth largest occupation and administrative officers are forecasted to drop three notches to be the tenth largest occupation in Calgary.

[5] 10-year long term high-growth occupations are limited to those generating at least 500 new jobs by 2017 and ranked by compound annual growth rate.

**Table 3.1: Top 10 Job Occupations in Calgary in 2017**

| Rank in 2017 | Occupation (4 Digit NOC) | Employees in 2017 | Rank in 2007 | Change in Rank | CAGR 2007-2017 |
|---|---|---|---|---|---|
| 1 | G211 Retail salespersons and sales clerks | 35,250 | 1 | Unchanged | 2.7% |
| 2 | B011 Financial auditors and accountants | 25,883 | 2 | Unchanged | 1.9% |
| 3 | A211 Retail trade managers | 19,234 | 4 | +1 | 3.0% |
| 4 | B511 General office clerks | 17,188 | 3 | -1 | 1.8% |
| 5 | E132 Elementary school and kindergarten teachers | 15,654 | 5 | Unchanged | 2.3% |
| 6 | C071 Information systems analysts and consultants | 13,637 | 10 | +4 | 4.0% |
| 7 | G111 Sales representatives, wholesale trade (non-technical) | 13,578 | 8 | +1 | 2.6% |
| 8 | B531 Accounting and related clerks | 13,425 | 6 | -2 | 1.9% |
| 9 | D112 Registered nurses | 13,321 | 14 | +5 | 4.5% |
| 10 | B311 Administrative officers | 13,059 | 7 | -3 | 1.9% |

The following tables contain additional detail on the high-growth and high job demand occupations in Calgary in the near term and the long term.

## Table 3.2: Long-Term Top 40 Growth Jobs in Calgary[6] Ranked by 10-Year Compound Annual Growth Rate

| 10-Year Growth Ranking | Occupation (4 Digit NOC) | Employees | | | | | CAGR | CAGR | Jobs Added | Jobs Added |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2007 | 2008 | 2009 | 2010 | 2017 | 2007-2010 | 2007-2017 | 2007-2010 | 2007-2017 |
| 1 | D312 Nurse aides, orderlies and patient service associates | 4,471 | 4,631 | 4,830 | 5,026 | 7,008 | 4.0% | 4.6% | 554 | 2,537 |
| 2 | D013 Dentists | 973 | 1,013 | 1,055 | 1,099 | 1,521 | 4.2% | 4.6% | 127 | 549 |
| 3 | D311 Dental assistants | 1,750 | 1,823 | 1,897 | 1,978 | 2,737 | 4.2% | 4.6% | 228 | 987 |
| 4 | D233 Licensed practical nurses | 1,523 | 1,582 | 1,649 | 1,717 | 2,382 | 4.1% | 4.6% | 193 | 859 |
| 5 | D012 General practitioners and family physicians | 2,120 | 2,208 | 2,297 | 2,395 | 3,314 | 4.1% | 4.6% | 275 | 1,194 |
| 6 | D011 Specialist physicians | 1,199 | 1,248 | 1,299 | 1,354 | 1,874 | 4.1% | 4.6% | 154 | 674 |
| 7 | D215 Medical radiation technologists | 1,002 | 1,042 | 1,085 | 1,130 | 1,564 | 4.1% | 4.6% | 128 | 562 |
| 8 | D112 Registered nurses | 8,553 | 8,872 | 9,232 | 9,613 | 13,321 | 4.0% | 4.5% | 1,060 | 4,768 |
| 9 | D313 Other assisting occupations in support of health services | 2,208 | 2,280 | 2,375 | 2,468 | 3,429 | 3.8% | 4.5% | 260 | 1,221 |
| 10 | D211 Medical laboratory technologists and pathologists' assistants | 1,432 | 1,482 | 1,538 | 1,602 | 2,216 | 3.8% | 4.5% | 170 | 784 |
| 11 | D212 Medical laboratory technicians | 1,599 | 1,652 | 1,714 | 1,783 | 2,466 | 3.7% | 4.4% | 185 | 867 |
| 12 | D031 Pharmacists | 1,237 | 1,271 | 1,324 | 1,370 | 1,881 | 3.5% | 4.3% | 133 | 644 |
| 13 | C134 Construction estimators | 1,074 | 1,193 | 1,283 | 1,332 | 1,632 | 7.4% | 4.3% | 258 | 558 |
| 14 | C051 Architects | 1,091 | 1,172 | 1,252 | 1,306 | 1,647 | 6.2% | 4.2% | 216 | 556 |
| 15 | C073 Software engineers | 1,532 | 1,639 | 1,747 | 1,821 | 2,302 | 5.9% | 4.2% | 289 | 770 |
| 16 | C153 Drafting technologists and technicians | 3,359 | 3,608 | 3,851 | 4,010 | 5,038 | 6.1% | 4.1% | 651 | 1,679 |
| 17 | E217 Early childhood educators and assistants | 5,359 | 5,621 | 5,907 | 6,149 | 8,026 | 4.7% | 4.1% | 790 | 2,667 |
| 18 | C031 Civil engineers | 4,308 | 4,639 | 4,954 | 5,155 | 6,448 | 6.2% | 4.1% | 847 | 2,141 |
| 19 | C075 Web designers and developers | 1,244 | 1,331 | 1,416 | 1,477 | 1,859 | 5.9% | 4.1% | 233 | 616 |
| 20 | C074 Computer programmers and interactive media developers | 6,280 | 6,707 | 7,145 | 7,436 | 9,370 | 5.8% | 4.1% | 1,155 | 3,090 |
| 21 | C047 Computer engineers (except software engineers) | 2,090 | 2,230 | 2,372 | 2,466 | 3,110 | 5.7% | 4.1% | 376 | 1,020 |
| 22 | C142 Electronic service technicians (household and business equipment) | 2,695 | 2,878 | 3,074 | 3,179 | 4,001 | 5.7% | 4.0% | 484 | 1,306 |
| 23 | C032 Mechanical engineers | 2,295 | 2,458 | 2,621 | 2,723 | 3,407 | 5.9% | 4.0% | 427 | 1,111 |
| 24 | C033 Electrical and electronics engineers | 2,888 | 3,091 | 3,294 | 3,423 | 4,287 | 5.8% | 4.0% | 535 | 1,398 |
| 25 | C071 Information systems analysts and consultants | 9,194 | 9,807 | 10,446 | 10,856 | 13,637 | 5.7% | 4.0% | 1,661 | 4,442 |
| 26 | E023 Family, marriage and other related counsellors | 1,387 | 1,461 | 1,536 | 1,600 | 2,051 | 4.9% | 4.0% | 213 | 664 |
| 27 | C034 Chemical engineers | 1,473 | 1,572 | 1,673 | 1,739 | 2,177 | 5.7% | 4.0% | 265 | 704 |
| 28 | C182 User support technicians | 2,982 | 3,172 | 3,377 | 3,503 | 4,402 | 5.5% | 4.0% | 521 | 1,420 |
| 29 | E212 Community and social service workers | 2,424 | 2,549 | 2,679 | 2,789 | 3,576 | 4.8% | 4.0% | 366 | 1,152 |
| 30 | C141 Electrical and electronics engineering technologists and technicians | 2,098 | 2,238 | 2,381 | 2,467 | 3,091 | 5.6% | 4.0% | 369 | 994 |
| 31 | C072 Database analysts and data administrators | 1,413 | 1,506 | 1,601 | 1,662 | 2,080 | 5.6% | 3.9% | 249 | 668 |
| 32 | C181 Computer and network operators and web technicians | 4,405 | 4,685 | 4,985 | 5,167 | 6,483 | 5.5% | 3.9% | 763 | 2,078 |
| 33 | E022 Social workers | 1,781 | 1,874 | 1,969 | 2,050 | 2,620 | 4.8% | 3.9% | 269 | 839 |
| 34 | C171 Air pilots, flight engineers and flying instructors | 1,179 | 1,235 | 1,306 | 1,347 | 1,727 | 4.5% | 3.9% | 168 | 548 |
| 35 | C111 Chemical technologists and technicians | 1,210 | 1,284 | 1,364 | 1,412 | 1,760 | 5.3% | 3.8% | 202 | 549 |
| 36 | C112 Geological and mineral technologists and technicians | 3,791 | 4,027 | 4,276 | 4,428 | 5,502 | 5.3% | 3.8% | 637 | 1,711 |
| 37 | E211 Paralegal and related occupations | 3,538 | 3,696 | 3,862 | 4,053 | 5,129 | 4.6% | 3.8% | 514 | 1,591 |
| 38 | E012 Lawyers and Quebec notaries | 5,969 | 6,231 | 6,504 | 6,829 | 8,641 | 4.6% | 3.8% | 860 | 2,672 |
| 39 | C013 Geologists, geochemists and geophysicists | 7,082 | 7,513 | 7,975 | 8,254 | 10,236 | 5.2% | 3.8% | 1,172 | 3,154 |
| 40 | J319 Other labourers in processing, manufacturing and utilities | 1,479 | 1,539 | 1,617 | 1,687 | 2,132 | 4.5% | 3.7% | 208 | 654 |

[6] **Includes only occupations adding over 500 jobs by 2017.**

## Table 3.3: Long-Term Top 40 Occupations for New Job Demand Ranked by Total Jobs Added by 2017

| Job Creation Ranking | Occupation (4 Digit NOC) | Employees | | | | | CAGR | CAGR | Jobs Added | Jobs Added |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2007 | 2008 | 2009 | 2010 | 2017 | 2007-2010 | 2007-2017 | 2007-2010 | 2007-2017 |
| 1 | G211 Retail salespersons and sales clerks | 26,879 | 27,829 | 28,130 | 29,074 | 35,250 | 2.7% | 2.7% | 2,195 | 8,371 |
| 2 | A211 Retail trade managers | 14,254 | 14,954 | 15,735 | 16,222 | 19,234 | 4.4% | 3.0% | 1,968 | 4,980 |
| 3 | D112 Registered nurses | 8,553 | 8,872 | 9,232 | 9,613 | 13,321 | 4.0% | 4.5% | 1,060 | 4,768 |
| 4 | C071 Information systems analysts and consultants | 9,194 | 9,807 | 10,446 | 10,856 | 13,637 | 5.7% | 4.0% | 1,661 | 4,442 |
| 5 | B011 Financial auditors and accountants | 21,459 | 22,275 | 22,900 | 23,577 | 25,883 | 3.2% | 1.9% | 2,118 | 4,424 |
| 6 | C045 Petroleum engineers | 7,458 | 7,906 | 8,383 | 8,657 | 10,661 | 5.1% | 3.6% | 1,199 | 3,202 |
| 7 | E132 Elementary school and kindergarten teachers | 12,461 | 12,590 | 12,875 | 13,210 | 15,654 | 2.0% | 2.3% | 749 | 3,193 |
| 8 | C013 Geologists, geochemists and geophysicists | 7,082 | 7,513 | 7,975 | 8,254 | 10,236 | 5.2% | 3.8% | 1,172 | 3,154 |
| 9 | C074 Computer programmers and interactive media developers | 6,280 | 6,707 | 7,145 | 7,436 | 9,370 | 5.8% | 4.1% | 1,155 | 3,090 |
| 10 | G111 Sales representatives, wholesale trade (non-technical) | 10,504 | 10,852 | 10,891 | 11,279 | 13,578 | 2.4% | 2.6% | 775 | 3,075 |
| 11 | G513 Food and beverage servers | 8,916 | 9,195 | 9,397 | 9,699 | 11,831 | 2.8% | 2.9% | 782 | 2,914 |
| 12 | G412 Cooks | 8,774 | 9,063 | 9,253 | 9,555 | 11,624 | 2.9% | 2.9% | 781 | 2,851 |
| 13 | A221 Restaurant and food service managers | 7,747 | 8,103 | 8,611 | 8,871 | 10,585 | 4.6% | 3.2% | 1,124 | 2,838 |
| 14 | B511 General office clerks | 14,401 | 14,925 | 15,342 | 15,732 | 17,188 | 3.0% | 1.8% | 1,332 | 2,787 |
| 15 | E012 Lawyers and Quebec notaries | 5,969 | 6,231 | 6,504 | 6,829 | 8,641 | 4.6% | 3.8% | 860 | 2,672 |
| 16 | E217 Early childhood educators and assistants | 5,359 | 5,621 | 5,907 | 6,149 | 8,026 | 4.7% | 4.1% | 790 | 2,667 |
| 17 | D312 Nurse aides, orderlies and patient service associates | 4,471 | 4,631 | 4,830 | 5,026 | 7,008 | 4.0% | 4.6% | 554 | 2,537 |
| 18 | G961 Food counter attendants, kitchen helpers and related occupations | 7,441 | 7,696 | 7,855 | 8,113 | 9,846 | 2.9% | 2.8% | 672 | 2,406 |
| 19 | G933 Janitors, caretakers and building superintendents | 9,977 | 10,172 | 10,168 | 10,465 | 12,285 | 1.6% | 2.1% | 488 | 2,308 |
| 20 | B531 Accounting and related clerks | 11,121 | 11,560 | 11,903 | 12,221 | 13,425 | 3.2% | 1.9% | 1,100 | 2,304 |
| 21 | B311 Administrative officers | 10,809 | 11,264 | 11,610 | 11,923 | 13,059 | 3.3% | 1.9% | 1,113 | 2,250 |
| 22 | A131 Sales, marketing and advertising managers | 6,913 | 7,237 | 7,534 | 7,799 | 9,135 | 4.1% | 2.8% | 886 | 2,222 |
| 23 | G311 Cashiers | 6,899 | 7,138 | 7,264 | 7,495 | 9,106 | 2.8% | 2.8% | 596 | 2,208 |
| 24 | H121 Carpenters | 7,087 | 7,622 | 7,933 | 8,195 | 9,292 | 5.0% | 2.7% | 1,108 | 2,205 |
| 25 | H812 Material handlers | 7,113 | 7,347 | 7,615 | 7,824 | 9,308 | 3.2% | 2.7% | 712 | 2,195 |
| 26 | E131 Secondary school teachers | 8,427 | 8,514 | 8,706 | 8,932 | 10,583 | 2.0% | 2.3% | 505 | 2,156 |
| 27 | C031 Civil engineers | 4,308 | 4,639 | 4,954 | 5,155 | 6,448 | 6.2% | 4.1% | 847 | 2,141 |
| 28 | C181 Computer and network operators and web technicians | 4,405 | 4,685 | 4,985 | 5,167 | 6,483 | 5.5% | 3.9% | 763 | 2,078 |
| 29 | H711 Truck drivers | 6,656 | 6,892 | 7,103 | 7,316 | 8,718 | 3.2% | 2.7% | 660 | 2,062 |
| 30 | G121 Technical sales specialists, wholesale trade | 6,874 | 7,093 | 7,105 | 7,366 | 8,813 | 2.3% | 2.5% | 492 | 1,940 |
| 31 | G814 Babysitters, nannies and parents' helpers | 5,268 | 5,436 | 5,542 | 5,734 | 7,082 | 2.9% | 3.0% | 466 | 1,815 |
| 32 | G931 Light duty cleaners | 6,393 | 6,575 | 6,654 | 6,872 | 8,198 | 2.4% | 2.5% | 479 | 1,805 |
| 33 | C112 Geological and mineral technologists and technicians | 3,791 | 4,027 | 4,276 | 4,428 | 5,502 | 5.3% | 3.8% | 637 | 1,711 |
| 34 | B211 Secretaries (except legal and medical) | 8,711 | 9,059 | 9,317 | 9,557 | 10,394 | 3.1% | 1.8% | 846 | 1,683 |
| 35 | G011 Retail trade supervisors | 5,191 | 5,375 | 5,463 | 5,639 | 6,870 | 2.8% | 2.8% | 449 | 1,679 |
| 36 | C153 Drafting technologists and technicians | 3,359 | 3,608 | 3,851 | 4,010 | 5,038 | 6.1% | 4.1% | 651 | 1,679 |
| 37 | A371 Construction managers | 4,893 | 5,316 | 5,566 | 5,782 | 6,570 | 5.7% | 3.0% | 889 | 1,677 |
| 38 | H211 Electricians (except industrial and power system) | 5,212 | 5,642 | 5,880 | 6,075 | 6,860 | 5.2% | 2.8% | 864 | 1,648 |
| 39 | H821 Construction trades helpers and labourers | 5,189 | 5,574 | 5,803 | 5,995 | 6,811 | 4.9% | 2.8% | 806 | 1,623 |
| 40 | B553 Customer service, information and related clerks | 7,527 | 7,795 | 8,039 | 8,245 | 9,141 | 3.1% | 2.0% | 718 | 1,614 |