

**Calgary Metropolitan
Region Board**

Regional Employment Forecasts



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Final Report

February 2020

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Introduction

The Calgary Metropolitan Region Board (CMRB) was officially established in January 2018 when the Calgary Metropolitan Region Board Regulation (“CMRB Regulation”, Alberta Regulation 190/2017) came into effect, creating the first provincially-mandated growth management board for the Calgary region. The CMRB has been mandated to prepare a regional Growth Plan and Servicing Plan that will guide the future growth of the region.

PURPOSE OF THE ANALYSIS

The purpose of this study is to evaluate the potential for non-residential growth within the Calgary region. This involves the projection of the employment growth in the region by major industry group over a long range timeframe, from 2018 to 2054. Additionally it involves consideration of the types of economic activity and employment growth that may be considered ‘regional’ in nature, as compared to activity that is considered to be local or sub-regional in nature. This distinction is important as the development of a regional plan should incorporate measures to ensure that the economic development potential of the region is not constrained by either planning or servicing impediments.

Further to this analysis a more in depth geographic analysis should be undertaken during the development of the Growth Plan to gain an understanding of the regionally significant employment areas within the region including where they are located, opportunities for growth, barriers to development, and approaches to planning these areas.

STUDY AREA

The CMRB consists of representatives from 10 municipalities mandated to develop a long term plan for managed, sustainable growth in the Calgary Metropolitan Region.

- ▶ City of Airdrie
- ▶ City of Calgary
- ▶ City of Chestermere
- ▶ Town of Cochrane
- ▶ Foothills County
- ▶ Town of High River
- ▶ Town of Okotoks
- ▶ Rocky View County
- ▶ Town of Strathmore
- ▶ Wheatland County (portion included in the CMRB)

ANALYSIS COMPONENTS

The consulting team participated in substantial engagement with member municipalities through several meetings with the CMRB’s Land Use Committee and Technical Advisory Group. In addition, discussions were held with representatives of member municipalities planning and economic development staff to develop a comprehensive list of economic opportunities that should be considered in the analysis.

BACKGROUND ON REGIONAL ECONOMY

The Calgary region economy has experienced significant economic expansion over the past decade, at times leading the nation in growth. This growth has been driven in large part by the energy sector. The swings in energy prices have also resulted in downturns in the regional economy. While other sectors in the economy have also grown, the predominance of the energy sector has been both the strength and achilles heel of regional economy.

Calgary is second to Toronto as the host of the most head offices in Canada. Many of these head offices are in the energy sector. However Calgary has been successful in attracting head offices in the financial, construction, transportation and engineering sectors. The most recent downturn has had a significant affect on the demand for office space in the downtown area. This decline in demand for office space combined with a significant increase in supply has resulted in high vacancy rates. These peaked around 25% are and now beginning to moderate.

Strides have been made in diversifying the regional economy. For example, over the past 30 years, the finance, insurance and real estate and transportation and warehousing sectors have doubled their share of total activity in the regional economy. Manufacturing, construction and professional scientific and technical services sectors have also experienced significant growth in their share of activity in the regional economy.

EMPLOYMENT FORECASTS

The employment forecasts presented in this report have been developed to support the regional Growth Plan and Servicing Plan that will guide the future growth of the region. These forecasts provide guidance on the long term trends of growth for the Calgary Region. In a metropolitan geography such as the Calgary Region, long term projections of growth can help to gain an understanding of opportunities for growth, barriers to development, and approaches to planning areas within the Region.

This analysis presents employment forecasts from 2018 to 2054. In the development of the forecasts, 2018 base year employment was estimated, as there is no public source for 2018 employment for the Calgary Metropolitan Region. The CMRB approved population projections¹ for the Calgary Metropolitan Region were used to develop an estimate of the 2018 employment. This estimate uses the labour force participation rates and unemployment rate as published for 2018². Employment estimates were calculated annually, by applying labour force participation rates and unemployment rates - consistent with the rates used in the baseyear, to the annual population by age projections. This approach to estimating employment ensures internal consistency between the population and employment projections that are being used to inform the Growth Plan. In addition, CMRB provided employment data from the City of Calgary's Regional Transportation Model. This data included employment by aggregate 2 digit NAICS³ by transportation zone for the entire Calgary Metropolitan Region. This dataset, along with the 2018 employment estimate derived from the population projections was used to develop the 2018 employment by industry group and municipality. During the

¹ Population Projections. Produced for the Calgary Metropolitan Region Board & Its Member Municipalities. December 2018, Rennie Intelligence.

² Statistics Canada Labour Force Characteristics by census metropolitan area.

³ The aggregate 2 digit NAICS data was converted to 2 Digit NAICS for the purposes of this analysis to be able to make detailed industry growth assumptions.

process, the consulting team reviewed the 2018 employment data and made some revisions⁴ to the data based on feedback provided by members of the Technical Advisory Group (Spring 2018).

It is intended that the employment forecasts prepared for this analysis are used to inform the regional planning process. It is not intended that this data will be used to determine specific utility or transportation servicing requirements.

⁴ It is noted that the base year employment figures estimated for the purposes of this report vary from other estimates for employment for the City of Calgary and the Calgary Region. For example, using Statistics Canada Place of Work the City of Calgary would yield an employment estimate which is below that which is used for the purposes of this report. This difference while acknowledged is reflective of the variance in the estimated employment by location depending on the source of the information used.

Current Employment

Employment for 2018 has been estimated for the region using data from various sources⁵. This includes the CMRB approved population projections and the City of Calgary's Regional Transportation analysis that was originally prepared in 2009 and updated in 2015.

EMPLOYMENT BY INDUSTRY

Total employment in 2018 is estimated to total over 840,000 jobs. This employment has been broken down by industry in the table below. The North American Industrial Classification System (NAICS) has been used to describe the industry sectors. The two digit NAICS industry sector descriptions are provided in Appendix D.

The largest industry sector is Professional, scientific and technical services, with approximately 100,000 jobs representing almost 12% of total employment. Retail trade is the second largest industry group at 92,000 jobs (10.9% of the total), followed by Construction with approximately 83,000 jobs representing 9.8% of the total.

Calgary Metropolitan Region Employment by Industry (2018)⁶

NAICS Code	Industry	Employment	% of Emp
11	Agriculture, forestry, fishing and hunting	2,398	0.3%
21	Mining and oil and gas extraction	50,506	6.0%
22	Utilities	10,772	1.3%
23	Construction	82,833	9.8%
31-33	Manufacturing	46,436	5.5%
41	Wholesale trade	19,723	2.3%
44-45	Retail trade	92,020	10.9%
48-49	Transportation and warehousing	67,000	7.9%
51	Information and cultural industries	16,770	2.0%
52	Finance and insurance	30,917	3.7%
53	Real estate and rental and leasing	12,966	1.5%
54	Professional, scientific and technical services	99,569	11.8%
55	Management of companies and enterprises	2,729	0.3%
56	Administrative and support, waste management and remediation services	36,872	4.4%

⁵ See Appendix C for more information on the data sources used to inform the 2018 employment estimate.

⁶ 2 digit NAICS - see Appendix C for a description of each industry category.

NAICS Code	Industry	Employment	% of Emp
61	Educational services	48,655	5.8%
62	Health care and social assistance	77,198	9.2%
71	Arts, entertainment and recreation	20,995	2.5%
72	Accommodation and food services	53,963	6.4%
81	Other services (except public administration)	47,377	5.6%
91	Public administration	23,395	2.8%
Total		843,094	100%

EMPLOYMENT BY MUNICIPALITY

The majority of employment in the Region is located in the City of Calgary. Rocky View County has the second largest employment total. It has been estimated that each of the other municipalities have less than 2% of the regions employment.

Calgary Metropolitan Region Employment by Municipality (2018)

Municipality	Employment	% of Employment
Airdrie	15,360	1.8%
Calgary	755,146	89.6%
Chestermere	2,759	0.3%
Cochrane	8,146	1.0%
High River	9,492	1.1%
Foothills County	13,963	1.7%
Okotoks	9,164	1.1%
Rocky View County	20,574	2.4%
Strathmore	6,898	0.8%
Wheatland County*	1,594	0.2%
Total	843,096	100%

* Portion of Wheatland County included in the CMRB

Status Quo Scenario

For the purposes of this analysis a Status Quo scenario has been developed. The following section outlines the Status Quo scenario.⁷

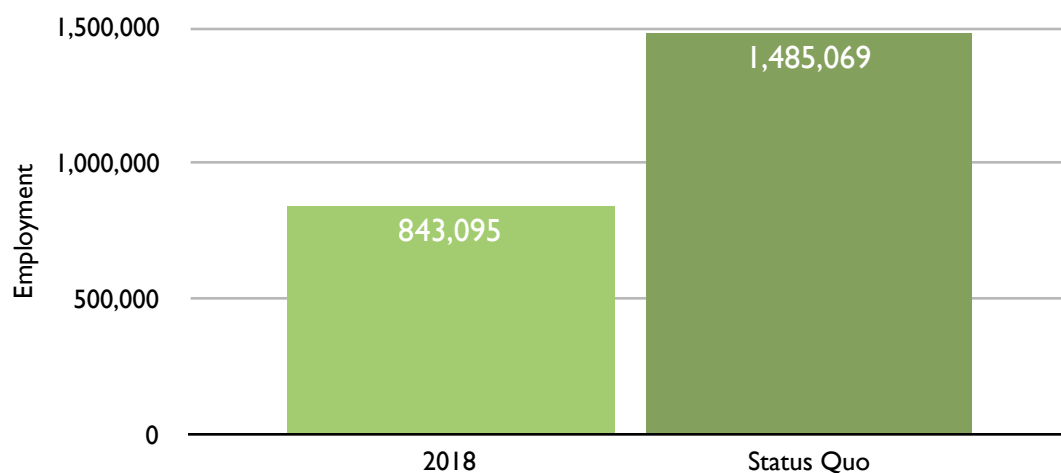
STATUS QUO

Employment growth in the Status Quo scenario was aligned to CMRB population forecasts⁸ prepared by Rennie Intelligence.

The Status Quo scenario analysis results are summarized as follows:

- ▶ **Population:** Total population increases from 1,589,218 in 2018 to 2,647,657 by 2054, an increase of 1,058,438 representing a 1.4% average annual growth rate.
- ▶ **Employment:** Total employment is projected to increase from 843,094 to 1,485,069 across the same period, an increase of 641,974 representing an average annual growth rate of 1.6%.
- ▶ **Labour Force:** The labour force increases consistently through the forecast period at an average annual rate of 1.5%.
- ▶ **Participation Rate:** The aggregate participation rate dips slightly from its 2018 rate of 70.4% to 66.4% by 2036, followed by a gradual increase to 69.6% by 2054.
- ▶ **Unemployment Rate:** The unemployment rate is projected to decline gradually from its 2018 rate of 7.9%, but remains above the 7.0% level through 2036. The unemployment rate is expected to settle at around 5.5% nearing the end of the forecast period.

Employment for 2018 and Status Quo Scenario

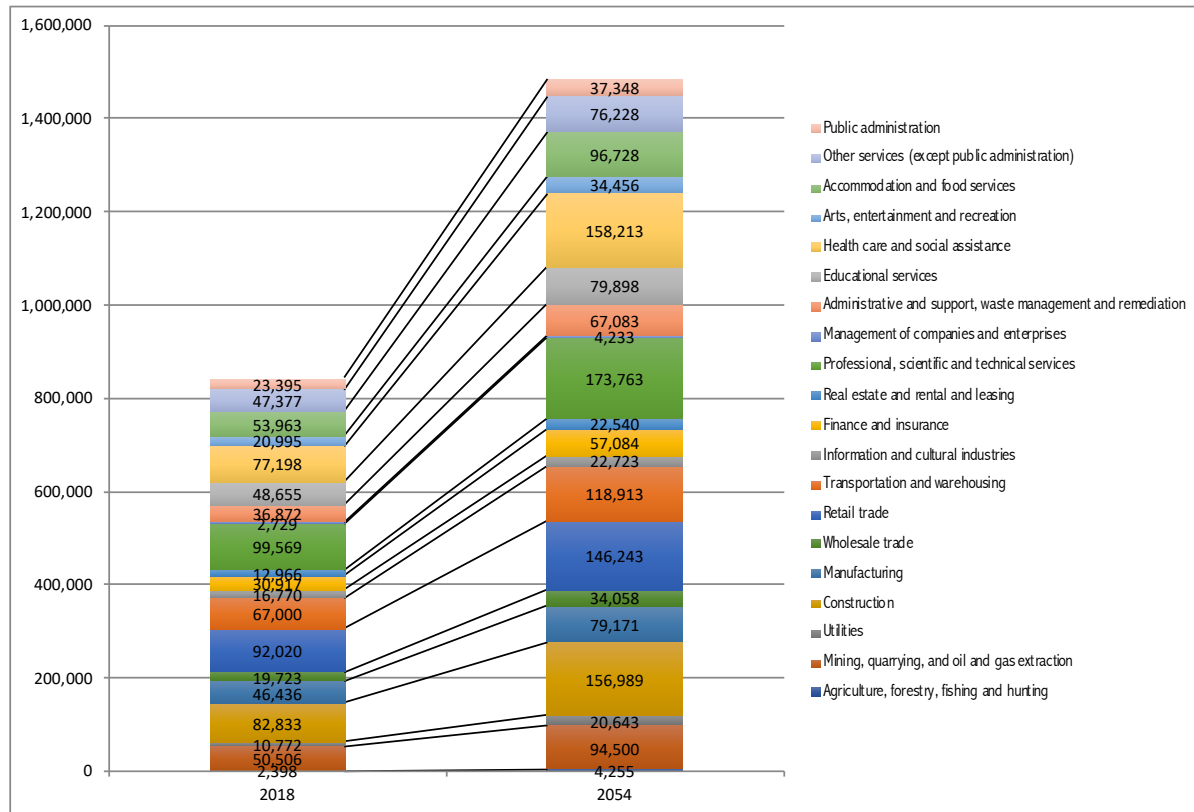


Between 2018 and 2054 there is job growth of 641,974. Relative to 2018, the industries with the largest job growth include: Healthcare and Social Assistance, Professional, scientific and technical services, Construction, Retail trade, and Transportation and warehousing. These industries comprise approximately 50% (+300,000 jobs) of total job growth over this period.

⁷The Status Quo scenario employment projections were approved by the Board at the November Board meeting.

⁸The age-specific population forecast target for 2054 was interpolated using the 2051 and 2056 data provided by Rennie Intelligence.

Employment by Industry - 2018 and Status Quo Scenario



Additional Scenario Discussion

As part of this process, the consulting team had further discussion with the Technical Advisory Group on different assumptions regarding six growth parameters and the respective employment impacts attributable to these parameters.⁹ The variation in these assumptions was explored to understand how employment will evolve based on structural changes to the economy. The details regarding these additional scenarios are presented in Appendix A.

These additional scenarios are not intended to be used as official regional projections. They are collectively intended to be used as a high-level reference tool that reflects the future directions of change envisioned for the region, recognizing that over a long term projection horizon there is uncertainty.

⁹ Growth parameters are defined as the fundamental components of the economy that can be used to define what direction economic growth can be expected to occur. These are described in detail in Appendix A.

Regionally Significant Employment Areas

Defining employment areas that have regional significance is important to ensure that sufficient lands are available for development, in the right locations, to maximize the potential for future economic and employment growth in the region. The definition of what comprises a 'regionally significant employment area' is subjective. As a result, an attempt has been made to attach some rigour to the process of defining "Regionally Significant Employment Areas". This has taken the form of some characteristics that may be considered in defining what areas rise to be of regional significance.

WHY ARE SOME EMPLOYMENT AREAS REGIONALLY SIGNIFICANT?

Some employment in every community and neighbourhood is tied to a specific location because it primarily services the community or neighbourhood around it. This would include a neighbourhood mall with a convenience store, gas station, health clinic and other retail and non-commercial services. This type of employment would not likely be considered 'regionally significant' because of its ties to the local community or neighbourhood. Contrast this with the Calgary International Airport, which provides a range of transportation and non-transportation services to the City of Calgary, residents and businesses in the Calgary metropolitan region and beyond. Employment of this type would clearly be 'regionally significant' as it services a broad range of users within the region and beyond the region. The purpose of identifying characteristics is to help define where an employment area transitions from primarily serving a local geographic base, to one that provides a regional function.

Further, it is noted that a 'regionally significant employment area' does not need to only accommodate development that is truly regional in nature, but would likely be predominately of this character. Similarly, it is possible that an area is not considered to have regional significance, but to have some development that provides goods or services beyond, or well beyond, what would be considered local within which it is located.

CHARACTERISTICS FOR DETERMINING REGIONALLY SIGNIFICANT EMPLOYMENT AREAS

It is recognized that determining 'regional significance' is not a precise science, but rather one that involves judgement. The following characteristics have been identified as a tool to assist in arriving at a consensus as to the factors important in determining 'regional significance' in the Calgary Metropolitan Region.

- ▶ Areas with approved land use plans.
- ▶ Areas with a critical mass of existing development. This could consider total employment, number of businesses or other metrics that help define critical mass.
- ▶ Areas with existing servicing and infrastructure 'in-place'.
- ▶ Connections to the regional, national and international transportation network including for both access to markets and supply of inputs to production:¹⁰
 - ▶ Rail

¹⁰ Consideration of the services and level of services for each transportation mode could be considered. For example, airport infrastructure with schedule air services could be considered more important than those without scheduled air service. Similarly, road infrastructure may consider the the level of service (i.e. highway, major arterials arterials, etc.).

- ▶ Road
- ▶ Air
- ▶ Connections to the regional transportation network to provide efficient access to required labour:
 - ▶ Road network
 - ▶ Transit
 - ▶ LRT / higher order transit
- ▶ Strategic considerations that areas may have potential for expanding in size and scale to provide regional benefit.

Appendix A: Scenario Development and Additional Scenario Results

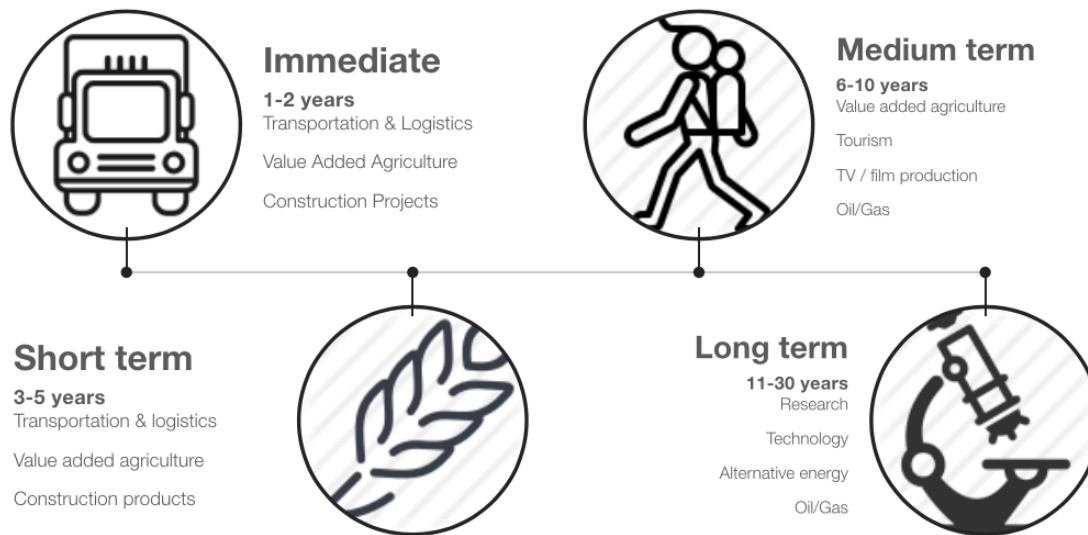
In developing the projections of future growth, the consulting team conducted a workshop with the Technical Advisory Group. Subsequent to this, discussions were held with representatives of each CMRB member municipality to discuss which industries were expected to hold the greatest potential for the municipality and for the region. This information was combined with published economic development initiatives and strategies as available for the member municipalities. The result was the definition of key industries that can be expected to drive growth in the future.

DRIVER INDUSTRIES




Based on research and input from the member municipalities, a road map of future growth by industry was prepared. This included consideration of not only which industries can be expected to lead growth – ‘driver industries’ – but also the general timeframe over which these industries might be expected to grow most significantly.

The specific driver industries identified and expected timeframe for growth are detailed below.




Driver Industries






IMMEDIATE TERM (1-2 YEARS)

<p>Transportation & logistics specialized cargo and logistic facilities</p>	 <p>Transportation</p>
<p>Value added agriculture: specialized food and beverage manufacturing.</p>	 <p>Value Added Agriculture</p>
<p>Non-residential construction: projects currently under construction is estimated at \$12.9 Billion.</p>	 <p>Construction Projects</p>




SHORT TERM (3-5 YEARS)

<p>Transportation and logistics: Large scale warehousing and storage facilities Transportation (air, rail, truck)</p>	 <p>Transportation</p>
<p>Value added agriculture: speciality food manufacturing, seed cleaning, cannabis production</p>	 <p>Value Added Agriculture</p>
<p>Manufacturing: growth in residential construction, building products/specialized home products, Industrial machinery/specialized machine shops, reinforced plastics.</p>	 <p>Manufacturing</p>

MEDIUM TERM (6-10 YEARS)

<p>Value added agriculture: plant proteins, micro-breweries/wineries</p>	 <p>Value Added Agriculture</p>
<p>Tourism: food accommodation sector; outdoor adventures, equestrian.</p>	 <p>Tourism</p>
<p>TV/Film Production: growth in residential construction, building products/specialized home products, Industrial machinery/specialized machine shops, reinforced plastics.</p>	 <p>T V / Film Production</p>

LONG TERM (11-20 YEARS)

<p>Research: pharmaceuticals, bio-technology, environmental sciences, growth food</p>	 <p>Research</p>
<p>Technology: oil/gas/geomatics, software, big data, architecture, agriculture technology</p>	 <p>Technology</p>
<p>Alternative Energy: solar farms, natural gas, bio-solids</p>	 <p>Alternative Energy</p>

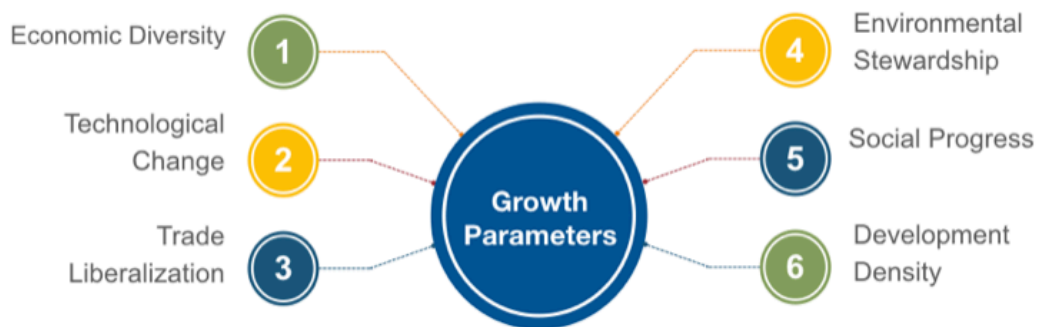
BASELINE GROWTH & STRUCTURAL CHANGE

The employment forecast includes two components: a Baseline projection that assumes there are no changes in economic 'structural' components of the regional economy. This Baseline employment forecast estimates total employment to increase to 1,341,460 for 2054. The Status Quo employment scenario includes a Baseline employment component, as well as a 'structural' employment component that results from assumptions regarding the degree to which each of six dimensions of the regional economy can change in the forecast. These 'structural' components of the forecast include the following dimensions: Economic Diversity; Technological Change; Trade Liberalization; Environmental Stewardship; Social Development; and Development Density. Each of these parameters are discussed below.

COMPONENTS OF STRUCTURAL CHANGE

Six key parameters of growth have been defined for the purpose of scenario development. These growth parameters have been used in the development of the employment scenario for this analysis. These growth parameters reflect consideration of the evolution of the Calgary regional economy over the long term forecast period

Structural Growth Parameters



It is recognized that each of these dimensions of structural growth often do not act independently. Rather they are related and to develop consistent projections of future economic and employment

growth, these interactions need to be defined. Below each of the components of structure growth are defined and how they are related is presented below.

ECONOMIC DIVERSITY

Diversification of the economy is a key initiative for the region and provincially. This refers to the variety of business and employment activities in the economy being spread across more industries as opposed to be concentrated in a few industries. In the context of the Calgary region, this refers to more of future economic growth being in non-energy related sectors than has historically been the case.

In measuring progress in diversifying the economy, the range for this parameter is defined as follows:

- ▶ **High:** The energy sector grows but at a lower rate than other selected driver industries.
- ▶ **Low:** The energy sector continues to dominate the regional economy.

Economic diversity is deemed to be strongly related to advancement of technological change, environmental stewardship and development density. The relationship of each structural parameter to economic diversity is provided below.



Economic Diversity

Economic Diversity	Technological Change	Trade Liberalization	Environmental Stewardship	Social Progress	Development Density
Relationship What is the relationship between Economic Diversity and the other Growth Parameters. + Positive ≈ Neutral - Negative	+++ Positive Faster adoption of new technologies will help to promote 'economic diversity'.	≈ Neutral Reduced barriers to trade will expose businesses to increased competition as well as provide greater opportunities to export for other businesses.	+ Positive Greater environmental stewardship will encourage evolution of enterprises to meet demand for new products and services increasing diversity.	≈ Neutral Social progress is largely independent of economic diversity.	++ Positive Newly emerging enterprises will likely benefit from the connectivities of increased densities and proximity to other businesses, services and workforce.
Dependency	Strong dependency: Moves in same direction	Mixed dependency: Industry specific	Minor dependency: Moves in same direction	Not dependent: Moves independently	Minor dependency: Moves in same direction

TECHNOLOGICAL CHANGE

Technological change is inevitable in today's economy and can affect each sector of the economy, albeit differentially. The effects of technological change depends on both the rate of technological change as it happens in the global economy and how quickly it is adopted within the local regional economy.

The range for this parameter is defined as follows:

- ▶ **High:** The rate of technological advancement and adoption of this technology is fast. As an example, autonomous vehicles and AI are developed and adopted quickly.
- ▶ **Low:** The rate of technological advancement is slow and costly to implement.

Technological change is deemed to be strongly related to economic diversity, trade liberalization, environmental stewardship and development density. The relationship of each structural parameter to technological change is provided below.



Technological Change

Technological Change	Economic Diversity	Trade Liberalization	Environmental Stewardship	Social Progress	Development Density
Relationship What is the relationship between Technological Change and the other Growth Parameters. + Positive ≈ Neutral - Negative	+++ Positive Adoption of productivity enhancing technology is likely to lead to increased competitiveness of local businesses and new opportunities across a range of industries.	+ Positive Improved trade liberalization is likely to result in better access to more efficient methods of production (through technology) due to comparative advantage.	++ Positive Environmental challenges will advance the adoption of technological change as businesses will evolve using new practices and processes.	≈ Neutral Social progress is largely independent of technological change.	+ Positive Increased density of development will enhance the adoption of technological advancements that take advantage of smaller business footprints.
Dependency	Minor dependency: Moves in same direction	Average dependency: Moves in same direction	Average dependency: Moves in same direction	Not dependent: Moves independently	Minor dependency: Moves in same direction

TRADE LIBERALIZATION

There are numerous international and inter-provincial barriers to trade that inhibit the movement of goods and services to and from Alberta and the Calgary region. The broad trend over past decades has been to reduce barriers to trade. Recently however, protectionist policies have been implemented, most notably by the United States.

The range for this parameter is defined as follows:

- ▶ **High:** Inter-provincial and international trade barriers are lowered through international trade agreements and inter-provincially through harmonization of specific industry requirements that removes or reduces the advantage of local suppliers.
- ▶ **Low:** Barriers to trade may be raised, including the implementation of tariffs or other policies that disadvantage non-local suppliers.

Trade liberalization is deemed to be strongly related to economic diversity, technological change, environmental stewardship and development density. The relationship of each structural parameter to technological change is provided below.



Trade Liberalization

Trade Liberalization	Economic Diversity	Technological Change	Environmental Stewardship	Social Progress	Development Density
Relationship What is the relationship between Trade Liberalization and the other Growth Parameters. + Positive ≈ Neutral - Negative	≈ Neutral Trade liberalization will likely affect some businesses positively (with export potential) and some negatively (where they compete with imports).	+ Positive Trade liberalization will increase the advancement and adoption of technological change.	++ Positive Trade agreements often include environmental measures and standards forcing the adoption of higher environmental standards.	≈ Neutral Trade liberalization is relatively independent of Social Progress for Canada. This may not be the case of some of Canada's trading partners.	+ Positive Businesses that rely on trade (imports/exports) will likely prefer to locate near major transportation hubs, encouraging density (where possible) in these locations.
Dependency	Mixed dependency: Industry specific	Minor dependency: Moves in same direction	Average dependency: Moves in same direction	Not dependent: Moves independently	Minor dependency: Moves in same direction

ENVIRONMENTAL STEWARDSHIP

Environmental stewardship is manifest in policies and practices that protect environmental assets. This has possible implications for many sectors of the economy, from energy production to consumer products.

The range for this parameter is defined as follows:

- ▶ **High:** Significant progress in advancing recycling, reducing air and water emissions and slowing/reversing climate change.
- ▶ **Low:** Slow progress in advancing recycling, reducing air and water emissions and slowing climate change.

Environmental stewardship is deemed to be strongly related to economic diversity, technological change, trade liberalization and development density. The relationship of each structural parameter to technological change is provided below.



Environmental Stewardship

Environmental Stewardship	Economic Diversity	Technological Change	Trade Liberalization	Social Progress	Development Density
Relationship What is the relationship between Environmental Stewardship and the other Growth Parameters. + Positive ≈ Neutral - Negative	+ Positive An emphasis on Environmental Stewardship will encourage economic diversification by creating demand for new and emerging businesses.	+ Positive Environmental challenges will advance the adoption of technological change as businesses will evolve using new practices and processes.	++ Positive Trade agreements often include environmental measures and standards forcing the adoption of higher environmental standards.	≈ Neutral Environmental Stewardship is relatively independent of Social Progress.	+ Positive Intensification of development will help reduce the demand for land resources.
Dependency	Minor dependency: Moves in same direction	Minor dependency: Industry specific	Average dependency: Moves in same direction	Not dependent: Moves independently	Minor dependency: Moves in same direction

SOCIAL DEVELOPMENT

Social development is defined as progress toward improving the well-being of citizens. This includes improving levels of education, health and well-being, and reducing poverty and income inequality. A healthy and educated population have lower social costs associated with health care, criminal justice and social services. Lower poverty and income balance tends to grow the local economy by creating more purchasing power in the hands of more people.

The range for this parameter is defined as follows:

- ▶ **High:** Major advances in reducing poverty and income disparity. Increases in general levels of education and well-being.
- ▶ **Low:** Little or no progress in reducing poverty and moderating income inequality. Similarly, no advancement in general levels of education and citizen well-being.

Social development is largely independent of the other structural change components. It is expected however; that increased density of development would help to promote social development by creating opportunities for living and working in the same community.



Social Progress

Social Progress	Economic Diversity	Technological Change	Trade Liberalization	Environmental Stewardship	Development Density
Relationship What is the relationship between Social Progress and the other Growth Parameters. + Positive ≈ Neutral - Negative	≈ Neutral Social progress is largely independent of economic diversity.	≈ Neutral Social progress is largely independent of technological change.	≈ Neutral Trade liberalization is relatively independent of Social Progress for Canada.	≈ Neutral Environmental Stewardship is relatively independent of Social Progress.	+ Positive Productivity-enhancing technology could result in better use of land resources for industries. Produce the same (or greater) amount using less space.
Dependency	Not dependent: Moves independently	Not dependent: Moves independently	Not dependent: Moves independently	Not dependent: Moves independently	Minor dependency: Moves in same direction

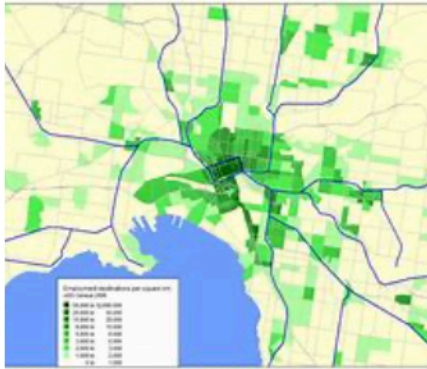
DEVELOPMENT DENSITY

Development density isn't as much an economic parameter, but rather a planning/development dimension that can affect the nature and magnitude of growth. For the purposes of this analysis, development density has been defined as putting more development in less space. This has implications for municipal servicing, community development and business efficiency. As well, reducing the footprint of development creates opportunities for alternate land uses and can reduce environmental impacts associated with development.

The range for this parameter is defined as follows:

- ▶ **High:** Higher density employment based activities are increased and intensified for businesses that have an opportunity to do so. It is noted not all business activities are able to operate effectively and efficiently in less space.
- ▶ **Low:** A continuation of historical development patterns where compact development is not typically considered.

Development density is seen to have a positive relationship with each of the other structural components.



Development Density

Development Density	Economic Diversity	Technological Change	Trade Liberalization	Environmental Stewardship	Social Progress
<p>Relationship</p> <p>What is the relationship between Development Density and the other Growth Parameters.</p> <p>+ Positive ≈ Neutral - Negative</p>	<p>++ Positive</p> <p>Newly emerging enterprises will likely benefit from the connectivities of increased densities and proximity to other businesses, services and workforce.</p>	<p>+ Positive</p> <p>Increased density of development will enhance the adoption of technological advancements that take advantage of smaller business footprints.</p>	<p>+ Positive</p> <p>Businesses that rely on trade (imports/exports) will likely prefer to locate near major transportation hubs, encouraging density (where possible) in these locations.</p>	<p>++ Positive</p> <p>Technological change is relatively independent of Social Progress.</p>	<p>+ Positive</p> <p>Productivity-enhancing technology could result in better use of land resources for industries. Produce the same (or greater) amount using less space.</p>
<p>Dependency</p>	<p>Average dependency: Moves in same direction</p>	<p>Minor dependency: Moves in same direction</p>	<p>Minor dependency: Moves in same direction</p>	<p>Average dependency: Moves in same direction</p>	<p>Minor dependency: Moves in same direction</p>

STATUS QUO SCENARIO

The Status Quo scenario incorporates some structural change, but this has been assumed to be minimal. The specific assumptions regarding structural change are summarized below.

Status Quo - Structural Change

Status Quo

Economic Diversity: The energy sector remains dominant (1.5).

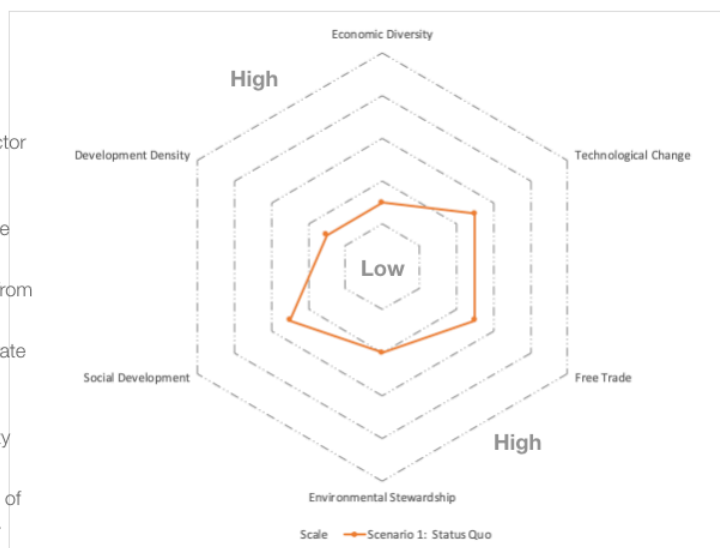
Technological Change: Moderate advancement of technological change (2.5).

Free Trade: Few gains in free trade from current situation (2.5).

Environmental Stewardship: Moderate advancement of this parameter (2.0).

Social Development: Some gain in poverty reduction and income equality (2.5).

Development Density: Continuation of existing pattern of development (1.5).



5 point scale: 1 = Low , 5 = High

Over the forecast period to 2054, structural change is projected to add an additional 144,000 jobs to the regional economy – 10.7% over and above the Baseline projection.¹¹ The resulting total employment for this scenario is 1.485 million jobs.

Status Quo Employment Scenario - Forecast Results for 2054

SCENARIO	BASELINE 2054	BASELINE + STRUCTURAL CHANGE 2054	STRUCTURAL CHANGE IN EMPLOYMENT	% CHANGE RELATIVE TO BASELINE
Status Quo	1,341,460	1,485,069	143,609	10.7%

In the Status Quo scenario employment in the Calgary region grows from 843,094 in 2018 to 1,485,069 by 2054, an average annual increase of 1.6% over the 35 year forecast period.

As part of this process, there was additional discussion on the variation of the six key parameters which were used for developing the Status Quo Scenario. Variation of the parameters reflect consideration of the evolution of the regional economy over the long term forecast period. The additional scenarios that were discussed include:

¹¹ The Baseline forecast is projected to increase employment in the region from 846,000 to 1.341 million between 2018 and 2054. This represents a total increase of 59% over the forecast period.

- ▶ **Economic Diversification Scenario:** This scenario focuses on maximizing the potential for diversification opportunities in the regional economy.
- ▶ **Technological Change Scenario:** This scenario focuses on maximizing the advancement of technological change and its adoption in the regional economy.
- ▶ **Development Density Scenario:** This scenario focuses on maximizing the potential for intensifying development in the regional economy.

The following section provides details regarding each of these additional scenarios. It is important to note that these scenarios are intended for discussion purposes only.

ECONOMIC DIVERSIFICATION SCENARIO

Population growth in the Economic Diversification scenario was projected using fertility, mortality and migration profiles identical to those outlined in the preceding Status Quo scenario section of this report.

The Economic Diversification scenario analysis results are summarized as follows:

- ▶ **Population:** Total population increases from 1,589,218 in 2018 to 2,854,016 by 2054, an increase of 1,264,016 representing a 1.6% average annual growth rate.
- ▶ **Employment:** Total employment is projected to increase from 843,094 to 1,602,069 across the same period, an increase of 758,975 representing an average annual growth rate of 1.8%.
- ▶ **Labour Force:** The labour force increases consistently through the forecast period at an average annual rate of 1.7%.
- ▶ **Participation Rate:** The aggregate participation rate dips slightly from its 2018 rate of 70.4% to 66.8% by 2036, followed by a gradual increase to 69.6% by 2054.
- ▶ **Unemployment Rate:** The unemployment rate is projected to decline relatively quickly from its 2018 rate of 7.9% to an average of about 6.0% by the 2026 to 2041 period, followed by further decline to 5.5% by the end of the forecast period.

The Economic Diversification scenario incorporates significant structural change. The specific assumptions regarding structural change are summarized below.

Economic Diversification - Structural Change

Economic Diversification

Economic Diversity: Maximize diversification opportunities (5.0).

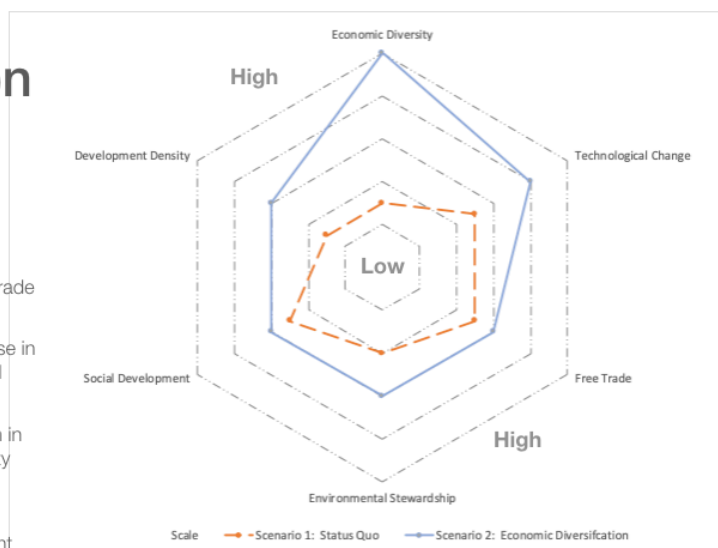
Technological Change: Fast advancement and adoption of technological change (4.0).

Free Trade: Moderate gains in free trade from current situation (3.0).

Environmental Stewardship: Increase in concern and action on environmental issues (3.0).

Social Development: Moderate gain in poverty reduction and income equality (3.0).

Development Density: Moderate increase in the density of development (3.0).



5 point scale: 1 = Low , 5 = High

Over the forecast period to 2054, structural change is projected to add an additional 260,000 jobs to the regional economy – 19.4% over and above the Baseline projection.¹² The resulting total employment for this scenario is 1.6 million jobs.

Economic Diversification Employment Scenario - Forecast Results for 2054

SCENARIO	BASELINE 2054	BASELINE + STRUCTURAL CHANGE 2054	STRUCTURAL CHANGE IN EMPLOYMENT	% CHANGE RELATIVE TO BASELINE
Status Quo	1,341,460	1,485,069	143,609	10.7%
Economic Diversification	1,341,460	1,602,069	260,609	19.4%

TECHNOLOGICAL CHANGE SCENARIO

Population growth in the Technological Change scenario was projected using fertility, mortality and migration profiles identical to those outlined in the preceding Status Quo scenario section of this report.

The Technological Change scenario analysis results are summarized as follows:

- **Population:** Total population increases from 1,589,218 in 2018 to 2,840,880 by 2054, an increase of 1,251,662 representing a 1.6% average annual growth rate.
- **Employment:** Total employment is projected to increase from 843,094 to 1,594,900 across the same period, an increase of 751,806 representing an average annual growth rate of 1.8%.

¹²The Baseline forecast is projected to increase employment in the region from 846,000 to 1.341 million between 2018 and 2054. This represents a total increase of 59% over the forecast period.

- ▶ **Labour Force:** The labour force increases consistently through the forecast period at an average annual rate of 1.7%.
- ▶ **Participation Rate:** The aggregate participation rate dips slightly from its 2018 rate of 70.4% to 66.8% by 2036, followed by a gradual increase to 69.6% by 2054.
- ▶ **Unemployment Rate:** The unemployment rate is projected to decline relatively quickly from its 2018 rate of 7.9% to an average of about 6.0% by the 2026 to 2041 period, followed by further decline to 5.5% by the end of the forecast period.

The Technological Change scenario incorporates significant structural change. The specific assumptions regarding structural change are summarized below.

Technological Change - Structural Change

Technological Change

Economic Diversity: Moderate diversification of the economy (3.0).

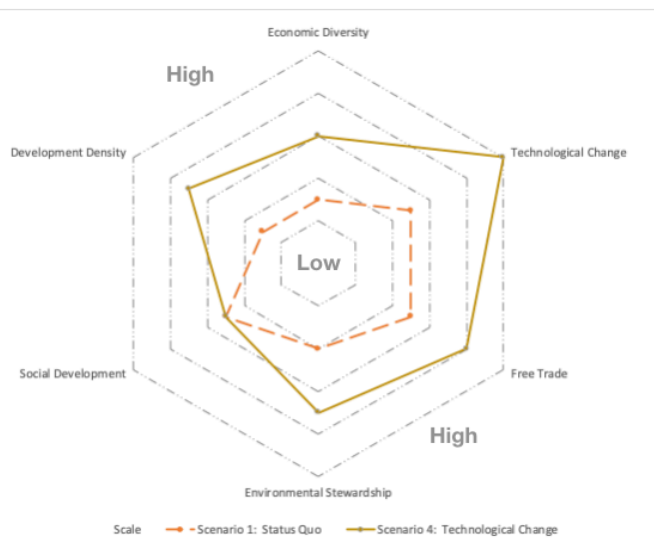
Technological Change: Maximize the advancement of technological change and its adoption (5.0).

Free Trade: Significant gains in free trade from current situation (4.0).

Environmental Stewardship: Increase in concern and action on environmental issues (3.5).

Social Development: No appreciable gains in poverty reduction and income equality (2.0).

Development Density: Moderate increase in the density of development (3.5).



5 point scale: 1 = Low , 5 = High

Over the forecast period to 2054, structural change is projected to add an additional 253,000 jobs to the regional economy – 18.9% over and above the Baseline projection.¹³ The resulting total employment for this scenario is 1.6 million jobs.

Technological Change Scenario - Employment Forecast Results for 2054

SCENARIO	BASELINE 2054	BASELINE + STRUCTURAL CHANGE 2054	STRUCTURAL CHANGE IN EMPLOYMENT	% CHANGE RELATIVE TO BASELINE
Status Quo	1,341,460	1,485,069	143,609	10.7%
Technological Change	1,341,460	1,594,900	253,440	18.9%

¹³The Baseline forecast is projected to increase employment in the region from 846,000 to 1.341 million between 2018 and 2054. This represents a total increase of 59% over the forecast period.

DEVELOPMENT DENSITY SCENARIO

Population growth in the Development Density scenario was projected using fertility, mortality and migration profiles identical to those outlined in the preceding Status Quo scenario section of this report.

The Development Density scenario analysis results are summarized as follows:

- ▶ **Population:** Total population increases from 1,589,218 in 2018 to 2,821,975 by 2054, an increase of 1,232,756 representing a 1.6% average annual growth rate.
- ▶ **Employment:** Total employment is projected to increase from 843,094 to 1,584,410 across the same period, an increase of 741,316 representing an average annual growth rate of 1.8%.
- ▶ **Labour Force:** The labour force increases consistently through the forecast period at an average annual rate of 1.7%.
- ▶ **Participation Rate:** The aggregate participation rate dips slightly from its 2018 rate of 70.4% to 66.8% by 2036, followed by a gradual increase to 69.6% by 2054.
- ▶ **Unemployment Rate:** The unemployment rate is projected to decline relatively quickly from its 2018 rate of 7.9% to an average of about 6.0% by the 2026 to 2041 period, followed by further decline to 5.5% by the end of the forecast period.

The Development Density scenario incorporates significant structural change. The specific assumptions regarding structural change are summarized below.

Development Density - Structural Change

Density of Development

Economic Diversity: Moderate diversification of the economy (3.0).

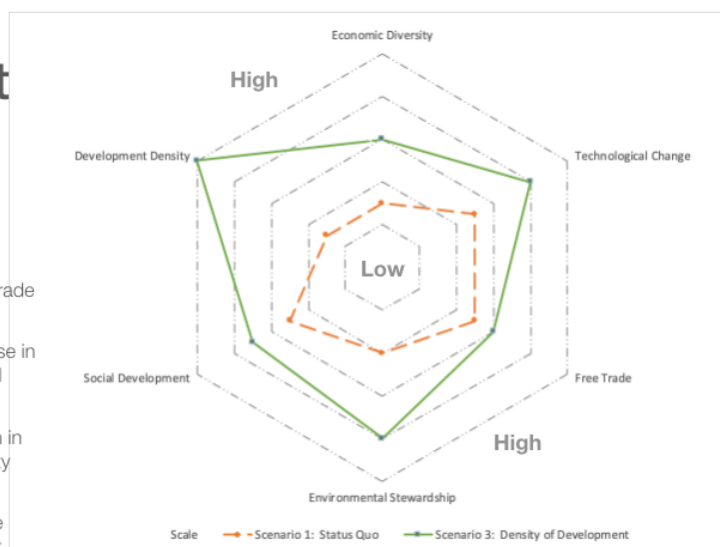
Technological Change: Fast advancement and adoption of technological change (4.0).

Free Trade: Moderate gains in free trade from current situation (3.0).

Environmental Stewardship: Increase in concern and action on environmental issues (4.0).

Social Development: Moderate gain in poverty reduction and income equality (3.5).

Development Density: Maximize the potential for intensifying development (5.0).



5 point scale: 1 = Low , 5 = High

Over the forecast period to 2054, structural change is projected to add an additional 243,000 jobs to the regional economy – 18.1% over and above the Baseline projection.¹⁴ The resulting total employment for this scenario is 1.58 million jobs.

¹⁴The Baseline forecast is projected to increase employment in the region from 846,000 to 1.341 million between 2018 and 2054. This represents a total increase of 59% over the forecast period.

Development Density Employment Scenario - Forecast Results for 2054

SCENARIO	BASELINE 2054	BASELINE + STRUCTURAL CHANGE 2054	STRUCTURAL CHANGE IN EMPLOYMENT	% CHANGE RELATIVE TO BASELINE
Status Quo	1,341,460	1,485,069	143,609	10.7%
Density of Development	1,341,460	1,584,410	242,950	18.1%

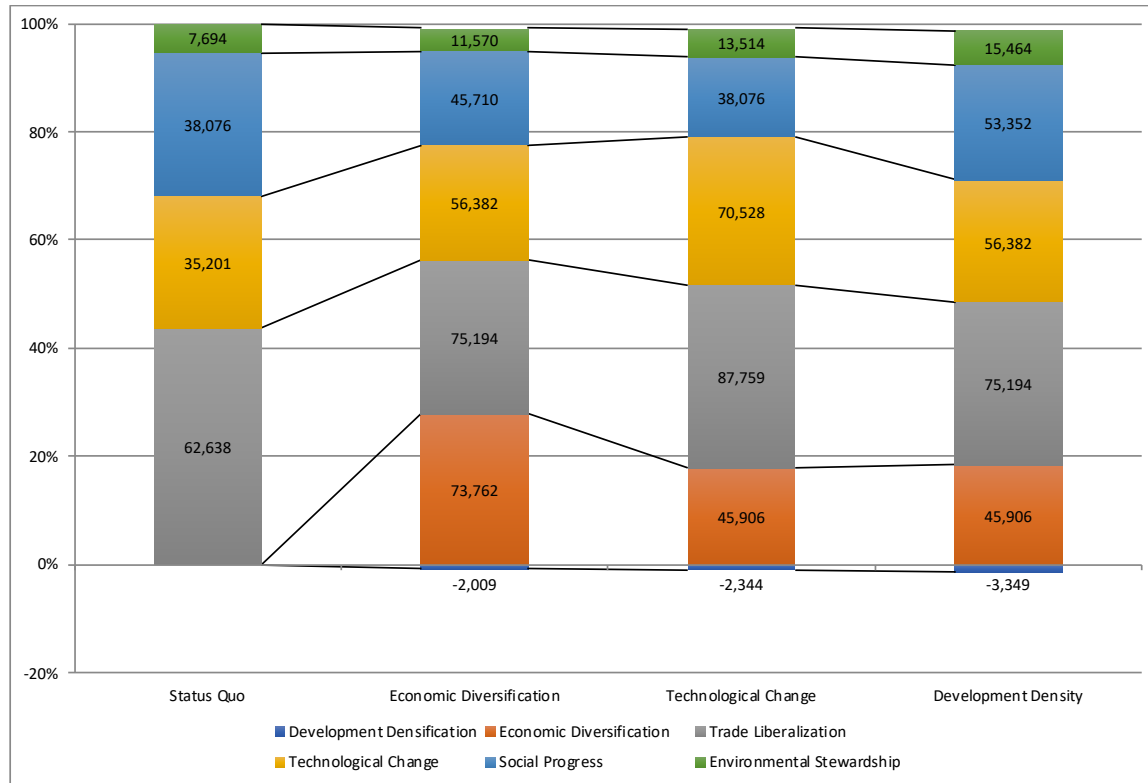
ASSOCIATED WITH STRUCTURAL CHANGE

This section describes the structural parameters that contribute to employment growth through the forecast period (relative to the Baseline scenario).

- ▶ **Status Quo:** Of the 143,609 additional jobs attributable to structural change in the Status Quo scenario, a majority are related to the liberalization of trade conditions (62,638). Significant job growth is also driven by improvements in social development (38,076) and technological change (35,201). Environmental stewardship efforts also contribute a meaningful amount of jobs (7,694) through 2054.
- ▶ **Economic Diversification:** Of the 260,609 additional jobs attributable to structural change in the Economic Diversification scenario, a majority again are related to the liberalization of trade conditions (75,194), though economic diversification efforts contribute nearly as many new positions (73,762). Significant job growth is also driven by improvements in technological change (56,382) and social progress (45,710). Environmental stewardship efforts also contribute a meaningful amount of jobs (11,570) through 2054. Development densification improvements have a net impact of subtracting a relatively small number of jobs (-2,009) through the forecast period.
- ▶ **Technological Change:** Of the 253,440 additional jobs attributable to structural change in the Technological Change scenario, a majority again are related to the liberalization of trade conditions (87,759), though adoption of new technology contributes nearly as many new positions (70,528). Significant job growth is also driven by economic diversification (45,906) and social progress (38,076). Environmental stewardship efforts also contribute a meaningful amount of jobs (13,514) through 2054. Development densification improvements have a net impact of subtracting a relatively small number of jobs (-2,344) through the forecast period.
- ▶ **Development Density:** Of the 242,950 additional jobs attributable to structural change in the Development Density scenario, a majority again are related to the liberalization of trade conditions (75,194). Significant job growth is also driven by the adoption of new technology (56,382), social progress (53,352), and efforts to improve economic diversification (45,906). Environmental stewardship efforts also contribute a meaningful amount of jobs (15,464) through 2054. Development densification improvements have a net impact of subtracting a relatively small number of jobs (-3,349) through the forecast period.

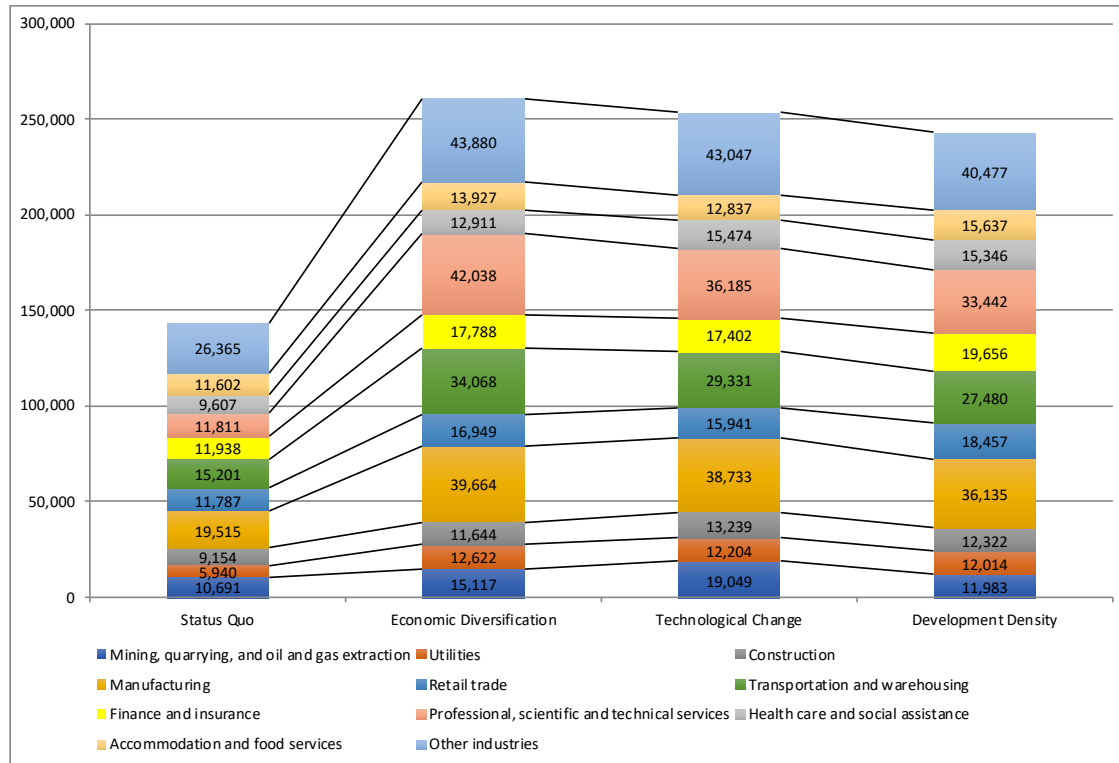
The chart below displays the structural component impacts on employment growth in each scenario, by type, through the forecast period relative to the Baseline.

Structural Parameter Impacts on Scenario-Specific Employment Growth (2054)



Differences in assumptions regarding the magnitude of structural component change across scenarios also results in different rates of job growth across industries. The chart on the following page disaggregates parameter-specific employment impacts in each scenario, according to industry group.

Scenario-Specific Structural Employment Growth (2054)



Appendix B: Employment Scenarios by 2 Digit NAICS

Status Quo Scenario - Employment by 2 Digit NAICS

2 DIGIT NAICS INDUSTRY	2018 EMPLOYMENT	2054 EMPLOYMENT	CHANGE IN EMPLOYMENT	AVERAGE ANNUAL % CHANGE
11 Agriculture, forestry, fishing and hunting	2,398	4,255	1,857	1.1%
21 Mining and oil and gas extraction	50,506	94,500	43,994	1.7%
22 Utilities	10,772	20,643	9,871	1.8%
23 Construction	82,833	156,989	74,156	1.8%
31-33 Manufacturing	46,436	79,171	32,735	1.5%
41 Wholesale trade	19,723	34,058	14,335	1.5%
44-45 Retail trade	92,020	146,243	54,223	1.3%
48-49 Transportation and warehousing	67,000	118,913	51,913	1.6%
51 Information and cultural industries	16,770	22,723	5,953	0.8%
52 Finance and insurance	30,917	57,084	26,167	1.7%
53 Real estate and rental and leasing	12,966	22,540	9,574	1.5%
54 Professional, scientific and technical services	99,569	173,763	74,194	1.6%
55 Management of companies and enterprises	2,729	4,233	1,504	1.2%
56 Administrative and support, waste management and remediation services	36,872	67,083	30,211	1.7%
61 Educational services	48,655	79,898	31,243	1.4%
62 Health care and social assistance	77,198	158,213	81,015	2.0%
71 Arts, entertainment and recreation	20,995	34,456	13,461	1.4%
72 Accommodation and food services	53,963	96,728	42,765	1.6%
81 Other services (except public administration)	47,377	76,228	28,851	1.3%
91 Public administration	23,395	37,348	13,953	1.3%
Total Employment	843,094	1,485,069	641,975	1.6%

*Highlighted shading represents the NAICS industries with average annual growth rates above the aggregate employment growth rate.

Economic Diversification Scenario - Employment by 2 Digit NAICS

2 DIGIT NAICS INDUSTRY	2018 EMPLOYMENT	2054 EMPLOYMENT	CHANGE IN EMPLOYMENT	AVERAGE ANNUAL % CHANGE
11 Agriculture, forestry, fishing and hunting	2,398	4,341	1,943	1.1%
21 Mining and oil and gas extraction	50,506	98,926	48,420	1.9%
22 Utilities	10,772	27,326	16,554	2.6%
23 Construction	82,833	159,479	76,646	1.8%
31-33 Manufacturing	46,436	99,320	52,884	2.1%
41 Wholesale trade	19,723	38,833	19,110	1.9%
44-45 Retail trade	92,020	151,405	59,385	1.4%
48-49 Transportation and warehousing	67,000	137,780	70,780	2.0%
51 Information and cultural industries	16,770	29,712	12,942	1.6%
52 Finance and insurance	30,917	62,934	32,017	2.0%
53 Real estate and rental and leasing	12,966	22,691	9,725	1.6%
54 Professional, scientific and technical services	99,569	203,990	104,421	2.0%
55 Management of companies and enterprises	2,729	4,338	1,609	1.3%
56 Administrative and support, waste management and remediation services	36,872	69,949	33,077	1.8%
61 Educational services	48,655	81,308	32,653	1.4%
62 Health care and social assistance	77,198	161,517	84,319	2.1%
71 Arts, entertainment and recreation	20,995	35,231	14,236	1.4%
72 Accommodation and food services	53,963	99,054	45,091	1.7%
81 Other services (except public administration)	47,377	77,232	29,855	1.4%
91 Public administration	23,395	36,703	13,308	1.2%
Total Employment	843,094	1,602,069	758,975	1.8%

*Highlighted shading represents the NAICS industries with average annual growth rates above the aggregate employment growth rate.

Technological Change Scenario - Employment by 2 Digit NAICS

2 DIGIT NAICS INDUSTRY	2018 EMPLOYMENT	2054 EMPLOYMENT	CHANGE IN EMPLOYMENT	AVERAGE ANNUAL % CHANGE
11 Agriculture, forestry, fishing and hunting	2,398	4,424	2,026	1.2%
21 Mining and oil and gas extraction	50,506	102,858	52,352	2.0%
22 Utilities	10,772	26,907	16,135	2.6%
23 Construction	82,833	161,074	78,241	1.9%
31-33 Manufacturing	46,436	98,389	51,953	2.1%
41 Wholesale trade	19,723	37,708	17,985	1.8%
44-45 Retail trade	92,020	150,397	58,377	1.4%
48-49 Transportation and warehousing	67,000	133,043	66,043	1.9%
51 Information and cultural industries	16,770	27,779	11,009	1.4%
52 Finance and insurance	30,917	62,548	31,631	2.0%
53 Real estate and rental and leasing	12,966	22,777	9,811	1.6%
54 Professional, scientific and technical services	99,569	198,136	98,567	1.9%
55 Management of companies and enterprises	2,729	4,419	1,690	1.3%
56 Administrative and support, waste management and remediation services	36,872	70,306	33,434	1.8%
61 Educational services	48,655	82,004	33,349	1.5%
62 Health care and social assistance	77,198	164,080	86,882	2.1%
71 Arts, entertainment and recreation	20,995	35,054	14,059	1.4%
72 Accommodation and food services	53,963	97,963	44,000	1.7%
81 Other services (except public administration)	47,377	78,504	31,127	1.4%
91 Public administration	23,395	36,531	13,136	1.2%
Total Employment	843,094	1,594,900	751,806	1.8%

*Highlighted shading represents the NAICS industries with average annual growth rates above the aggregate employment growth rate.

Density of Development Scenario - Employment by 2 Digit NAICS

2 DIGIT NAICS INDUSTRY	2018 EMPLOYMENT	2054 EMPLOYMENT	CHANGE IN EMPLOYMENT	AVERAGE ANNUAL % CHANGE
11 Agriculture, forestry, fishing and hunting	2,398	4,343	1,945	1.1%
21 Mining and oil and gas extraction	50,506	95,792	45,286	1.8%
22 Utilities	10,772	26,717	15,945	2.5%
23 Construction	82,833	160,157	77,324	1.8%
31-33 Manufacturing	46,436	95,791	49,355	2.0%
41 Wholesale trade	19,723	37,035	17,312	1.8%
44-45 Retail trade	92,020	152,913	60,893	1.4%
48-49 Transportation and warehousing	67,000	131,192	64,192	1.9%
51 Information and cultural industries	16,770	27,318	10,548	1.4%
52 Finance and insurance	30,917	64,802	33,885	2.1%
53 Real estate and rental and leasing	12,966	22,724	9,758	1.6%
54 Professional, scientific and technical services	99,569	195,393	95,824	1.9%
55 Management of companies and enterprises	2,729	4,338	1,609	1.3%
56 Administrative and support, waste management and remediation services	36,872	69,454	32,582	1.8%
61 Educational services	48,655	81,524	32,869	1.4%
62 Health care and social assistance	77,198	163,953	86,755	2.1%
71 Arts, entertainment and recreation	20,995	35,766	14,771	1.5%
72 Accommodation and food services	53,963	100,764	46,801	1.7%
81 Other services (except public administration)	47,377	78,148	30,771	1.4%
91 Public administration	23,395	36,285	12,890	1.2%
Total Employment	843,094	1,584,410	741,316	1.8%

*Highlighted shading represents the NAICS industries with average annual growth rates above the aggregate employment growth rate.

Appendix C: 2018 Employment Estimate

In the development of the forecasts, 2018 base year employment was estimated, as there is no public source for 2018 employment for the Calgary Metropolitan Region. The CMRB approved population projections¹⁵ for the Calgary Metropolitan Region were used to develop an estimate of the 2018 employment. Employment estimates were calculated annually, by applying labour force participation rates and unemployment rates to the annual population by age projections. The age-specific population forecast target for 2054 (forecast end year) was interpolated using the 2051 and 2056 data provided by Rennie Intelligence.

This approach to estimating employment helps to align the population and employment projections that are being used to inform the Growth Plan. In addition, CMRB provided employment data from the City of Calgary's Regional Transportation Model. This data included employment by aggregate 2 digit NAICS¹⁶ by transportation zone for the entire Calgary Metropolitan Region. This dataset, along with the 2018 employment estimate derived from the population projections was used to develop the 2018 employment for the Region. During the process, the consulting team reviewed the 2018 employment data and made some revisions to the data based on feedback provided by members of the Technical Advisory Group.

In addition, other data sources were reviewed in the development of the 2018 employment estimate. These data sources include:

- ▶ Rennie Population Projections (CMRB);
- ▶ Federal and Municipal Census data;
- ▶ Alberta Regional Dashboard;
- ▶ Conference Board of Canada;
- ▶ Statistics Canada CANSIM Database (Labour Force Survey)

As the CMR is a unique geography, publicly available data sources do not exactly align with this geography. For each of the data sources reviewed, the geographies were unique, and as part of our analysis adjustments were necessary in order to compare estimates.

¹⁵ Population Projections. Produced for the Calgary Metropolitan Region Board & Its Member Municipalities. December 2018, Rennie Intelligence.

¹⁶ The aggregate 2 digit NAICS data was converted to 2 Digit NAICS for the purposes of this analysis to be able to make detailed industry growth assumptions.

Appendix D: NAICS Industry Definition

Please refer to NAICS Industry Classification Table (below) for the industry names corresponding to the industry codes presented in the tables in this report.

NAICS Industry Classification¹⁷

2-DIGIT NAICS CODE	INDUSTRY NAME
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

The following section describes the methodology for describing the employment activities captured or excluded from the 2-digit North American Industry Classification System (NAICS) industry categories.

11 Agriculture, forestry, fishing and hunting

This sector comprises establishments primarily engaged in growing crops, raising animals, harvesting timber, harvesting fish and other animals from their natural habitats and providing related support activities. The establishments that are primarily engaged in agricultural research or that supply veterinary services are not included in this sector.

¹⁷ Description of 2-digit NAICS from [Industry Canada](#)

21 Mining and oil and gas extraction

This sector comprises establishments primarily engaged in extracting naturally occurring minerals. These can be solids, such as coal and ores; liquids, such as crude petroleum; and gases, such as natural gas. It also includes establishments engaged in exploration, support activities for mineral, oil and gas extraction as well as those operating on a contract or fee basis.

22 Utilities

This sector comprises establishments primarily engaged in operating electric, gas and water utilities. These establishments generate, transmit, control and distribute electric power; distribute natural gas; treat and distribute water; operate sewer systems and sewage treatment facilities; and provide related services, generally through a permanent infrastructure of lines, pipes and treatment and processing facilities.

23 Construction

This sector comprises establishments primarily engaged in constructing, repairing and renovating buildings and engineering works, and in subdividing and developing land. These establishments may operate on their own account or under contract to other establishments or property owners. These establishments may be involved from the project start till its completion or be involved in joint ventures. Activities include: construction of buildings; land subdivision and land development; engineering construction; construction management; site preparation work; building interior finishing work; building equipment installation, other specialty contractors. Establishments that are excluded from this category are those which are primarily engaged in manufacturing and installing building equipment, such as power boilers; manufacturing pre-fabricated buildings (31-33, Manufacturing); operating highways, streets and bridges (48-49, Transportation and Warehousing); projects management services, when it is a primary activity (54133, Engineering Services); maintenance of rights of way for power, communication and pipe lines; and cleaning building exteriors after construction (56, Administrative and Support, Waste Management and Remediation Services).

31-33 Manufacturing

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.

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.

41 Wholesale trade

This sector comprises establishments primarily engaged in wholesaling merchandise and providing related logistics, marketing and support services. The wholesaling process is generally an intermediate step in the distribution of merchandise; many wholesalers are therefore organized to sell merchandise in large quantities to retailers, and business and institutional clients. However, some wholesalers, in particular those that supply non-consumer capital goods, sell merchandise in single units to final users.

This sector recognizes two main types of wholesalers, that is, wholesale merchants and wholesale agents and brokers.

Wholesale merchants buy and sell merchandise on their own account, that is, they take title to the goods they sell. They generally operate from warehouse or office locations and they may ship from their own inventory or arrange for the shipment of goods directly from the supplier to the client. Dealers of machinery and equipment, such as dealers of farm machinery and heavy-duty trucks, also fall within this category.

Wholesale Agents and Brokers

Wholesale agents and brokers buy and sell merchandise owned by others on a fee or commission basis. They do not take title to the goods they buy or sell, and they generally operate at or from an office location.

44-45 Retail trade

The retail trade sector comprises establishments primarily engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.

The retailing process is the final step in the distribution of merchandise; retailers are therefore organized to sell merchandise in small quantities to the general public. This sector comprises two main types of retailers, that is, store and non-store retailers.

Store retailers operate fixed point-of-sale locations, located and designed to attract a high volume of walk-in customers. In general, retail stores have extensive displays of merchandise and use mass-media advertising to attract customers. They typically sell merchandise to the general public for personal or household consumption, but some also serve business and institutional clients. Catalogue sales showrooms, gasoline service stations, and mobile home dealers are treated as store retailers.

Non-store retailers, like store retailers, are organized to serve the general public, but their retailing methods differ. The establishments of this sub-sector reach customers and market merchandise with methods such as the broadcasting of infomercials, the broadcasting and publishing of direct-response advertising, the publishing of traditional and electronic catalogues, door-to-door solicitation, in-home demonstration, temporary displaying of merchandise (stalls) and distribution by vending machines. The non-store retailers sub-sector also includes establishments engaged in the home delivery of products. This includes home heating oil dealers and newspaper delivery companies.

48-49 Transportation and warehousing

This sector comprises establishments primarily engaged in transporting passengers and goods, warehousing and storing goods, and providing services to these establishments. The modes of transportation are road (trucking, transit and ground passenger), rail, water, air and pipeline. National post office and courier establishments, which also transport goods, are included in this sector. Many of the establishments in this sector are structured as networks, with activities, workers, and physical facilities distributed over an extensive geographic area.

The establishments excluded from this category are those which are primarily engaged in the renting and leasing of transportation equipment without operator (532, Rental and Leasing Services).

51 Information and cultural industries

This sector comprises establishments primarily engaged in producing and distributing (except by wholesale and retail methods) information and cultural products. Establishments providing the means to transmit or

distribute these products or providing access to equipment and expertise for processing data are also included.

The unique characteristics of information and cultural products, and of the processes involved in their production and distribution, distinguish this sector from the goods-producing and services-producing sectors.

Most of these products are protected from unlawful reproduction by copyright laws. Only those possessing the rights to these works are authorized to reproduce, alter, improve and distribute them. Acquiring and using these rights often involves significant costs.

The main components of this sector are the publishing industries (except exclusively on Internet), including software publishing, the motion picture and sound recording industries, the broadcasting industries (except exclusively on Internet), the telecommunications and related services industries (i.e., telephony, including VoIP; cable and satellite television distribution services; Internet access; telecommunications reselling services), data processing industries, and the other information services industries, including Internet publishing and broadcasting and web search portals.

52 Finance and insurance

This sector comprises establishments primarily engaged in financial transactions or in facilitating financial transactions. Included are: Establishments that are primarily engaged in financial intermediation. Establishments that are primarily engaged in the pooling of risk by underwriting annuities and insurance. Establishments that are primarily engaged in providing specialized services that facilitate or support financial intermediation, insurance and employee benefit programs. In addition, establishments charged with monetary control - the monetary authorities - are included in this sector.

53 Real estate and rental and leasing

This sector comprises establishments primarily engaged in renting, leasing or otherwise allowing the use of tangible or intangible assets. Establishments primarily engaged in managing real estate for others; selling, renting and/or buying of real estate for others; and appraising real estate, are also included.

54 Professional, scientific and technical services

This sector comprises establishments primarily engaged in activities in which human capital is the major input. These establishments make available the knowledge and skills of their employees, often on an assignment basis. The individual industries of this sector are defined on the basis of the particular expertise and training of the service provider.

The main components of this sector are legal services industries, accounting and related services industries, architectural, engineering and related services industries, surveying and mapping services industries, design services industries, management, scientific and technical consulting services industries, scientific research and development services industries, and advertising services industries.

Much of the expertise requires a university or college education, though not in every case.

Establishments that have been excluded are those primarily engaged in providing instruction and training in a wide variety of subjects and those primarily engaged in providing health care by diagnosis and treatment are not included in this sector.

55 Management of companies and enterprises

This sector comprises establishments primarily engaged in managing companies and enterprises and/or holding the securities or financial assets of companies and enterprises, for the purpose of owning a controlling interest in them and/or influencing their management decisions. They may undertake the function of management, or they may entrust the function of financial management to portfolio managers.

56 Administrative and support, waste management and remediation services

This sector comprises two different types of establishments: those primarily engaged in activities that support the day-to-day operations of other organizations; and those primarily engaged in waste management activities.

The first type of establishment is engaged in activities such as administration, hiring and placing personnel, preparing documents, taking orders from clients, collecting payments for claims, arranging travel, providing security and surveillance, cleaning buildings, and packaging and labelling products. These activities are often undertaken, in-house, by establishments found in many sectors of the economy. The establishments classified to this sector specialize in one or more of these activities and can therefore provide services to clients in a variety of industries and, in some cases, to households.

Waste management establishments are engaged in the collection, treatment and disposal of waste material, the operation of material recovery facilities, the remediation of polluted sites and the cleaning of septic tanks.

61 Educational services

This sector comprises establishments primarily engaged in providing instruction and training in a wide variety of subjects. This instruction and training is provided by specialized establishments, such as schools, colleges, universities and training centres. These establishments may be privately owned and operated, either for profit or not, or they may be publicly owned and operated. They may also offer food and accommodation services to their students.

62 Health care and social assistance

This sector comprises establishments primarily engaged in providing health care by diagnosis and treatment, providing residential care for medical and social reasons, and providing social assistance, such as counselling, welfare, child protection, community housing and food services, vocational rehabilitation and child care, to those requiring such assistance.

71 Arts, entertainment and recreation

This sector comprises establishments primarily engaged in operating facilities or providing services to meet the cultural, entertainment and recreational interests of their patrons. These establishments produce, promote or participate in live performances, events or exhibits intended for public viewing; provide the artistic, creative and technical skills necessary for the production of artistic products and live performances; preserve and exhibit objects and sites of historical, cultural or educational interest; and operate facilities or provide services that enable patrons to participate in sports or recreational activities or pursue amusement, hobbies and leisure-time interests.

Establishments that are excluded for the reason that they fall into other related NAICS categories are follows. Establishments primarily engaged in transportation providing sightseeing and pleasure cruises (48-49, Transportation and Warehousing),

motion picture theatres, libraries and archives, and publishers of newspapers, magazines, books, periodicals and computer software (51, Information and Cultural Industries), establishments that provide both accommodation and recreational facilities, such as hunting and fishing camps, resorts and casino hotels (721, Accommodation Services), restaurants and night clubs that provide live entertainment in addition to the sale of food and beverages (722, Food Services and Drinking Places).

72 Accommodation and food services

This sector comprises establishments primarily engaged in providing short-term lodging and complementary services to travellers, vacationers and others, in facilities such as hotels, motor hotels, resorts, motels, casino hotels, bed and breakfast accommodation, housekeeping cottages and cabins, recreational vehicle parks and campgrounds, hunting and fishing camps, and various types of recreational and adventure camps. This sector also comprises establishments primarily engaged in preparing meals, snacks and beverages, to customer order, for immediate consumption on and off the premises.

81 Other services (except public administration)

This sector comprises establishments, not classified to any other sector, primarily engaged in repairing, or performing general or routine maintenance, on motor vehicles, machinery, equipment and other products to ensure that they work efficiently; providing personal care services, funeral services, laundry services and other services to individuals, such as pet care services and photo finishing services; organizing and promoting religious activities; supporting various causes through grant-making, advocating (promoting) various social and political causes, and promoting and defending the interests of their members. Private households are also included.

91 Public administration

This sector comprises establishments primarily engaged in activities of a governmental nature, that is, the enactment and judicial interpretation of laws and their pursuant regulations, and the administration of programs based on them. Legislative activities, taxation, national defence, public order and safety, immigration services, foreign affairs and international assistance, and the administration of government programs are activities that are purely governmental in nature.

Ownership is not a criterion for classification. Government owned establishments engaged in activities that are not governmental in nature are classified to the same industry as privately owned establishments engaged in similar activities.

Government establishments may engage in a combination of governmental and non-governmental activities. When separate records are not available to separate the activities that are not governmental in nature from those that are, the establishment is classified to this sector.