Photo: credit to Tourism Calgary

Calgary and Region Economic Outlook

2017 - 2026

Fall 2017

Table of Contents

Table of Contents	2
Introduction	3
Executive Summary	4
Forecast	7
City of Calgary	7
Calgary Economic Region (CER)	13
Assumptions	20
Alberta	20
Canada	24
United States	26
World	28
Forecast Tables	29
Appendices	35
High Case Scenario Forecast Tables	36
Low Case Scenario Forecast Tables	39
Historical Data Tables	42
Glossary	44
Who We Are	47

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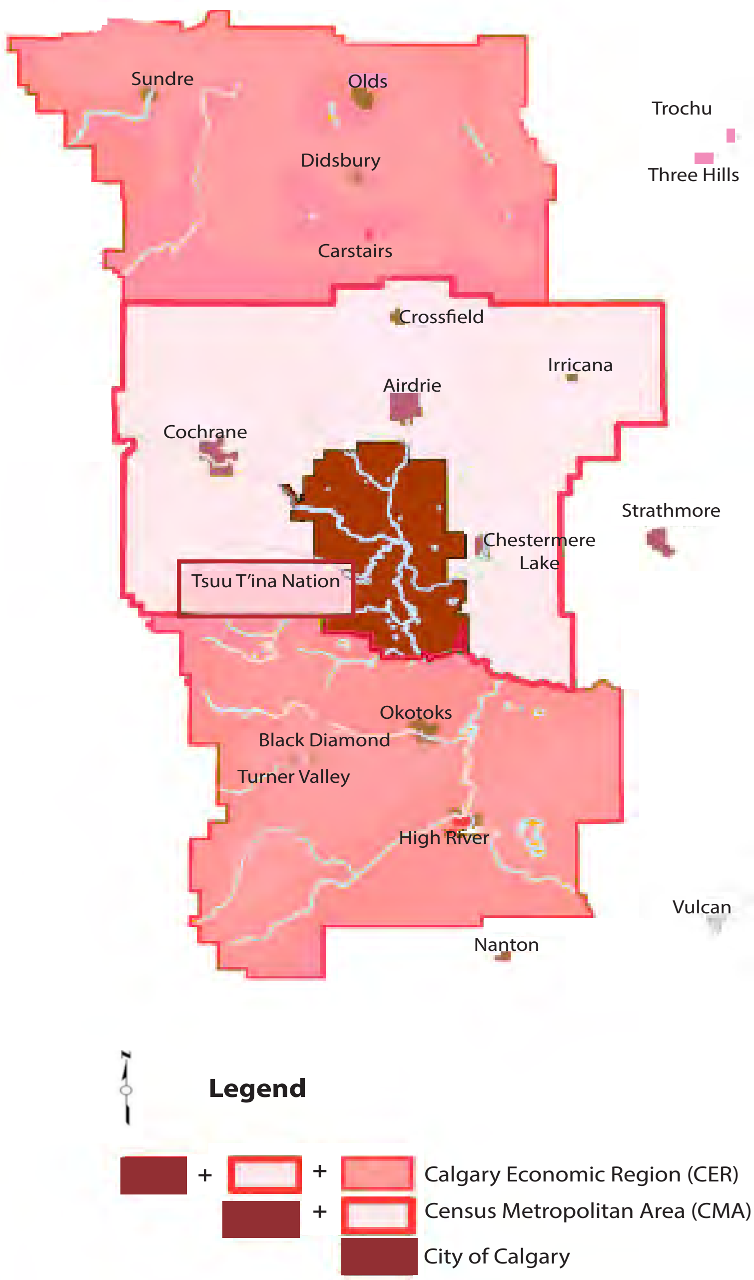
Calgary Region



Introduction

Preamble

The City of Calgary monitors and tracks economic indicators to develop insights on how external events are impacting the local economy throughout the year. The results of this process are published twice annually as the Calgary and Region Economic Outlook; once in the spring and then again in the fall. In it we track several key macroeconomic indicators and present forecasts for a selected number of economic variables.

We prepare this document to provide analysis of those factors that are considered most likely to have a significant effect on the local economy over the forecast period.

Purpose

- This publication is used to assist The City of Calgary in its financial planning and budgeting, as well as physical planning. The forecast enables The City to take into consideration the current economic conditions and potential outlook to plan prudently and responsibly the financial path forward, while understanding current risks and opportunities.
- The report fills an important information gap by providing a comprehensive economic analysis of the Calgary local economy which most other economic reports exclude. Unlike most research institutions, which restrict their analyses to the Alberta economy and a few urban areas within the province, this report answers the following key questions:
  - ◊ What is the overall forecast for the rate of growth of the local Calgary economy?
  - ◊ What are the drivers of the local Calgary economy?
  - ◊ What is the expected number of jobs that will be created in the local Calgary economy?
  - ◊ What is the expected population growth for the city of Calgary and its region?
  - ◊ What is the expected inflation rate in the Calgary Economic Region?
  - ◊ What are the implications of the forecast and how will it impact municipal finance?

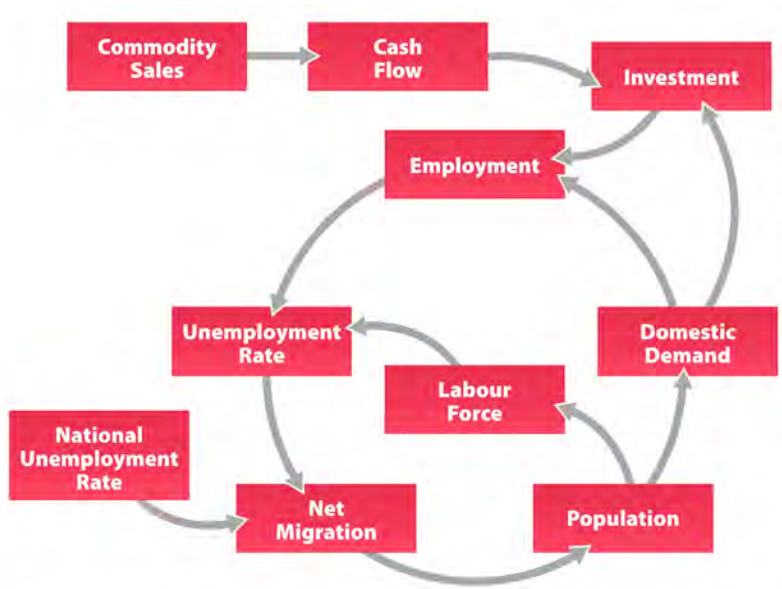
Assumptions

The study area for the economic forecast is the Calgary Economic Region (CER). The CER is a small open economy that is affected by changes outside its borders (see regional growth dynamics chart below). For example, political instability in the world's oil producing regions or technological changes can cause sharp increases or decreases in oil prices, which affect the Alberta energy industry's cash flow and investment in the local economy.

In attempting to explain the Calgary economy certain key assumptions are made about factors or activities outside its borders. For example, we assume the world growth continues to expand, and likewise, that the Canadian economy continues to grow.

Any deviations from our key assumptions will alter the forecasts provided in this report.

Regional Growth Dynamics



Executive Summary

Between 2012 and 2015 Calgary's population grew by an average 3.1 per cent per year, growing a total of 111,000 people. Fortunes changed in 2015 after world oil prices collapsed. In 2016 the Calgary population grew by only 4,000 people. The forecast calls for modest population growth over 2017-2018 with an average annual growth in 2018-2021 of 13,500 per year. After two years of recession the situation is now improving. Improvement is expected to be slow and structural changes to the world and Calgary economies mean that future growth will be at a slower pace than Calgary experienced during the boom years. In this report, we present our base case scenario. The base case scenario is predicated upon assumptions of key variables which have been published by national and international forecast organizations. In the appendices we include our high and low case scenarios.

Forecast

Calgary

- Calgary population is expected to grow by 1 per cent in 2018 and, on average, grow by just over 1 per cent per year during 2019 to 2021.
- Calgary is expected to experience modest stable growth until 2022. In 2022, we anticipate oil prices will stabilize above U.S.$60 /bbl. This will increase optimism in Calgary's future resulting in increased net migration in 2021 and thereafter.
- Average re-sale house MLS® prices in Calgary will fare differently depending on the type of dwelling. Single family homes will continue to be the favored type of dwelling and will experience modest price increases averaging 1.7 per cent in the forecast period. Semi-detached dwellings will also experience price gains as more people elect to live in this type of dwelling.
- Construction activity in the housing sector is expected to remain below average due to lower levels of net migration, lower household formation rates, and higher interest rates. Total annual housing starts in Calgary are expected to fall in 2017 to 6,300 units, and rise to 9,600 units by 2022.
- The office vacancy rate in Calgary is expected to remain elevated above industry norms in the forecast period. Calgary's improving job market is expected to absorb the current excess supply of office space but this will be a slow process.
- The combination of weak population and employment growth and higher interest rates is expected to depress future building permit values. Relatively high vacancy rates in the residential and non-residential markets will also weigh on the construction of new space. The forecast for building permit values is $3.6 billion in 2018, down slightly due to provincial construction projects, and $3.9 billion in 2019.

Calgary Economic Region (CER)

- Economic activity in the CER is expected to grow in 2017 by 3 per cent, after contracting 1.2 per cent last year. The recession is over but Calgary is not entering a boom. The forecast calls for the economy to expand by 2.4 per cent in 2018 and by 3.0 per cent in 2019. The economic recovery would be driven by growth in consumer spending, business investment, government expenditures and net exports.
- Total employment in the CER was estimated at 880,000 in 2017, slightly higher than employment in Calgary at the peak of the boom in 2015, but Calgary's population has grown by 15,500 since then too. The forecast for total employment indicates improving job prospects in Calgary with 901,000 jobs in 2018, and 930,000 in 2019. Job growth is expected to slow by 2022 when Calgary's unemployment rate dips into the 5.4 per cent range.
- Consumer prices will rise by 1.8 per cent in 2017, up

from 1.0 per cent a year earlier. The consumer price index inflation rate is expected to average 2.3 per cent in 2018 and 2019.

- Non-Residential building costs continued to fall in the first half of 2017 but the fall has now stopped. In total construction prices fell by 3.2 per cent since 2015. In 2018 price pressures from an increasingly active U.S. economy and higher Canadian interest rates will cause construction costs to increase 0.4 per cent. Low building cost inflation of about 1 per cent is expected in 2019 and 2020 before increasing oil prices in 2021 push construction inflation up significantly.

Assumptions

Alberta

- Oil prices have fallen from U.S. $100/bbl. to around U.S. $50/bbl. in 2017. The outlook calls for oil prices to rise slowly and steadily, reaching U.S.$65/bbl. by 2026.

- After 2 years of recession Alberta's economy is growing. Real GDP in Alberta is expected to grow around 2.4 per cent in 2018, and to maintain that pace of growth until 2022. At that stage Calgary's economy will be diversified into the new lower oil price environment and GDP growth will slow thereafter.

Canada

- The Bank of Canada (BoC) has begun raising interest rates. Rates have risen by 0.5 per cent this year and future rate increases will likely follow the U.S. Federal Reserve. The Canadian dollar is expected to slowly appreciate over the forecast period in response to rising interest rates.

- Real GDP growth in Canada was estimated at 1.5 per cent in 2016, higher than the low of 0.9 per cent in 2015, and was supported by increases in residential investment, government spending, and exports. The national economy is forecast to grow by 2.8 per cent in 2017 and 2 per cent in 2018, before trending down to 2.0 - 1.7 per cent for the rest of the forecast period.

United States

- The United States real gross domestic product is expected to grow 2.1 per cent in 2017 and 2.2 per cent in 2018 and average 2.2 per cent per annum between 2019 and 2022.
- The U.S. Federal Reserve has begun raising interest rates. They have indicated that they intend to raise the target rate in the medium term and current expectations are for the target rate to rise from 1.0 to 1.25 per cent today to 2.75 per cent by 2020.

World

- The decline in world oil prices have given importing countries opportunities to improve their GDP while limiting exporting countries GDP growth. Importing countries have, mostly, rebalanced their economies now and are expected to grow this year. On net, global GDP is expected to grow at an average 3.5 per cent over the forecast horizon.

- There are numerous geopolitical events ongoing around the world today. These geopolitical events represent significant risks to the forecast.

Forecast Risks

Downside

- Fortunes have shifted for the Alberta Government. From 1994 to 2016 the Province of Alberta had a positive net financial position. The provinces' net financial position turned negative this year. Projections by the Royal Bank of Canada estimate that by April 2020 Alberta's net position will be negative, by about 12 percent of annual GDP. Including all savings funds, like the Heritage Savings Fund, the Alberta net position is projected to be about negative $35 billion dollars or about 80 percent of the Provincial government's annual revenues from all sources. The Provincial government has little capacity to further assist Calgary in the near future. There is little doubt that the Provincial government will do some budget tightening in the near future. The risk to Calgary is the degree to which the Provincial government may cut spending.
- Renegotiation of NAFTA and the Canada-U.S. softwood lumber agreements represents a significant risk to the forecast. The U.S. is embroiled in multiple international issues including NAFTA which is creating a politically uncertain environment. In such an uncertain environment, some Canadian businesses may be waiting to see how much of what access they will have to U.S. customers before making investments.
- The new global oil market is one of greater efficiency, lower prices and reduced opportunities for prices to spike up in response to local environmental or geopolitical issues. Stockpiles of oil have grown over the past 3 years. The existence of those stocks is now acting as a buffer keeping prices low. It is expected those stockpiles will return to more normal levels around 2021, which is the earliest that oil prices are expected to start showing significant gains.

Upside

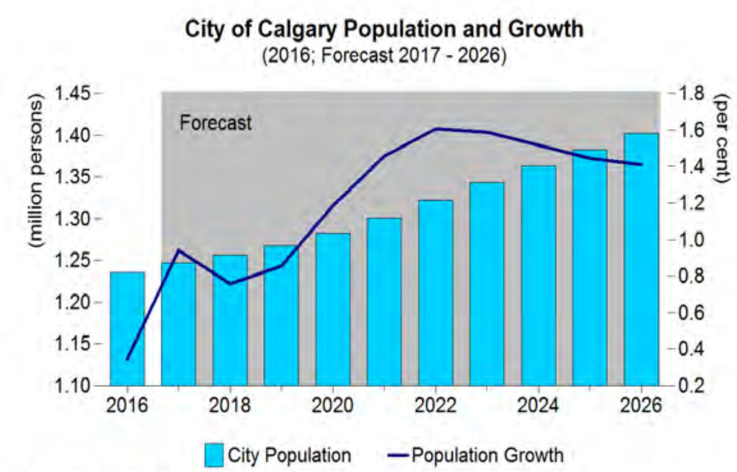
- There is a significant risk to the housing forecast. Foreign investors have pumped up housing prices in Vancouver and Toronto. Both have instituted some form of foreign buyers' tax which has discouraged foreign investors. It appears that high end Montreal market is the new hub of foreign residential investor activity in Canada and it is possible that foreign investors could look to Calgary during the forecast horizon due to Calgary's relative affordability. Should foreign investors descend on Calgary, housing prices could experience rapid escalation.
- Since the United States is Canada's major trading partner, a stronger U.S. dollar relative to the Canadian dollar makes Canadian manufactured goods cheaper in the U.S. The ability for the manufacturing industry to capitalize on this opportunity may help mitigate some of the adverse impacts of lower capital investment in Canada's energy sector.
- The new U.S. President has declared that one of his goals will be to re-invigorate U.S. public infrastructure. Airports, infrastructure along the U.S. southern border and highways are all on the agenda for improvement. If large public work projects are undertaken this will result in more jobs which will, in turn, increase demand for residential housing. Greater construction and economic activity in the U.S. encourages greater energy imports from Alberta. It also implies a larger market for the export of Alberta expertise in engineering and design.

City of Calgary

City of Calgary: Population

- The single most important variable from a municipal financial and physical planning perspective is population. Population growth puts pressure on local infrastructure and municipal services. Services like roads, pipes, garbage and recycling collection services, police services, fire services, recreation, public transit, and community services are all affected by population growth.

- In 2014, when oil prices peaked, Calgary's population grew by 4.0 per cent. When oil prices fell Calgary lost jobs and the growth of Calgary's population slowed. Population growth went from 3 per cent in 2015 to 0.4 per cent in 2016, and 0.9 per cent in 2017. In-migration from other provinces in 2014 became provincial out-migration in 2015 and 2016. However, international migrants continued to view Calgary positively. This buoyed Calgary net in-migration during the economic recession.



Source: Calgary Civic Census, Corporate Economics

- The Calgary Civic Census placed the city's population at 1,246,300 persons in 2017, up 11,200 persons from 2016. Corporate Economics' population forecast projects the city's population to reach 1,402,400 persons by end of 2026. The change in population is driven by the combination of increased net migration and natural increase[1]. For the next two years the population is expected to grow at 1 per cent annually and increase modestly to 1.1 per cent in 2020. Between 2018 and 2026 the population of the City of Calgary is expected to grow by an annual average of 1.3 per cent per year.

City of Calgary: Net Migration

- In 2016 Calgary saw more people leave the city than arrive, with a net loss of 6,500 persons. The last time Calgary recorded a negative net migration was in 2010, when 4,154 persons departed. The 2017 Calgary Civic Census showed a net gain of 974 persons. This slight uptick signals that current market conditions relative to the rest of Canada have improved somewhat. As the economy continues to recover and improve relative to the rest of Canada net migration is expected to increase, but not return to prior levels. The average annual net migration between 1986 and 2016 was 10,900 persons per year, while over the forecast horizon the average annual net migration is expected to be 8,250 persons per year.

- Calgary experienced strain on physical infrastructure and financial pressures due to a high rate of annual population growth prior to 2016. A growing population in the future will continue to pressure municipal finances, but to a lesser degree than previously.

City of Calgary: Natural Increase

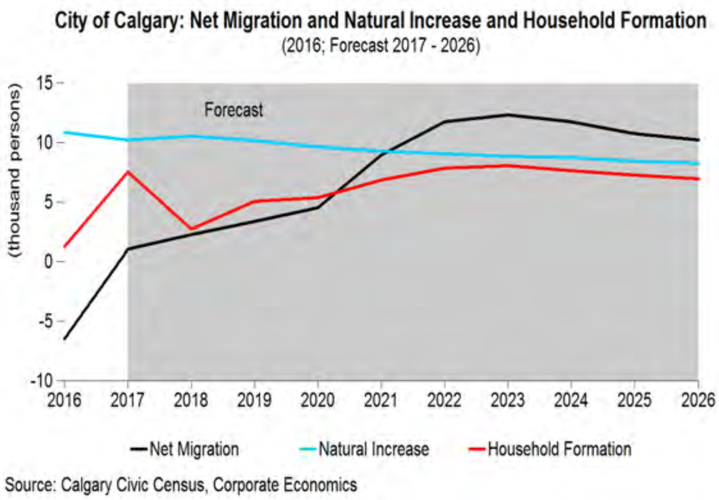
- Natural increase is a function of the number of births and deaths, but is also influenced by the longevity of the population. Longevity is impacted by the availability of healthcare. Thanks to healthcare and medical advances more Canadian children survive their second birthday today than did a century ago. With more children surviving childhood, the average age of death across Canada has been increasing even though the risk of death for older Canadians has not changed significantly for an extended period.

- In Calgary, the average natural increase between 1986 and 2016 was 8,800 persons per year. The average annual natural increase over the next ten years is expected to soften, reaching 8,100 persons by 2026.

- Declining natural increase is mostly the result of a shifting demographic among the female population in Alberta. Since WWII, populations across the

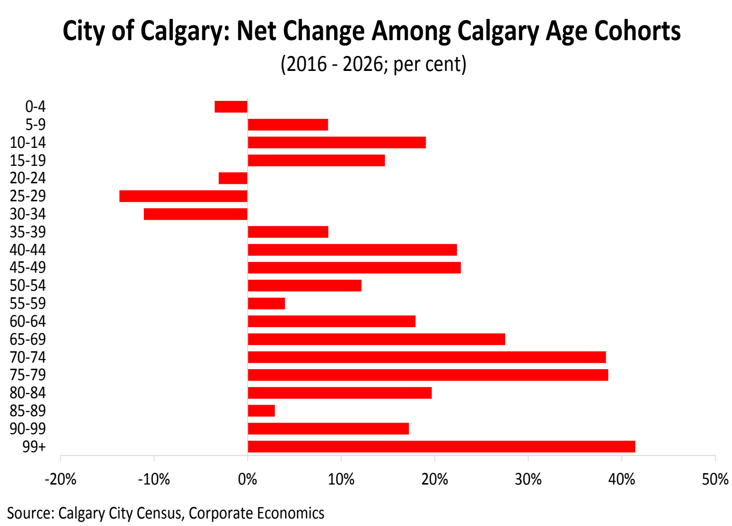
[1] Natural increase is the defined as the difference between total births less total deaths.

western world periodically experience declines in the number of women in their childbearing years. Over the forecast horizon the number of women in childbearing years is expected to continue declining which will result in fewer children being born.



City of Calgary: Population Growth

- There are some significant shifts in the demographics of the population that will dramatically impact Calgary over the next 10 years.
- First, Calgary will be home to a greater number of seniors. The population of those 65 and up will grow by about 58,000 persons over the next ten years, from about 148,600 people today to 206,000 in 2026. This represents an increase of about 4 per cent per year more than the general population growth in Calgary over the same period. Rapid growth in these age cohorts will stress some of Calgary's infrastructure and services.



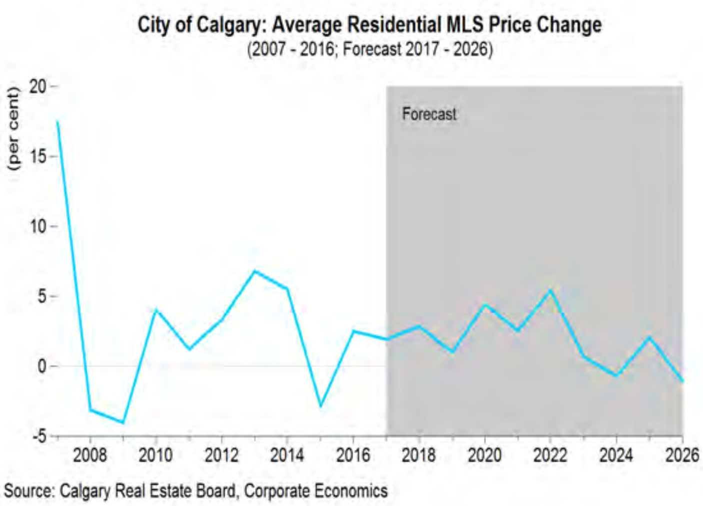
- Second, the population of people aged 40 to 50 is expected to grow from 186,000 today to 240,000 by 2026. This represents an increase of about 1 per cent per year more than the general population growth over the same period. People in this age cohort tend to be the highest income earners, have young families and typically desire to reside in single family dwellings. Typically, they also reside in larger single-family homes and have active family lives with teenaged children registered in multiple activities.
- Finally, our population model indicates a significant decline in the number of young adults aged 20 to 34. Calgary currently has 293,000 young adults but by 2026 that population is expected to decline by about 9 per cent to 267,000. This decline is not due to an exodus of young people from Calgary but rather because fewer people are moving here and those here are getting older. Calgary's young adults typically reside in apartments and high-rise condos and they typically aspire to reside in "move-up" single-family dwellings. As this population cohort shrinks, and as some of these individuals move to houses, duplexes and townhouses, the demand for high-rise condos will shrink over the forecast horizon.
- These shifts in Calgary demographics indicate a likely decline of young people in the downtown core, and an increase of seniors in Calgary's core. Though some continued demand for all types of housing in Calgary is expected, the busiest market in Calgary over the next 10 years will likely be in the larger single-family dwelling market.

Real Estate Markets

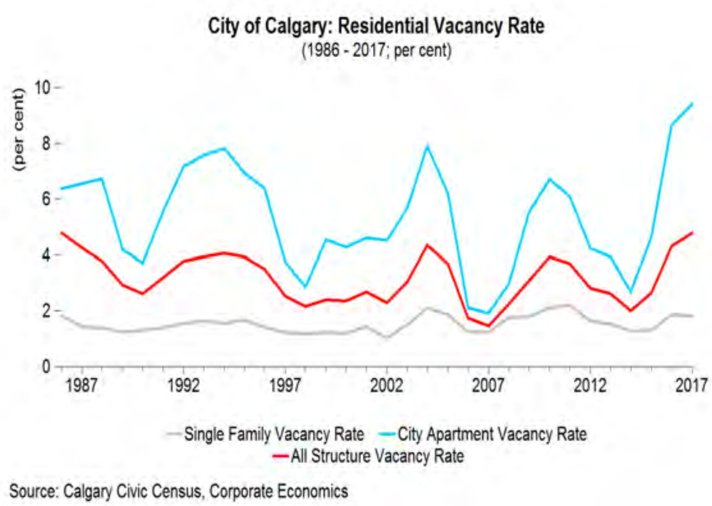
Residential Sector

- Residential housing prices in Calgary have been remarkably resilient to changes in oil prices. In 2015, oil prices dropped precipitously and have since stabilized at around half of what they were in early 2015. Housing prices dropped by almost 3 per cent in 2015, but were up by 2.5 per cent in 2016, and so far, this year are up 1.9 per cent to average at $488,000, 1.5 per cent higher than they were in 2014. Adjusting for general inflation, housing prices in Calgary are on average 3 per cent cheaper today than they were in 2014. This is a remarkably small decrease compared to housing price declines during previous recessions.

- The forecast calls for 2.8 per cent increase in average MLS prices in 2018 and some stronger house price increases to 2022. In 2023 and beyond the demographic mix of Calgary combined with a more stable oil price will result in slower MLS house price increases. Going forward four factors will impact housing prices in Calgary:
  - ◊ The job market is expected to continue improving.
  - ◊ There is some pent-up demand for housing in Calgary.
  - ◊ Price increases for imported construction materials have not been passed on to Calgarians over the past few years and pent-up price increases are expected to start being passed-on in the future. This will accelerate residential construction costs faster than baseline inflation and will drive up the value of existing housing as well.
  - ◊ Rising interest rates are expected to moderate demand for larger dwellings.



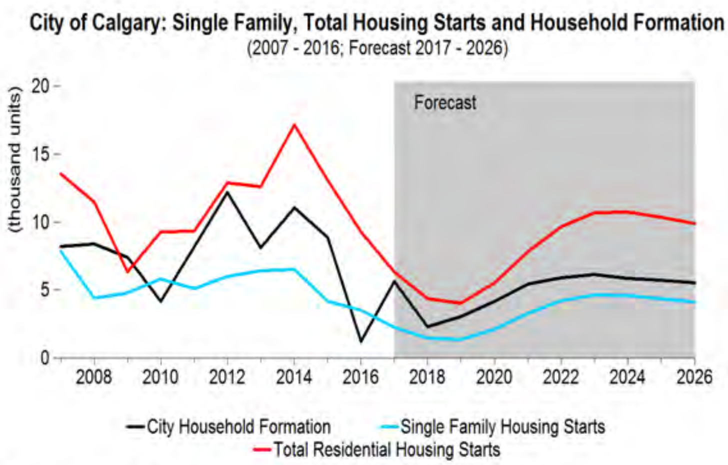
- Each market segment will fare differently:
  - ◊ **Single-family home** prices in Calgary dropped by 2.5 per cent in 2015 and another 2 per cent in 2016, but shot up by 6 per cent in 2017. Low interest rates, an improving job market and pent-up demand along with the threat of rising interest rates has driven up demand in this sector as people try to jump into the market while they can. Now that interest rates are rising price increases in this market segment are expected to slow. The outlook for this market segment is for modest growth with prices rising at or slightly below the rate of inflation for the forecast horizon.
  - ◊ **Attached dwellings** typically offer a yard and some parking options as well as reasonable square footage at a price that is typically 25 per cent lower than a single-family home. Prices for attached dwellings dropped by 3 per cent per year from 2014 to 2016. Construction in this segment has slowed and prices are stabilizing as a result. The outlook for this segment is positive as greater numbers of Calgarians consider this housing option as interest rates continue to rise in the future.
  - ◊ **The apartment/high rise condo market** has faltered recently. New energy efficiency building regulations that took effect over the past 2 years resulted in a construction rush as builders advanced groundbreaking plans to finish projects under the older and cheaper building regulations. Under the new energy efficiency regulations designs will need to change, particularly with regard to the size of windows. The oil-price drop in 2015 came at a bad time for this market segment, which was in the process of a planned overbuild. Prices have dropped by an average 2.5 per cent per year since 2014. The outlook for this segment is subdued. Some new construction is expected over the forecast period, but only for projects that developers see as having unique location/amenity advantages.



Forecast

- The rental market in Calgary continues to favor tenants. In 2016, the vacancy rate hit 6.9 per cent, a level not seen in Calgary since the National Energy Program of 1982-84. We estimate the apartment vacancy rate in 2017 to be 8.1 per cent, up just over 1 per cent from last year. The vacancy rate is expected to peak in 2017 and begin to taper off in 2018, but it will continue to favor tenants for at least 5 more years.

- There are significant risks to the forecast. Foreign investors have looked to Vancouver and Toronto in recent years, pumping up prices there. The Bank of Canada is now increasing interest rates to discourage borrowing and thereby ease upward pressure on prices. This should help calm real estate markets in Toronto and Vancouver. Calgary real estate markets could fall victim if the Bank of Canada raises interest rates too high too fast.



Source: Canada Mortgage and Housing Corporation, Corporate Economics

- Housing Starts are a measure of business investment intentions. Calgary total housing starts are expected fall to 6,300 units in 2017 from 9,245 units in 2016, and average 7,900 units annually between 2018 and 2026. Single family housing starts are also expected to tip lower in 2017 to 2,200 units from 3,500 units in 2016, but average 3,300 units annually over the forecast period. In all, both total and single-family start forecasts are lower than historical averages from 1986 to 2016. These forecast numbers for housing starts are in line with the lower than average population growth for the forecast period. Builders do have a continued intention to invest in Calgary, but their investment level will be adjusted to match the slower growing market.

Non-Residential Sector

Office Space

- Headlease vacancy rate in the Calgary downtown office market currently sits at around 21 per cent. In addition, some tenants wish to sublease some of their space. Though landlords are currently being paid for this space, sublease space adds to the available inventory and impacts the rents that landlords can charge. Together, headlease space and sublease space available in Calgary's downtown has tipped the total vacancy rate to just over 25 per cent. We anticipate that will rise in the next year as Brookfield Place and TELUS Sky projects, with a total of 3 million sq. ft., are completed.

Source: Altus InSite, Corporate Economics

- The second quarter of 2017 saw 54.9 million square feet of occupied office space in Calgary, with 650,000 square feet finishing construction, and 14.2 million square feet vacant. There is about 6.7 million square feet more vacant downtown office space today compared to historical averages.

- If Calgary's economy was in a full boom cycle, the fastest Calgary's extra empty space could be absorbed would be about 2 years. Calgary's economy is in a slow growth cycle which suggests a slow uptake of this excess office capacity. With 1.5 to 3.3 per cent growth in the Calgary economy expected over 2018-2026, Calgary's overall downtown office vacancy rate is expected to decline to its long-term average vacancy rate around 2025.

- With developers always eager to get ahead, we would

anticipate the next developer of a downtown office building to seek a building permit around 2024. These projections would be advanced if any existing downtown office property owners decide that instead of waiting for the market to turn, demolition and sale of land is their financial best option.

Source: Altus InSite, Corporate Economics

- Current rents for "class A" property in Calgary's downtown core have fallen to about $15/sq. ft., with additional rent[2] of $20/sq. ft. This compares with Vancouver where asking rents are $23/sq. ft. plus additional rent of around $15/sq. ft. Toronto prices are just under $29/sq. ft. with $26/sq. ft. in additional rent. At these prices, Calgary's downtown offers significant value to a variety of companies and presents an opportunity for significant diversification of the Calgary economy.

Industrial Sector

- Calgary has the fifth largest amount of industrial land in Canada. Toronto has, by far, the largest allotment with about 900 million square feet. Montreal lags with almost 300 million square feet, followed by Vancouver with 200 million square feet. Edmonton and Calgary round out the top 5 with about 130 million square feet each.

- The Calgary industrial market appears to have shifted into recovery mode with about 600,000 square feet being leased out in first half of 2017. The only other Canadian city to see more leasing activity was Toronto which saw 1 million square feet leased in Q1 2017. Calgary's activity also compares favorably to Vancouver which saw only 355,000 square feet leased, while Montreal, Edmonton and Regina all saw large chunks of industrial space become vacant.

- Currently, the Canadian average industrial vacancy rate is 3.1 per cent but this largely reflects the very low vacancies in Vancouver (4 per cent) and Toronto (1 per cent). Calgary vacancy in light industrial space is now at 8 per cent, up from 6.4 per cent last year. The industrial vacancy rate appears to have peaked and is now falling as more companies are renting, and there are not many additions to inventory.

Source: Altus InSite, Corporate Economics

- Net rents in Calgary's industrial space have dropped from about $7.75/sq. ft. last year to $7.00/sq. ft. this year. This is higher than the $6.10/sq. ft. rate in Toronto and $5.75/sq. ft. in Montreal, but compares favorably to $9.25/sq. ft. in Vancouver and $9.75/sq. ft. in Edmonton.

- Some larger tenants in Calgary are relocating to the new CN Logistics Park located east of Calgary's city limits. This location offers lower construction and operating costs, easy access to rail loading facilities and quick highway access to Calgary as well as the airport, which are of benefit to some wholesale and distribution centers. This site does not, however, offer convenient customer access so we view this as a limited threat to the industrial space market in Calgary.

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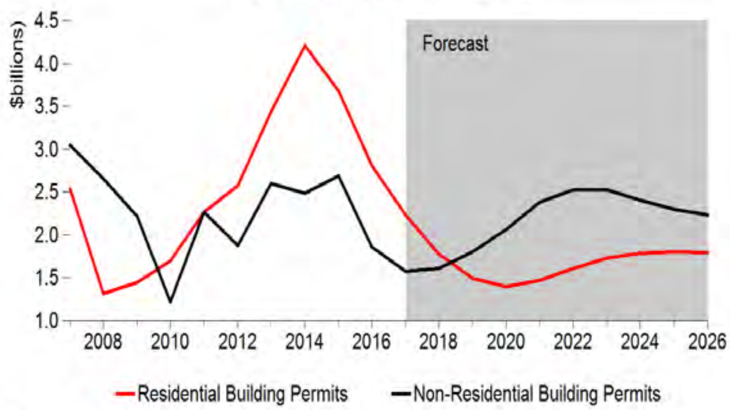
[2] Additional rent is usually a share of the costs and charges incurred to operate the property. These costs can include municipal taxes, insurance premiums, repair and maintenance costs and common area utility charges. Most commercial leases contain terms that require tenants to pay additional rent.

City of Calgary: Building Permits

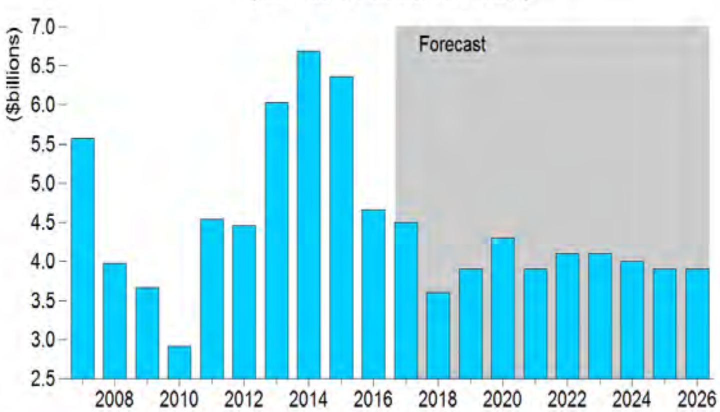
- Permit values are an indicator of the investment intentions of the Calgary real estate market. They also hint at future employment opportunities in Calgary.
- A change in building construction rules, which took effect in 2015 and 2016, contributed to an unexpected increase in construction permits. Between 2001 and 2014, Calgary permit values averaged $4.0 billion dollars per year, while average annual permit values increased to $5.5 billion dollars between 2015 and 2016. Permit values over 2017 to 2026 and beyond are expected to be lower than the annual average for the previous two years, averaging $4.4 billion dollars per year.

City of Calgary: Building Permit Values By Type
(2007 - 2016; Forecast 2017 - 2026)



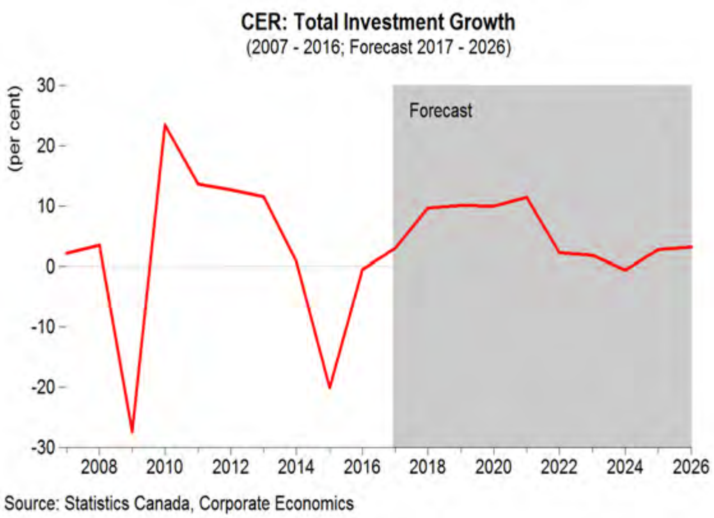
Source: The City of Calgary, Corporate Economics

City of Calgary: Total Building Permits
(2007 - 2016; Forecast 2017 - 2026)



Source: The City of Calgary, Corporate Economics

Calgary Economic Region (CER)



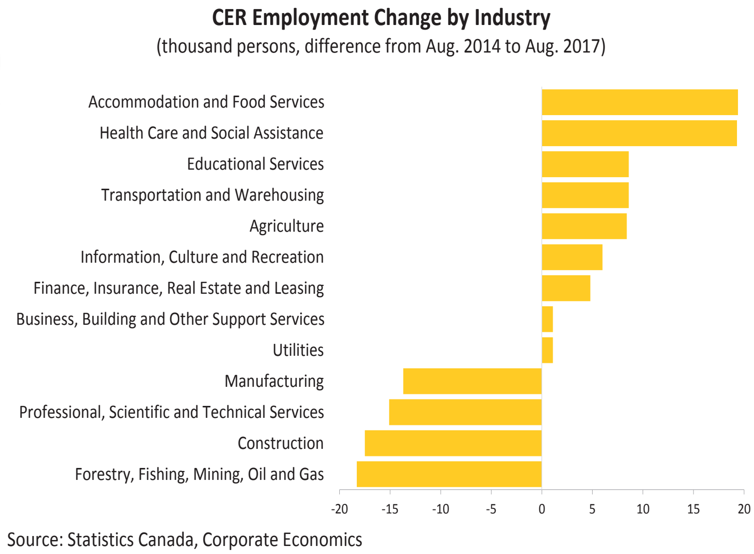
Labour Market

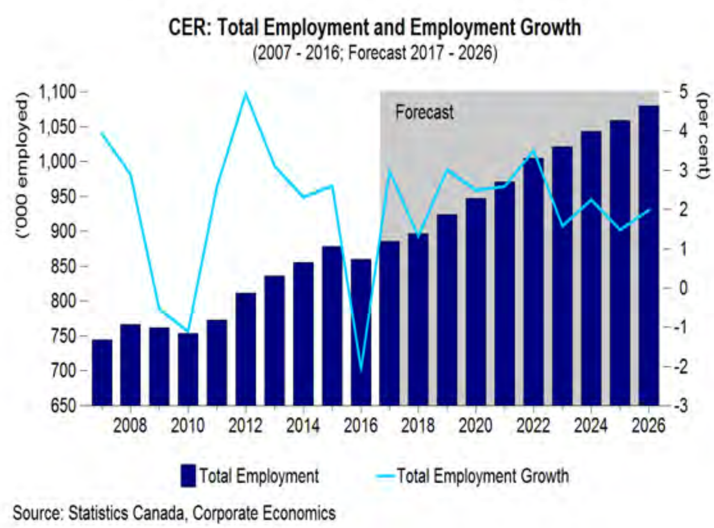
► The Calgary unemployment rate in 2016 was 9.0 per cent and is estimated to have softened to 8.8 per cent in 2017. This signals a reversal of the labor market trend in Calgary. Unlike last year, the number of jobs in Calgary is growing faster than the labor force.

► When the unemployment rate starts dropping people who have left the labour force tend to start looking for work again, which increases the labour force. This effect tends to moderate declines in the unemployment rate and makes it look like the labour market isn't improving as much as it is. We anticipate similar dynamics in 2018, when the unemployment rate is expected to fall to 6.7 per cent. After 2018, the supply of returning workers will abate, and the unemployment rate should average 5.7 per cent between 2018 and 2026.

► Over the past ten years, total employment in the CER increased 15 per cent from 744,000 in 2007 to 859,000 in 2016. The job gains were concentrated in the service-producing sectors instead of goods-producing sectors, except for the construction industry. The job market structure continued to shift during the recent recession with service industries outperforming goods producing industries.

► Three years after the dramatic plunge in crude oil prices, labour markets in the CER not only gained back all the jobs lost but also added 27,200 new positions. From August 2014 to August 2017, job gains were mostly in the service industries - Accommodation and Food Services (+19,400), and Health Care and Social Assistance (+19,300). Job losses were mostly restricted to goods-producing and energy related industries - Mining, Oil and Gas (-18,300), Construction (-17,500), and Professional, Scientific and Technical Services (-15,100).



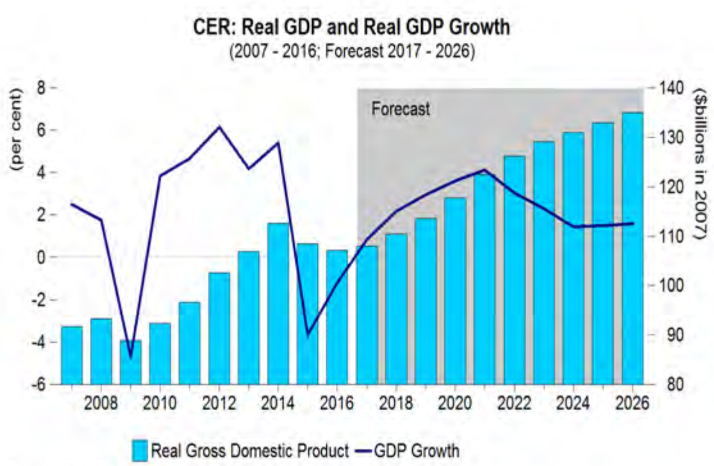


Forecast

- We anticipate the number of employed people in Calgary will grow by 2.4 per cent in 2017 and 2018, and grow by an average annual rate of 2.2 per cent between 2018 and 2026. From August 2016 to August 2017, 31,100 new jobs were filled in the Calgary Economic Region. Our models indicate slowing job growth over the forecast horizon, averaging 19,700 new jobs per year from 2017 to 2026.

Gross Domestic Product (GDP)

- Calgary experienced an average annual decrease in GDP of 2.5 per cent in 2015 and 2016, stemming from the oil price slump that began in late 2014. The loss in economic output from the Calgary Economic Region between 2014 and 2016 is estimated at $5.4 billion in 2007 dollars. Comparatively, the economic loss of output from Calgary during the global 2007-2009 recession was estimated at $4.4 billion in 2007 dollars.
- Real GDP is expected to grow at 3.0 per cent in 2017, 2.4 per cent in 2018, and average 2.3 per cent per year between 2018 and 2026. Real investment is expected to be higher in 2017 than in 2016 by about $1 billion in 2007 dollars, however, investment patterns are shifting. Calgary currently finds itself in a situation with a significant overbuild of office space and high residential vacancies particularly in the high-rise condo/apartment market. New investment in these structures is not expected for a significant time period. Public works projects like the completion of the Ring Road, Green Line and others will be the large investment projects in the coming years instead of large downtown office / condo developments.

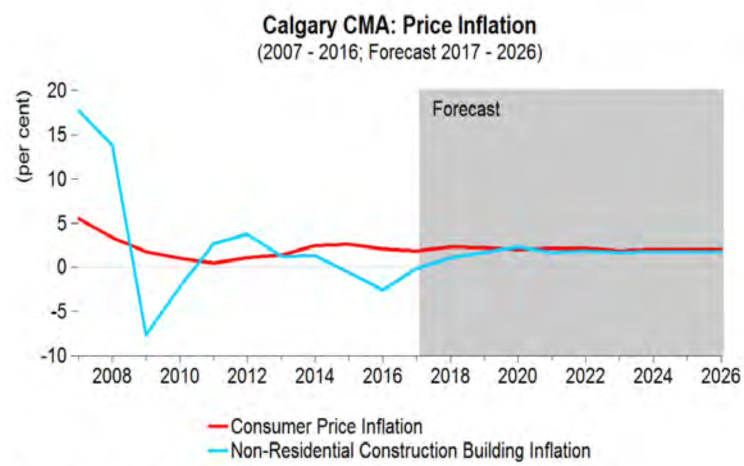


Source: Statistics Canada, Corporate Economics

- The average annual historical growth of real GDP from 1989 to 2016 was 3.6 per cent in the Calgary Economic Region. The average annual GDP forecast over 2017 to 2026 is 2.4 per cent. The economy is growing, but at a reasonable pace and not as fast as when oil prices soared to over U.S.$100/bbl. As the Calgary economy continues to grow, and adapt to a structural shift in the local labour market, business and consumer confidence are expected to rise. Higher wages and salaries are expected to follow which should increase household consumption, boosting local retail sales and creating further economic growth.

Consumer Price Index

- The consumer price index measures changes in the price of a typical basket of consumer goods. As prices for consumer products (food, housing, transportation and other items) change, the consumer price index adjusts. Energy prices are included in the CPI but direct energy costs only accounts for about 5 per cent of the average Canadians' monthly consumer budget. Energy is, however, used in the vast majority of what the average Canadian consumes. As a result, when energy prices change, the total effect on CPI is amplified.



Source: Statistics Canada, Corporate Economics

- The Bank of Canada has recently started raising interest rates which has multiple impacts in Calgary. Rising interest rates increase housing costs and makes the Canadian dollar appreciate against the U.S. dollar, which lowers prices for imported goods. On net, the impact is to lower inflation but in the process people must spend more of their income on housing.

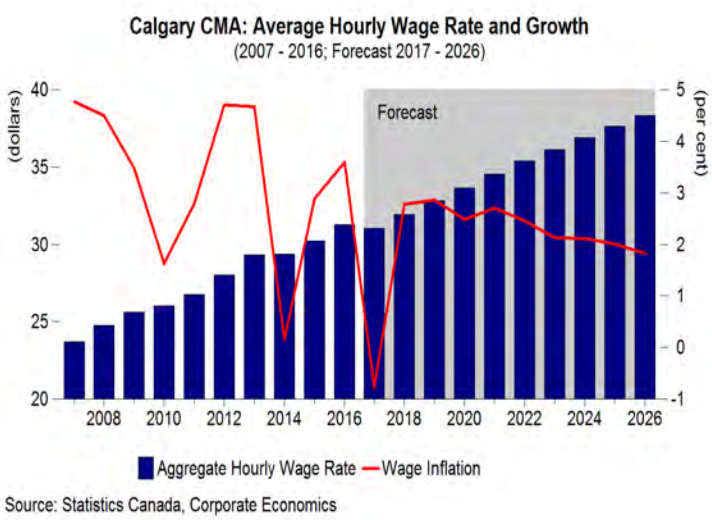
Forecast

- Recently the Alberta Provincial government has imposed a carbon tax, with plans to increase the tax rate in the future. Those costs directly impact consumers' budgets and have an impact on some prices in Alberta. Price shifts from the carbon tax have been included in the CPI forecast. Any changes to the carbon tax by any future Provincial government represent a risk to the CPI forecast.

- With stronger labor market conditions in 2017, the consumer price index reflects modest upward pressures on goods and services pricing, with inflation estimated at 1.6 per cent for 2017, 2.3 per cent in 2018, and average 2.1 per cent per year between 2018 and 2026.

Hourly Wages

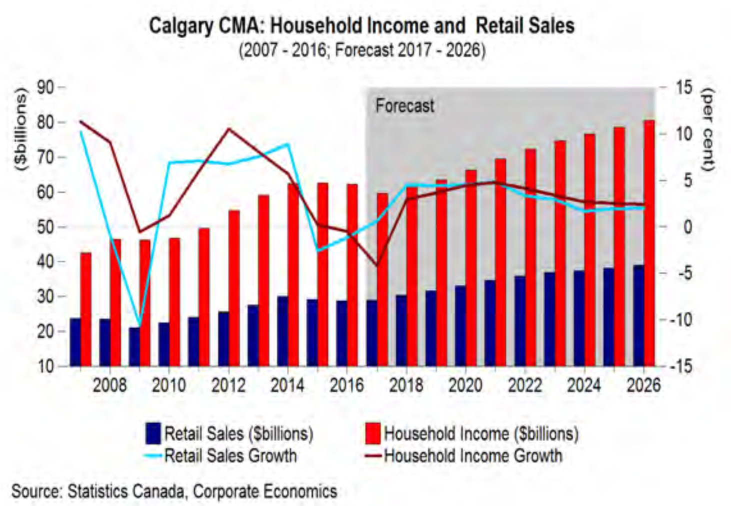
- In Calgary the average hourly wage for all workers, including overtime, is estimated at $30.80 in 2017, up 0.9 per cent from 2016. However, after accounting for CPI inflation, the purchasing power of average hourly wages in Calgary is expected to fall by 0.1 per cent in 2017.



- The average annual wage growth between 1999 and 2014 was 3.9 per cent, and after accounting for inflation, the purchasing power of those wages rose by an average 2.8 per cent per year. The forecast calls for an average annual nominal wage growth of 2.3 per cent from 2018 to 2026, and after accounting for inflation, the purchasing power of those wages is expected to rise by a subdued 0.6 per cent. Slower growth in the purchasing power of wages signals some shifts to come for the Calgary retail markets. There will be less acceptance of rising prices for consumer goods and in response to rising prices Calgarians will be more likely to shift to cheaper alternatives. Retailers will have a harder time vying for market share in a market where the only significant opportunities stem from a growing population instead of deepening pockets.

Household Income and Retail Sales

- Household income, made up of all the wages, investments and transfers to all members of an average Calgary household, grew at an average annual rate of 7.4 per cent between 1992 and 2014. During that time Alberta retail sales grew slightly slower at 7.1 per cent per year. Retail sales fell by 2.6 per cent in 2015 and 1.2 per cent in 2016 due to weaker consumer confidence and as households lost jobs. As employment firms up in 2017, consumer confidence and retail sales should begin to lift.



- Household income is expected to fall by 4.2 per cent in 2017. Most new employment in 2017 went to the services sectors, which tend to pay less than the goods producing sectors. As a result, gains in new employment in Calgary in 2017 are actually lowering the average wage income in Calgary.

- After the economy adjusts to this shift we expect household income to grow at 2.9 per cent in 2018, and average 3.4 per cent per year across the forecast horizon. Likewise, retail sales are expected to edge up 0.6 per cent in 2017, and average 3.3 per cent per year across the forecast horizon.

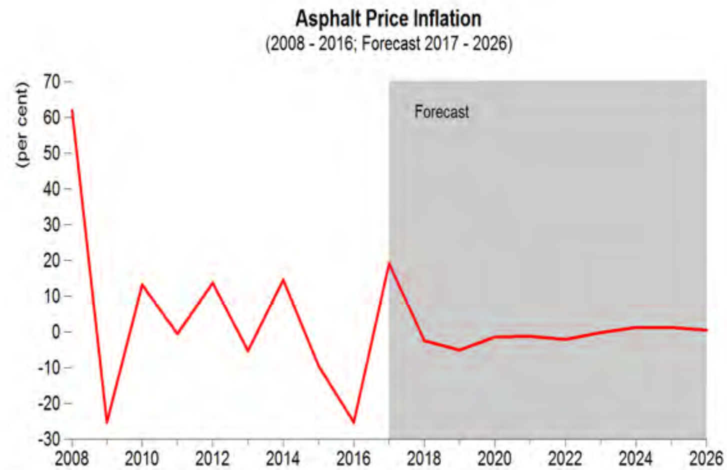
Non-residential Building Price Inflation

- Non-Residential building costs fell in 2015 and 2016 by a total of 3 per cent. In 2017, price pressures from an increasingly active U.S. economy filtered into the Calgary construction market resulting in higher prices for imported raw materials. This stopped construction prices from falling in 2017, but the lower level of economic activity in Calgary is limiting the ability of suppliers to raise prices further.
- The outlook calls for increases in building costs well below the level of general inflation until 2021 when employment in Calgary is expected to rise to the point where those cost increases can be passed on.
- U.S. employment gains have resulted in increased demand for construction materials like iron, aluminum and wood products. Increasing demand for these materials are causing upward pressure on prices. Additionally, the renegotiation of NAFTA and the softwood lumber agreements presents a risk to the local building price inflation forecast.
- President Trump has declared that he would like the U.S. government to heavily invest in U.S. public infrastructure. After a particularly devastating hurricane season in 2017, there will certainly be an increase in demand for construction materials in the southern U.S. The extent to which the U.S engages in large scale recovery and public works projects represents another upside risk to the Calgary construction materials price forecast.
- Should Calgary be selected as a host city for the 2026 Winter Olympics our forecast may underestimate building price inflation in the post 2021 period.

Commodities Prices

Asphalt

- Last year the price of asphalt dropped by 25 per cent as a result of the fall in oil prices. This year, asphalt prices have rebounded, rising by almost 20 per cent. Major projects like the S.W. segment of Calgary's Ring Road are increasing demand for product and supporting the market.



Source: Statistics Canada, Corporate Economics

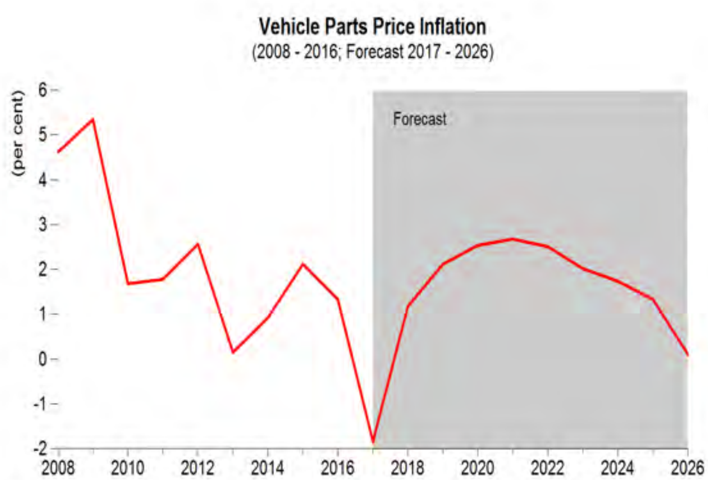
- Asphalt prices are adjusting to the new lower trajectory of oil prices, with slow price declines to the end of the forecast horizon as production efficiencies reduce asphalt prices faster than oil prices push asphalt prices up. The outlook calls for Asphalt prices to drop from about $650 per tonne today to about $600 per tonne by 2026.
- Transportation capacity of Alberta pipelines continues to limit the ability of Alberta oil sands to get to international markets. This significantly limits the prospects for price escalation of asphalt in Alberta. Rail transportation of oil sands products has increased over the past year which is temporarily lifting the local price of asphalt, but rail capacity is expected to be reached within the next 12 months. With a new B.C. government granted intervener status in the Trans-Mountain pipeline regulatory hearing, the prospect of increasing pipeline capacity out of Alberta appears challenging.
- Significant risks to this forecast include international oil prices, international conflicts and interprovincial pipeline approvals. Oil prices could rise dramatically in the event of a significant international conflict, which would result in increased prices for local asphalt.
- Since interprovincial pipelines are under the exclusive jurisdiction of the Federal government in Canada, the

federal government could decree and enforce orders for new pipelines, notwithstanding objections from any province. Such a pipeline expansion would result in higher asphalt prices in Calgary. However, the chances of such events occurring within the forecast horizon are low.

Vehicle Parts

- Traditionally a lower exchange rate with the U.S. made Canadian manufactured goods cheaper (compared to US goods), and boosted the Canadian manufacturing sector. However, the negative impact of high electricity prices in Ontario challenges the positive impact of the lower exchange rate, which has fallen from parity in 2013 to about 80 cents U.S. today.

- We anticipate a stunted Ontario manufacturing sector for the extent of the forecast horizon with only modest price increases for vehicle parts in Canada that mirror general inflation. Renegotiation of NAFTA represents a risk of rising part prices, as well as a risk to the sustainability of the Ontario manufacturing sector.

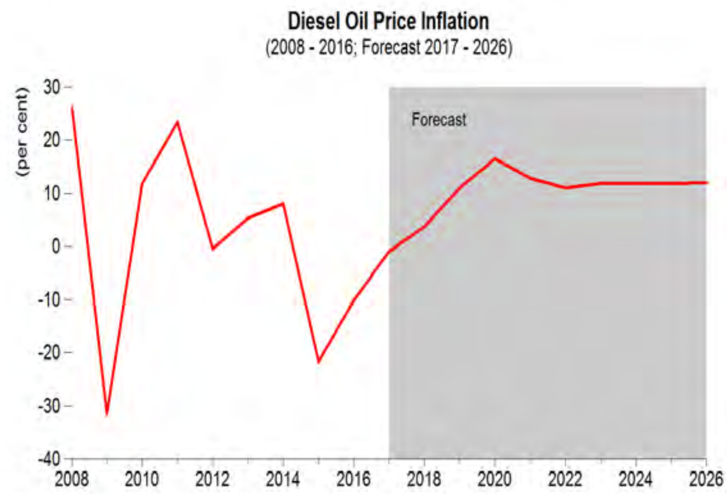


Source: Statistics Canada, Corporate Economics

Diesel

- Diesel prices stabilized in Calgary at around 90 cents per litre in 2017. Though there were some worries about the normal seasonal variation in demand for fuel, the price for diesel has remained stable.

- The new carbon tax, combined with the increased price of oil, have impacted the forecast for diesel prices in Calgary. There is currently a 5.35 cent per litre tax on diesel fuel with plans for this tax to increase to 15.4 cents per litre by 2020. Outlook for diesel prices in Calgary mirrors the oil price forecast, modest increases throughout the forecast period.



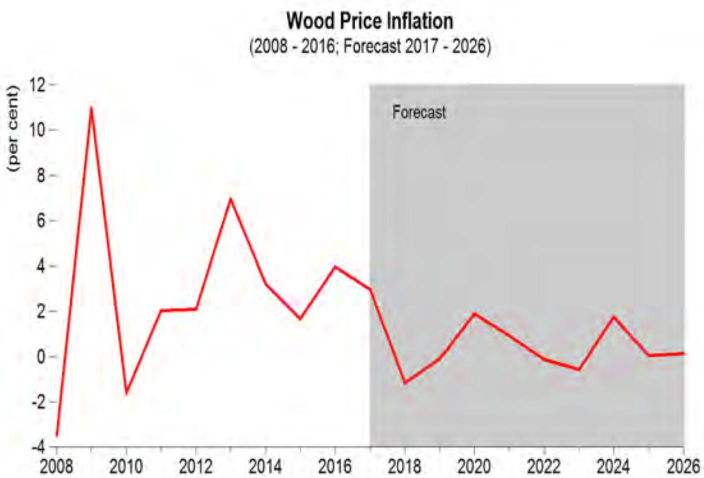
Source: Statistics Canada, Corporate Economics

- Diesel prices are expected to average 94 cents per litre in 2017, climb to 110 cents per litre by 2020, and continue to climb to 113 cents per litre by the end of the forecast horizon.

Wood

- The U.S. imposed new tariffs on Canadian softwood at the start of 2017. Certain producers, particularly in B.C. and Ontario were targeted. Recourse is traditionally through tribunals set up under NAFTA and further to the World Trade Organization. This typically takes years and though Canada has been successful in appealing past U.S. tariffs this time is different. NAFTA is being renegotiated which places additional risks on softwood lumber disputes. Recognizing the interconnectedness of NAFTA and the softwood lumber industry, Canada and the U.S. are also renegotiating the Canada/U.S. softwood lumber agreement. This renegotiation poses a significant risk to the Canadian industry with a likely downside to Canadian jobs and softwood prices, particularly in B.C. and Ontario.

- The U.S. housing industry continues to gain momentum but it is still a far cry from levels seen in 2000 to 2007 when the U.S. averaged 1.4 million single family dwellings per year. So far in 2017 the U.S. is building only about 0.8 million wood frame single family dwelling units. This is up 8 per cent from 2016 and is about double the number that were built in 2011, but can still be described as only a modest level of building activity.



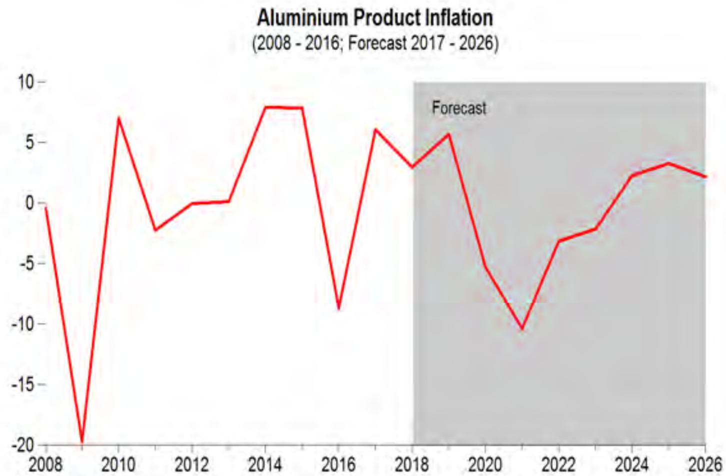
Source: Statistics Canada, Corporate Economics

- Still, populations are growing in both Canada and the U.S. and the demand for softwood lumber in both countries is increasing. The outlook for the Canadian softwood lumber industry is moderate growth, which may experience some short-term surges caused by weather events like the 2017 hurricane season.

Aluminum

- Aluminum prices continue to be highly volatile with dramatic shifts, largely resulting from changes in demand and electricity prices (the primary input in the process which translates bauxite into aluminum).

- U.S. automotive manufacturers have shifted their increased utilization of aluminum. Aluminum has been used as a body material and in the new Ford F150 was found to be wanting in places where hardness and resilience to impact punctures are of primary importance. Still, aluminum has been found to have good weight and wear properties and manufacturers are planning on utilizing this material in some non-stressed parts like hoods and steering components, where light weight and crumple ability are advantageous. Increased demand for the automotive use of aluminum is increasing the price of aluminum.



Source: Statistics Canada, Corporate Economics

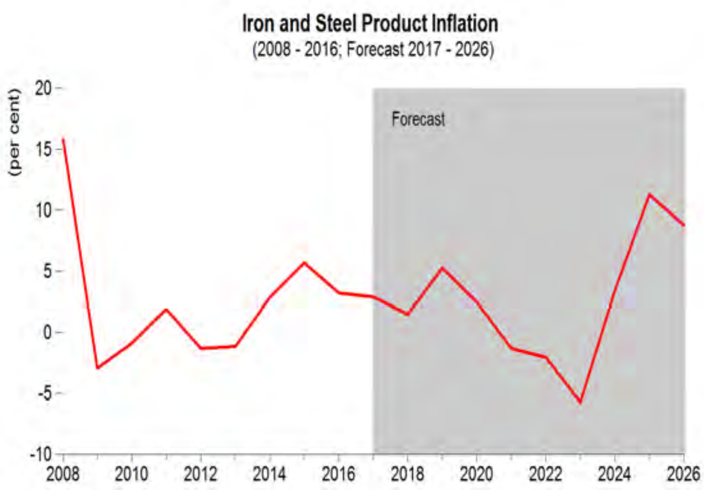
- As well, some of the recent increase in the price of aluminum is speculative as President Trump continues to threaten building a wall between the U.S. and Mexico. Though progress on that project is minimal to date, the threat itself continues to escalate the price of aluminum.

- The outlook for aluminum prices includes some sharp increases until 2021. U.S. interest rates are expected to rise by then, resulting in reduced demand for new vehicles and building materials for new dwellings.

Steel

- Global steel production is now averaging about 72.5 per cent utilization of global capacity. This is up about 3 per cent from last year, and about on par with 2014 production levels. Eighty per cent utilization is the mark where we typically see significant price increases, so 72.5 per cent utilization indicates the market continues to have significant slack. There is a growing market for steel recycling with new markets springing up for repurposed shipping containers and innovative new uses in construction. Further, manufacture of pipe used in wells, and machinery and equipment used in oil sands production, continue to be affected by low oil prices and reduced investment in Alberta's oil industry.

- The U.S. economy has improved over the past few years and the usage of raw materials has increased in lock step. This has buoyed the price of steel in North America above world averages but the renegotiation of NAFTA stands as a significant risk. President Trump disapproves of U.S. companies manufacturing in other countries and selling into the U.S., much like the way U.S. Steel does with its plant in Hamilton, Ontario. With changes in the electricity market and taxation shifts in Ontario, the continuation of the Hamilton production facility is tenuous so there is a high risk that Canadian steel manufacturing could shrink.



Source: Statistics Canada, Corporate Economics

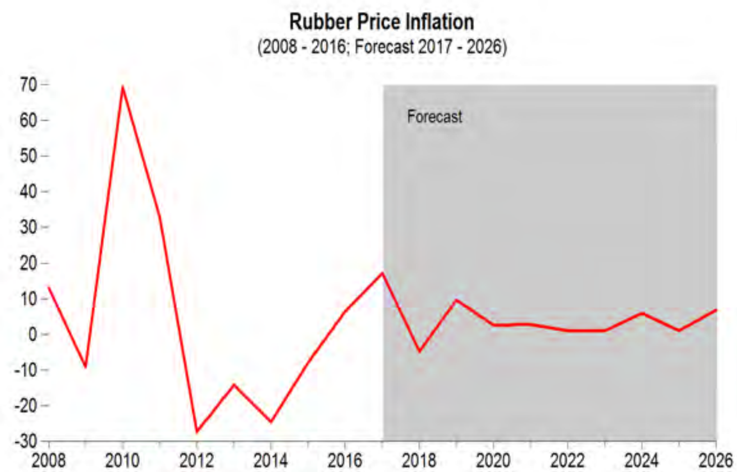
- Our base case forecast presumes some continued shrinkage of Canadian steel production that mirrors the 3 per cent decline from 2015 to 2016 with an increasing exposure to U.S. concentration of North American steel markets. We anticipate price increases over the next 3 years followed by 3 years of price declines as rising interest rates stifle demand for steel. The effect of rising interest rates will abate by 2024 and some pent-up inflationary increases will be passed on to consumers by the end of the forecast period.

Rubber

- There are two sources of rubber - natural rubber which is at risk to weather and localized political events, and artificial rubber which is manufactured with oil and natural gas.

- Most rubber is used in the manufacture of automotive tires so oil prices, weather events, the general global economy, changes in use of personal vehicles, and international trade in oil and natural gas, as well as the value of the Canadian dollar, all impact the price of rubber in Canada.

- Oil prices have risen and appear stable at around $50 U.S. now, with the Canadian dollar hovering in the $0.80 U.S. range. Storms in Malaysia and monsoon rains, which have been particularly heavy in the past two years, have limited natural rubber production. Meanwhile softening Chinese economic growth and lackluster increases in driving mileage in the U.S. are moderating global demand for rubber.



Source: Statistics Canada, Corporate Economics

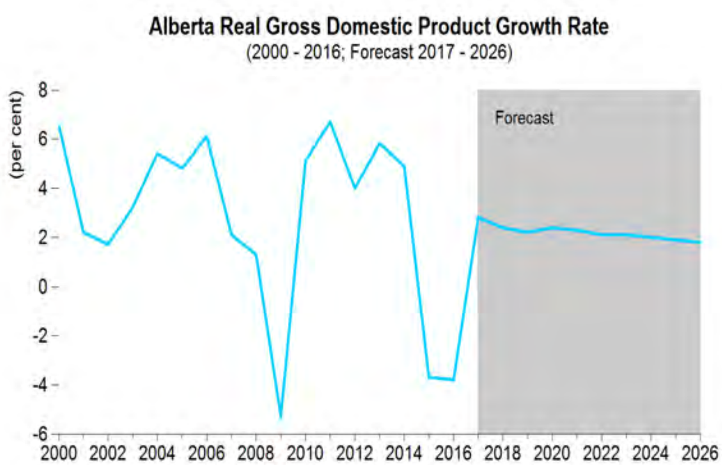
- This market is exposed to large price swings, usually in response to extreme weather events. The natural rubber market used to be almost exclusively served by Malaysia but now India and other countries are serving the market which spreads the risks of price swings as a result of localized adverse weather. As well, increased trade in natural gas in the Pacific rim is stabilizing international natural gas prices which, in turn, is stabilizing international synthetic rubber prices. As a result of these market shifts the long-term outlook calls for more stable prices than this market has historically seen.

- Rubber prices in Canada are expected to increase this year but soften in 2018 as higher Canadian interest rates push up the value of the Canadian dollar in Indian and Malaysian markets. Global demand for tires is expected to grow in 2019 and we expect a price spike that year. Thereafter, the outlook calls for modest price increases.

Alberta

Alberta Economic Growth

- In 2017 Alberta began recovering from its worst recession since the days of the National Energy Program. Stronger oil prices in the beginning of 2017 provided a lift to activities in the energy sector as new oil investment started edging up. With some activity returning to the energy sector there has been some increased momentum in manufacturing, retail sales, housing and employment. As current projects complete construction, increased oil sands production should provide a boost to economic growth. However, several future projects have been shelved and the outlook for investment contributions from the oil sands to the Alberta economy are reduced. Further, obtaining more pipeline capacity to external markets continues to be a challenge. Rail transportation of oil sands product is increasing but will soon reach capacity, well before Alberta's production capacity is reached. New developments in pelletizing oil sands product shows some promise for safely increasing road and rail export capacity, but it is too soon to tell if this new technology can be implemented economically at an industrial scale.



Source: Statistics Canada, The Centre for Spatial Economics, Corporate Economics

- After contracting by an average of 3.8 per cent a year over 2015-16, Alberta's economy is projected to grow by 2.8 per cent in 2017, and 2.4 per cent in 2018. However, the growth is coming off a very low base after two consecutive years of recession and the level of economic activity in Alberta will not recover to 2014 levels until 2019.

- Alberta consumers have been spending more recently with a return to purchases of higher ticket items like trucks and appliances. However, with rising interest rates it is likely that some of the demand for these large ticket items will moderate over the next few years. As well, increases in discretionary income are projected to be much slower than they were during the 2010-2014 period. As such, growth in overall consumer spending will be constrained during the forecast horizon.

- Though the populations of Alberta and Calgary are still growing they are growing more slowly than they did only a few short years ago. Slower population growth implies reduced pressures on public infrastructure and commercial and industrial investments. Investments in machinery and equipment will still be needed for life-cycle maintenance and to take advantage of cost reducing technologies, but the overall outlook for commercial investment in Alberta's economy is softer than it was a few short years ago.

- Public works projects are currently providing some relief from reduced business investment. However, the impact is limited because the Alberta business community, and its impact on the economy, is several orders of magnitude larger than the Alberta public sector. Still, major projects like the completion of Calgary's ring road and the Calgary Transit Green Line project will provide some needed investment with the potential for longer term spin-off investment and business opportunities.

- In the longer term, the outlook for continued provincial investments in local municipalities appears to be more and more strained as the Alberta government continues to accumulate deficits. The modest economic recovery ongoing in Alberta is not expected to be enough to put the provincial government into a budget surplus position in the short term. Our base case scenario anticipates the Alberta government will pursue some moderate belt tightening activities.

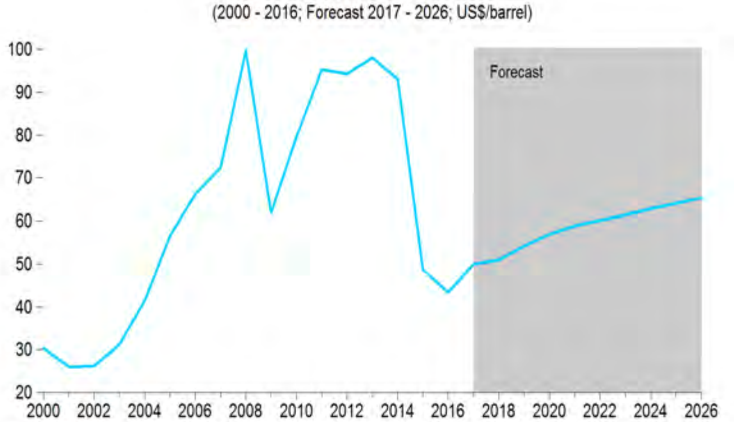
WTI Oil Prices

- With lower oil prices companies have slowed and stopped investing in developing resources. As wells age, they tend to produce less and new investment is always needed to maintain flow. Without that investment industry output falls off which typically results in oil shortages which drives up prices. This is the traditional view, but things have changed. New production techniques employed in the northern U.S. involve relatively little investment to maintain production. As such, lower world oil prices are effectively reducing the future productive capacity of higher priced international producers like Russia and Canada, while increasing the future productive capacity of the U.S. There is still a market for Canadian crude south of the border as U.S. demand continues to outstrip U.S. production. However, it is now well established that North American energy independence from the rest of the world is only a matter of time.

- In addition to production increases in the U.S., Libya and Nigeria have also raised production, which is also keeping global prices down.

- OPEC and Russia have recently agreed on output cuts to rebalance global oil supply. There are uncertainties about how seriously and how long they will adhere to the agreement and how effective their actions will be on global oil prices.

WTI Crude Oil Price
(2000 - 2016; Forecast 2017 - 2026; US$/barrel)



Source: U.S. Energy Information Administration, Bloomberg, Consensus Economics, Corporate Economics

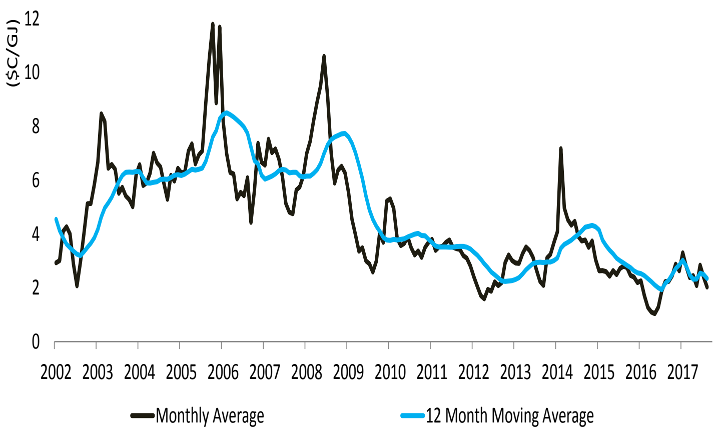
- Global consumption for crude oil is expected to grow moderately in 2017 and 2018, supported by demand from non-OECD consumers, especially China and India.

- WTI crude oil prices have averaged US$50/bbl. for the first half of 2017. WTI oil prices are forecast to float around US$50/bbl. in 2017 and 2018. The outlook for WTI crude oil anticipates moderate inflationary price increases only.

Natural Gas Prices

- In the past when natural gas prices were high, natural gas royalties in Alberta made significant contributions to provincial budgets. Demand for Alberta natural gas came mostly from automotive plants in the northeastern U.S. and associated parts manufacturers in southern Ontario. In 2006 a significant number of those plants moved; some to the southern U.S. and some to Mexico. The relocation dramatically reduced demand for, and the price of, Alberta natural gas. To make matters worse, U.S. production of shale gas has dramatically increased and is located closer to North American automotive plants.

AECO Spot Market Prices
(2002 - 2017)



Source: GLJ Energy Publications, Corporate Economics

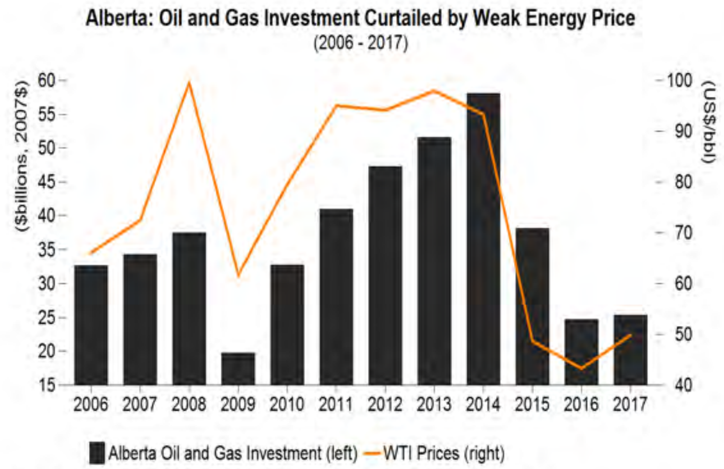
- Today, growth in natural gas demand in Alberta is driven by upgrading activities in the oil sands sector, growth in Alberta's petrochemical production, and Alberta's electricity market. However, prices are still determined in the North American market and the North American natural gas market continues to be oversupplied. U.S. shale gas is expected to keep the market amply supplied, even with increasing demand for natural gas in North America. New markets for Alberta natural gas could be reached with new pipeline capacity to the west coast, but that seems like a distant hope for a few reasons. First, though the B.C. government has signaled its dislike of pipelines it has also signaled its willingness to give approval for its own natural gas resources while engaging in regulatory activity to delay or prevent pipelines from Alberta. Secondly, Aboriginal consultation requirements may add to project timelines and costs. Without opening new markets, the outlook for Alberta natural gas prices remains subdued.

- With limited prospects in the Alberta natural gas sector companies are reluctant to make the large capital investments required to bring new projects to life. Natural gas prices are expected to remain low, with the AECO-C average price at $2.5/GJ in 2017 and $2.8/GJ in 2018.

Alberta Investment

- After steep declines over the past two years business investment activity in Alberta started to improve. During the economic recession of 2015-2016 the continued weakness in energy prices hurt Alberta producers' cash flow and corporate revenues and companies responded by layoffs and reducing their investment activity. Investment in the oil and gas sector contracted by over 40 per cent between 2014 and the end of 2016. With energy prices stabilizing companies are now engaging in some limited energy related investments in Alberta. The investment outlook can more accurately be called an improving situation rather than a recovery, as investment levels are expected to remain well below the highs seen during the oil boom years.

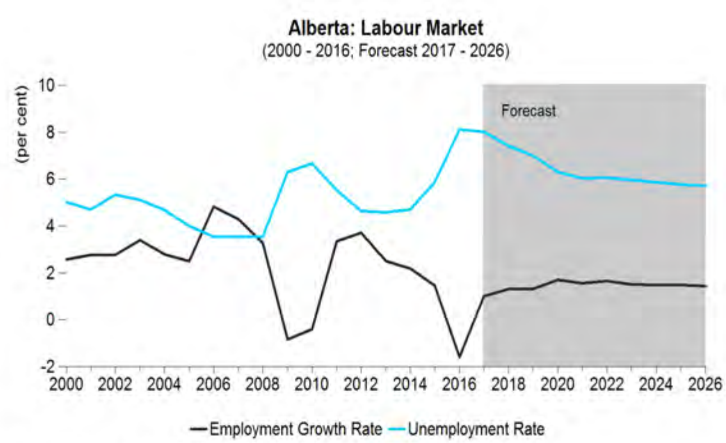
- The improving activity in capital spending has spread beyond oil and gas to other industries in the province. Reconstruction efforts in Fort McMurray and ongoing government infrastructure spending are also expected to contribute to investment growth. However, the gains will be limited. High office and residential vacancies in the province will result in lower private sector construction spending. Uncertainty surrounding the North American Free Trade Agreement (NAFTA) is also giving pause to non-energy sector investment projects.



Source: Conference Board of Canada, Statistics Canada, Corporate Economics

Alberta Employment

- Alberta's labour market has shown signs of gradual improvement. After losing 1.6 per cent of jobs in 2016 Alberta is expected to see job increases of 1 per cent this year. Growth in 2017 is mainly being driven by the resource sector, as oil prices and drilling activity begin to improve. The service industries have also seen improvements in 2017. With conventional oil and gas, and manufacturing activity increasing, the goods sector is expected to drive the jobs recovery later in the forecast horizon. Employment is set to average growth of 1.4 per cent annually from 2017 to 2026.



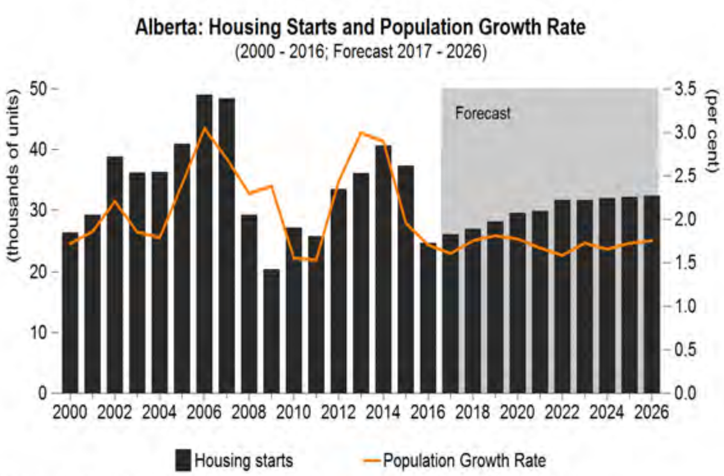
Source: Statistics Canada, Corporate Economics

- Even as employment declined in 2015 and 2016 the labour force in Alberta was still increasing. The combination of job losses and population growth drove the Alberta unemployment rate to 8 per cent in 2016. Although employment is expected to increase in 2017 the labour force will grow at almost the same pace, keeping the unemployment rate elevated at 8.0 per cent in 2017. Beyond 2018 growth in employment is forecast to surpass labour force increases, and the Alberta unemployment rate is expected to fall to 6 per cent by 2021.

- Our base case outlook anticipates modestly reduced provincial expenditures going forward. Correspondingly, the unemployment rate is expected to slowly decline after 2019, but remain above the full employment level. As such, we anticipate only moderate wage increases in Alberta for the forecast horizon.

Housing Starts and Population Growth

- A weaker labour market in 2015 and 2016 discouraged migration to Alberta from other provinces. In 2016, more people moved out of Alberta than people moved in, mostly due to reduced job opportunities. Alberta is expected to continue to see more people move to other provinces than come from other provinces. However, the net interprovincial outflow will be more than offset by natural increase and elevated international migration.
- However, it is important to note that although Alberta population growth remains above the national average, the pace of natural growth is slowing as the Alberta population ages. Net migration, both inter-provincially and internationally, will become more and more important to Alberta's population growth as time goes on.



Source: Statistics Canada, Alberta Treasury Board and Finance, Corporate Economics

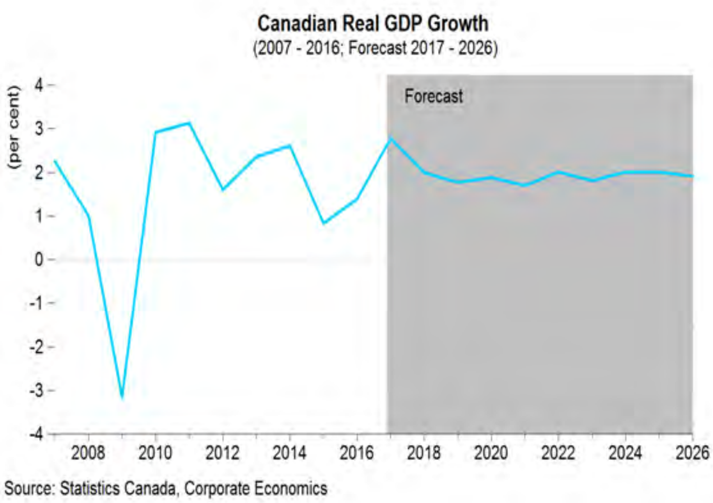
- Slower job growth over the forecast period implies lower interprovincial net migration than Alberta previously experienced. Alberta's population growth is forecast to increase by 1.6 per cent in 2017 and 1.8 per cent in 2018.

- Slower population growth and soft demand for housing, combined with excess supply in some of Alberta's existing housing markets, are expected to weigh on growth in housing starts. Rebuilding efforts in Fort McMurray will soften some of the downward pressure on housing starts in the short term though. In 2017, housing starts in Alberta are projected to increase to 26,000, slightly higher than 2016 levels.
- Over the longer term, continued population growth and Alberta's relatively high per capita income should continue to support a robust but smaller housing market. Housing starts are forecast to grow moderately, reaching 32,000 units by 2026, well off the historical peak of 48,000 units recorded in 2006.

Canada

Economic Growth

- Increased consumer spending in durable goods and residential investment in housing markets increased real GDP in Canada in 2016 after a slower 2015. Consumer spending and residential investment are expected to be the key drivers behind real GDP growth in 2017, which is forecast to be 2.8 per cent.



- Beyond 2017, a high household debt to income ratio combined with rising interest rates should limit further growth in consumption and residential investment. Future business investment is also expected to taper in response to rising interest rates.

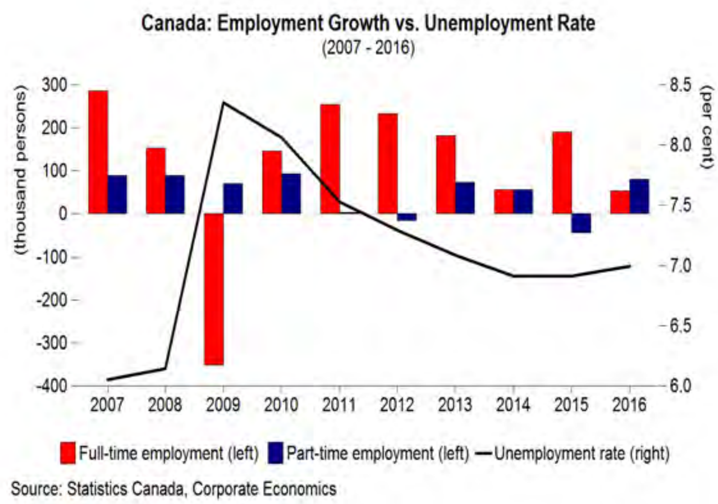
- Government spending is expected to continue at current levels for a couple more years. Beyond that, federal government spending is expected to ease up in the longer term as the federal government starts to address its ongoing deficits.

- Net exports are expected to increase over the forecast horizon, but mostly from increased volume of natural resource exports and IT services and increased tourism in Canada instead of increased volume of exports of manufactured goods.

- On net, real GDP growth in Canada is expected to decelerate to 2.0 per cent in 2018, and fluctuate around 1.7 per cent to 2.0 per cent for the next decade.

Labour Market

- The Canadian job market experienced a high growth period during the commodities super cycle from 2004 to 2013 with an average of 203,000 jobs created annually. From 2014 to 2016 job creation slowed to a pace of 129,000 positions per year due primarily to cuts in the energy and other goods-producing sectors, and the associated negative spin-off effects into service sectors. Over the next ten years job creation in Canada is expected to be moderate.



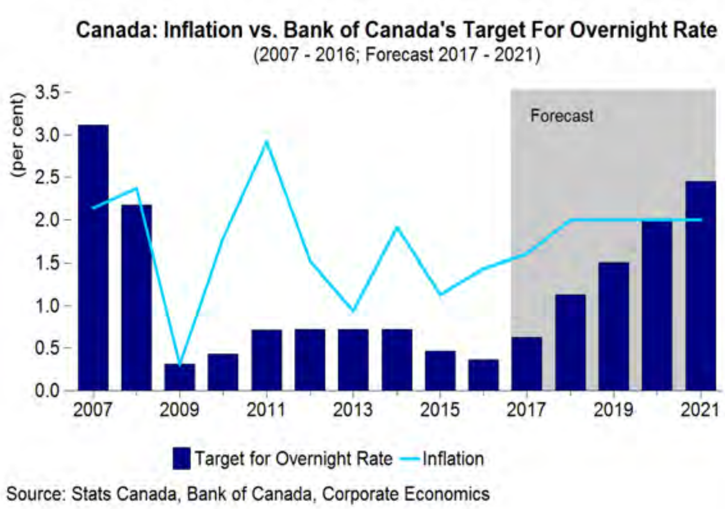
- The unemployment rate in Canada held stable around 7 per cent for the past four years. It is expected to decline gradually from 6.5 per cent in 2017 to 5.7 per cent in 2026, but not as a result of massive job creation. A key driver behind the declining national unemployment rate is the increasing number of baby boomers retiring.

Inflation and Interest Rate

- The Bank of Canada raised its overnight target rate in July 2017 from 0.5 to 0.75 per cent, and again to 1.0 per cent in September. The last time The Bank of Canada changed interest rates was a rate cut in July 2015. Back then the major problem facing the Canadian economy was a labour market hit by the collapse of oil prices and deflation pressures. Today, across Canada the labour market is slowly absorbing people formerly employed in energy and related sectors. Although inflation is forecast to be below the Bank target rate of 2.0 per cent, the Bank is being proactive in raising interest rates with an expectation that national inflation will reach 1.8 per cent in 2017, and 2 per cent in 2018.

- Increasing interest rates cause the value of the Canadian dollar to rise, especially if interest rates in Canada are higher than they are in the U.S. This can have negative impacts on Canadian exports. Considering this, the Bank of Canada should be careful to not outpace the U.S. Federal Reserve in future interest rate hikes.

- The Bank of Canada is expected to continue increasing its overnight target rate to 2.5 per cent within the next three years. This corresponds to a typical 5-year fixed mortgage rate, rising to about 6.50 per cent, which is significantly higher than recent rates of around 4 per cent. The extra interest represents an increased cost of about $3,000 per year on a $250,000 mortgage to the average family in Canada. Bear in mind, about half of the households in Canada don't have a mortgage and half of them have fairly high mortgages, so these average numbers don't reflect individual circumstances.



- In Calgary, increased interest rates would likely result in increased annual mortgage costs of about $6,000 per year for a household with a $400,000 mortgage. Monthly payments, not including property taxes or insurance, would rise from about $2,150 today on that mortgage to around $2,700, depending on the renewal date of the mortgage. Of course, not all mortgages are that high and individual incomes are important in the calculations, but it is certain that rising interest rates will impact housing affordability in Calgary.

Exchange Rate and Export by Product

- The value of the Canadian currency against the U.S. dollar continues to respond to interest rates and oil prices. Recent increases in interest rates have pushed the loonie upward from 76 U.S. cents into the 80 U.S. cents range this year. Though less responsive to oil prices in the past, the Canadian dollar is still fluctuating daily in response to oil price changes.

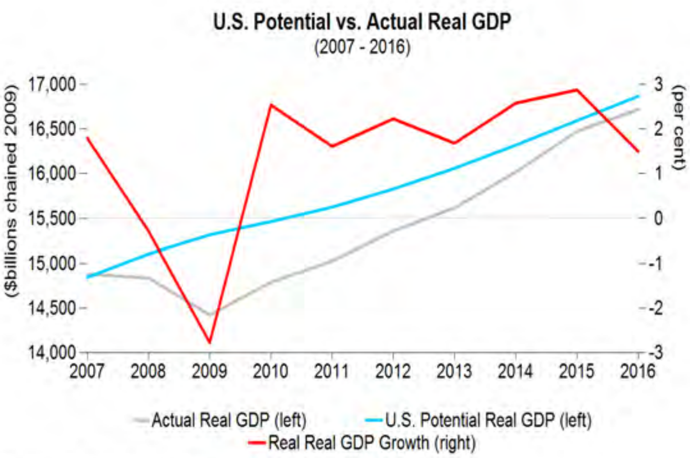
- The weak loonie helped the Canadian economy to adjust to the low oil price environment, resulting in a 20 per cent increase in export volumes from 2014 to 2016. However, on closer look a significant portion of those increases in export volumes were from energy markets and not from Ontario manufacturing markets as is traditionally the case in Canada.

- Our base case outlook for Canadian exchange rates calls for modest increases in the value of the Canadian dollar over the forecast horizon. Our outlook calls for the Canadian dollar to slowly rise to $0.84 U.S. by 2026.

United States

Economic Growth and Output Gap

- The current economic expansion in the U.S. just entered its 8th year. This is the third longest expansion period in U.S. history, but the global recession of 2008-2009 impacted the U.S. so much that it took longer than usual for the U.S. economy to recover. The U.S. economy is expected to grow further in the next few years driven by increases in consumer spending and residential construction, as well as higher business investments in non-residential construction.

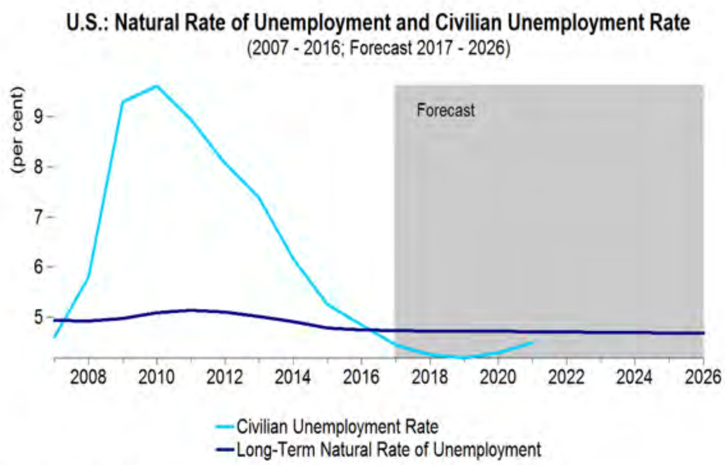


Source: Federal Reserve Economic Data, Corporate Economics

- Potential GDP is the level of output an economy can produce without increasing inflation. The Congressional Budget Office (CBO) forecasts that the potential real GDP in the U.S. will grow at 1.8 per cent annually over 2017-2026, reaching 20.2 trillion in chained 2009 U.S. dollars by 2026. Meanwhile, the U.S. real GDP expected to grow at an annual average of 2.0 per cent over this period. The gap between actual and potential real GDP is expected to close by 2018, ten years after the Great Recession in 2008. After 2018, the U.S. economy will be temporarily growing faster than its maximum possible output potential. This will result in increased inflation and increased wages, but this situation should only persist for 1 or 2 years. After that inflation pressures are expected to ease.

Labour Market Tightening

- The U.S. unemployment rate in 2016 dropped to 4.8 per cent, near the natural rate of unemployment. However, these numbers must be taken with a bit of caution. The U.S. definition of unemployment doesn't match the Canadian definition. If we use a statistic that more closely matches the Canadian measure of unemployment, the current U.S. unemployment rate would be around 6 per cent. If we also include all people who want full-time work but can only get part-time work, the more broadly defined unemployment rate[3] in the U.S. would be 8.6 per cent as of August 2017. This shows a significant amount of underemployment in the U.S. which helps to explain how President Trump got elected on a platform of "jobs, jobs, jobs, make America great again" when the official U.S. unemployment rate was below 5 per cent.



Source: Federal Reserve Economic Data, Corporate Economics

- Monthly U.S. job creation has averaged 174,000 in the past 12 months. The official U.S. unemployment rate is expected to drop below 4.4 per cent in 2017 and 4.2 per cent in 2019. This is not likely to result in significant inflationary pressures in the U.S. before 2020.

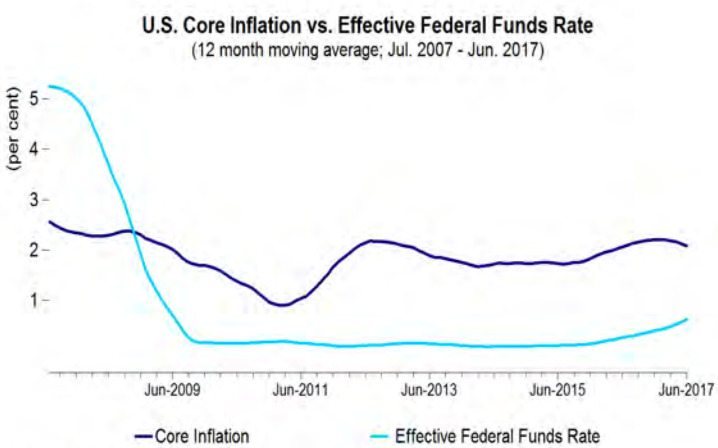
- The improving U.S. labour market should support increased consumer spending in durable goods and improvements in investments in residential construction. Increased U.S. residential construction has a couple impacts on Canada. Prices for imported goods like

[3] U-6, total unemployed, plus all marginally attached workers, plus total employed part-time for economic reasons, as a per cent of the civilian labour force plus all marginally attached workers.

drywall and plumbing fixtures are expected to rise. Meanwhile, prices for Canadian exports like wood products would ordinarily rise as well, but renegotiation of NAFTA and the softwood lumber agreement could alter that.

Inflation Pressure and Rising Interest Rates

- U.S. inflation picked up significantly after the U.S. election. Meanwhile, consumer prices for some U.S. services have seen unprecedented deflationary impacts due to technological advancements, e.g. Uber, Airbnb, and automation in various industries. Also, increased cellular data and minute packages for the same price represent effective deflation in technology prices for Americans.



Source: Federal Reserve Economic Data, Corporate Economics

- The U.S. Federal Reserve is expecting a sustained return of inflation of 2 per cent in the longer term, but chose to maintain its target range for the Fed funds rate at 1 to 1-1/4 per cent in September 2017. At that time, the U.S. Federal Reserve indicated it intended to gradually increase the target rate in the medium term. Current expectations are for the U.S. Federal Reserve to raise its target rate to 1.9 per cent in 2018, 2.5 per cent in 2019, and 2.75 per cent in 2020.
- The U.S. Federal Reserve announced its decision to unwind its stimulus program by selling off the bonds it bought on the open market over the past 9 years as part of its "quantitative easing" initiative.

World

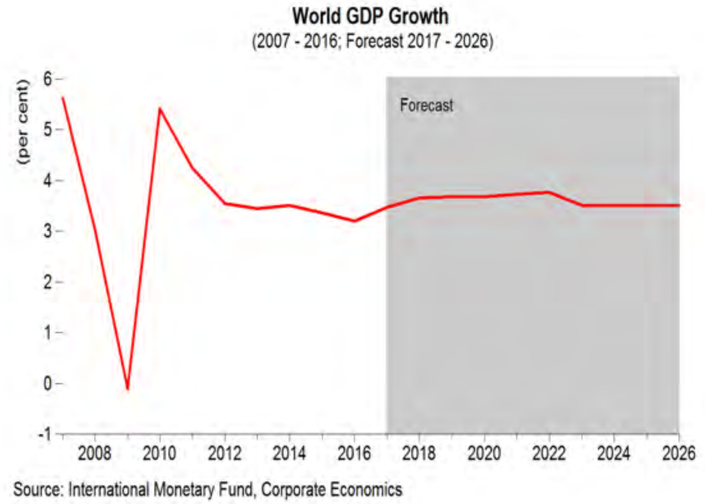
- The world outside of North America can have profound impacts on the Calgary economy as evidenced with the most recent "oil supply glut" which drove oil prices from U.S.$100/bbl. to U.S.$50/bbl. in 2017. Weather, natural events and geopolitical issues in many parts of the world continue to add to economic uncertainty abroad and at home. Protectionism, possible financial market turbulence (not the least of which is from Brexit) and slower population growth in developed nations, all add risks to the global economy.

- Europe continues to suffer geopolitical uncertainty. Greece continues in its seemingly never-ending recession and European trade is in a new level of uncertainty with Brexit looming on the horizon. Still, Russia is exiting from its 2-year recession along with Turkey and the Baltic states. Overall, Europe and Central Asia are expected to grow by about 2.5 per cent in the next few years.

- China and East Asia continue to grow at about 6 per cent per year, though this is off several points from the past decade. East Asian countries continue to improve trade among themselves, boosting GDP in the Pacific Rim.

- Countries in the Middle East are ticking along in 2017 with barely any growth. 2018 is expected to see a return to growth in these countries as they adapt to lower oil prices. Reforms in public policy and business rules are expected to allow diversification of these economies and permit growth in industries outside of oil.

- World gross domestic product is expected to grow by close to 3.5 per cent in 2017, followed by an increase of 3.6 per cent in 2018, and an average annual growth of 3.7 per cent per year for the rest of the forecast period.



- Global oil prices remain muted due to increased production by United States shale oil producers, which has shifted market dynamics since late 2014. Lower oil prices have given importing countries a price break which has allowed them extra room for further growth. Oil exporting countries have not fared as well and their economies have struggled. Some of them are exiting recession this year, like Canada and Russia, but some of them continue to face challenges like Venezuela, Saudi Arabia, and Iraq. Global inflation is estimated at 3.5 per cent in 2017, decreasing to 3.4 per cent in 2018, and expected to average 3.3 per cent per year between 2018 and 2022.

Forecast Tables

Table 1 Selected Economic Indicators

	Estimate	FORECAST								
Forecast completed September 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
ASSUMPTIONS										
Global Economy										
World Real Gross Domestic Product Growth (%)	3.5	3.6	3.7	3.7	3.7	3.8	3.5	3.5	3.5	3.5
The United States										
U.S. Real Gross Domestic Product Growth (%) (chained 2009 dollar)	2.1	2.2	2.0	2.1	2.3	2.6	2.2	2.4	2.1	1.7
Canada										
Canada Real Gross Domestic Product Growth (%) (chained 2007 dollar)	2.8	2.0	1.8	1.9	1.7	2.0	1.8	2.0	2.0	1.9
Prime Business Loan Rate (%)	2.8	3.6	4.2	4.7	4.7	4.7	4.8	4.8	5.0	5.0
Exchange Rate (US$ per Cdn$)	0.76	0.78	0.79	0.80	0.81	0.82	0.82	0.83	0.83	0.84
Alberta										
Alberta Real Gross Domestic Product Growth (%) (chained 2007 dollar)	2.8	2.4	2.2	2.4	2.3	2.1	2.1	2.0	1.9	1.8
Total Employment Growth (%)	1.0	1.3	1.3	1.7	1.6	1.6	1.5	1.5	1.5	1.4
Unemployment Rate (%)	8.0	7.4	7.0	6.3	6.0	6.1	6.0	5.9	5.8	5.7
Housing Starts ('000 Units)	26.0	26.9	28.1	29.5	29.8	31.7	31.8	31.9	32.1	32.4
Alberta CPI Inflation (%)	1.8	2.0	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1
West Texas Intermediate - WTI (US$/bbl)	49.8	50.8	54.1	56.9	58.8	60.1	61.4	62.7	64.0	65.3
Western Canadian Select - WCS (US$/bbl)	35.8	37.7	42.5	44.6	46.1	47.9	49.7	50.2	52.0	53.8
Alberta Natural Gas Price - AECO/NIT (C$/GJ)	2.5	2.8	3.0	3.2	3.5	3.7	3.8	3.9	4.1	4.3
Industrial Product Price Index (%)	3.3	1.9	2.1	1.8	1.7	1.9	1.9	2.1	2.0	2.0
Raw Materials Price Index (%)	7.2	2.7	4.5	2.1	2.1	2.2	2.3	2.2	2.3	2.2
Alberta Average Wage Rate Increase for all industries (%)	0.6	2.5	2.3	2.7	2.7	2.4	2.3	2.3	2.2	2.1
FORECAST										
Calgary Economic Region (CER)										
Real Gross Domestic Product Growth (%)*	3.0	2.4	3.0	2.9	3.3	2.7	1.6	1.5	1.5	1.8
Total Employment (‘000 persons)	880	901	930	955	977	992	1,006	1,020	1,036	1,051
Total Employment Growth (%)	2.4	2.4	3.2	2.7	2.3	1.5	1.4	1.4	1.6	1.4
Unemployment Rate (%)	8.8	6.7	6.1	5.3	5.4	5.4	5.8	5.8	5.9	5.8
Calgary Census Metropolitan Area (CCMA)										
Calgary CPI Inflation (%)	1.6	2.3	2.2	2.0	2.1	2.1	1.8	2.0	2.0	2.0
Non-Residential Building Price Inflation (%)	(0.2)	0.4	0.9	0.9	2.5	2.6	2.1	3.3	1.3	1.8

Numbers may not add up due to rounding; negative numbers in brackets.
* Source: Centre for Spatial Economics, Corporate Economics, International Monetary Fund
Total population, census divisions and census metropolitan areas, 2001 Census boundaries
Canada GDP (CANSIM380-0017)

Forecast Tables

Table 2 Selected Indicators for the City of Calgary

	Estimate	FORECAST								
Forecast completed August 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Demography										
Total Population ('000 Persons)	1,246	1,259	1,272	1,285	1,303	1,323	1,344	1,365	1,384	1,402
Total Population Growth (%)	0.9	1.0	1.0	1.1	1.4	1.6	1.6	1.5	1.4	1.3
Net Migration ('000 Persons)	1.0	1.9	2.8	3.8	8.5	11.4	12.6	11.9	11.0	10.2
Household Formation ('000 Units)	7.5	2.6	4.9	5.0	6.6	7.6	8.0	7.7	7.3	6.9
Real Estate										
Residential Market										
Housing Starts ('000 units)	6.3	4.4	4.1	5.9	8.0	9.6	10.2	10.1	9.7	9.5
Housing Completions ('000 units)	9.6	3.9	4.0	4.2	5.4	6.1	6.6	7.5	7.1	6.7
Average Residential MLS® Price Change (%)*	1.9	2.8	1.0	4.4	2.5	5.4	0.6	(0.7)	2.0	(1.1)
Total Building Permits mid point ($billions)	4.5	3.6	3.9	4.3	3.9	4.1	4.1	4.0	3.9	3.9
Office Space Market										
Calgary Downtown Office Vacancy Rate	21.2	22.7	20.2	18.1	16.2	14.9	13.7	12.5	11.0	9.9

* Source: CREB, Corporate Economics. Negative numbers in brackets.

Table 3 Selected Commodity Price Inflation

(Year-over-year percentage change)

	Estimate	FORECAST								
Forecast completed August 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Commodities										
Construction Commodities										
Iron and steel products	2.9	1.4	5.2	2.4	(1.3)	(2.1)	(5.8)	3.4	11.2	8.8
Aluminium products	6.1	2.9	5.7	(5.4)	(10.4)	(3.2)	(2.2)	2.2	3.3	2.1
Wood	2.9	(1.2)	(0.1)	1.9	0.9	(0.2)	(0.6)	1.8	0.0	0.1
Asphalt*	19.0	(2.6)	(5.2)	(1.4)	(1.3)	(2.1)	(0.2)	1.1	1.1	0.5
Operational Commodities										
Rubber	17.1	(4.8)	9.6	2.5	2.8	1.0	1.0	5.9	1.0	6.8
Diesel Oil	(1.0)	3.7	10.9	16.4	12.7	11.0	11.8	11.8	11.7	11.8
Vehicle Parts	(1.8)	1.2	2.1	2.5	2.7	2.5	2.0	1.7	1.3	0.1

* Based on Ontario Ministry of Transportation Asphalt Price Index

Numbers may not add up due to rounding; negative numbers in brackets.

Forecast Tables

Table 4 City of Calgary Population Projections

City of Calgary (thousand persons)	Estimate	FORECAST								
Completed September 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Population (as of April)	1,246.3	1,258.7	1,271.6	1,285.0	1,302.7	1,323.0	1,344.3	1,364.7	1,384.1	1,402.4
Total Population Growth Rate (April - March) %	0.9	1.0	1.0	1.1	1.4	1.6	1.6	1.5	1.4	1.3
Total Net Migration (April - March)	1.0	1.9	2.8	3.8	8.5	11.4	12.6	11.9	11.0	10.2
Total Births (April - March)	16.2	17.5	17.3	17.1	16.8	16.8	16.8	16.8	16.8	16.8
Total Deaths (April - March)	6.0	7.0	7.2	7.5	7.7	7.9	8.1	8.3	8.5	8.7
Total Natural Increase (April - March)	10.2	10.5	10.0	9.6	9.1	8.9	8.7	8.6	8.4	8.1
Total Households (as of April)	471.2	473.8	478.6	483.6	490.3	497.9	506.0	513.7	520.9	527.9
Total Household Formation (April - March)	7.5	2.6	4.9	5.0	6.6	7.6	8.0	7.7	7.3	6.9
Population by 5-year Cohort (thousands)										
0-4	86.4	87.0	87.0	86.7	85.9	85.0	84.2	83.7	83.5	83.5
5-9	78.2	80.0	81.4	82.7	84.2	86.1	86.7	86.7	86.3	85.6
10-14	68.7	70.7	73.1	75.3	77.2	78.6	80.6	82.0	83.3	84.9
15-19	67.5	66.5	66.4	66.9	68.0	69.7	72.1	74.7	77.1	79.1
20-24	78.1	75.5	73.5	72.0	71.8	72.1	72.8	73.8	74.8	75.8
25-29	100.3	96.6	93.3	89.6	87.2	86.9	87.5	87.9	88.1	88.2
30-34	114.1	112.9	110.8	108.7	108.0	107.2	106.4	105.7	104.4	102.7
35-39	109.8	112.1	114.6	116.8	118.8	119.8	121.0	120.9	120.5	120.2
40-44	98.9	100.3	102.3	105.2	108.8	113.4	117.3	121.4	125.0	127.4
45-49	86.7	89.9	92.5	94.6	97.3	99.8	102.0	104.8	108.4	112.3
50-54	86.0	84.8	83.9	83.5	84.2	86.4	89.9	92.9	95.2	97.9
55-59	77.0	78.8	80.6	82.4	82.8	82.4	80.7	79.6	79.3	80.2
60-64	62.2	65.7	68.4	70.5	71.8	72.4	73.4	74.5	75.5	75.8
65-69	47.9	48.9	50.6	53.0	55.7	58.4	61.4	63.5	65.1	66.1
70-74	31.1	34.0	36.7	39.2	41.4	43.6	44.3	45.7	47.8	50.3
75-79	21.7	22.4	23.5	24.4	25.5	26.8	29.2	31.4	33.4	35.3
80-84	15.9	16.0	16.1	16.4	16.7	17.1	17.6	18.3	19.0	19.8
85-89	10.5	10.6	10.7	10.6	10.5	10.4	10.4	10.4	10.6	10.8
90-99	5.4	5.7	6.0	6.3	6.5	6.6	6.5	6.5	6.5	6.5
100+	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Total	1,246.3	1,258.7	1,271.6	1,285.0	1,302.7	1,323.0	1,344.3	1,364.7	1,384.1	1,402.4
Youth (12-18)	80.0	80.8	81.9	83.9	87.0	89.8	92.3	94.0	96.5	98.8
Primary School Age 6-17	171.1	173.4	177.0	181.1	185.6	190.0	194.1	197.6	200.5	202.4
Working Age 15-65	880.5	883.2	886.4	890.2	898.7	910.1	923.2	936.2	948.4	959.4
Seniors 65+	132.6	137.8	143.7	150.1	156.6	163.1	169.6	176.2	182.6	189.1
Super Seniors 85+	16.0	16.4	16.8	17.1	17.2	17.2	17.2	17.2	17.3	17.5
Female Super Seniors 85+	10.2	10.4	10.6	10.7	10.8	10.8	10.8	10.8	10.9	11.0

Numbers may not add up due to rounding.

Table 5 Calgary Economic Region Population Projections

Calgary Economic Region (thousand persons)	Estimate	FORECAST								
Completed September 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Population (as of April)	1,563.0	1,577.4	1,593.4	1,611.3	1,634.4	1,656.7	1,684.5	1,714.8	1,739.3	1,758.0
Total Population Growth Rate (April - March) %	0.6	0.9	1.0	1.1	1.4	1.4	1.7	1.8	1.4	1.1
Total Net Migration (April - March)	(2.4)	2.1	4.2	6.9	12.6	12.4	18.6	21.6	16.2	11.1
Total Births (April - March)	-	21.4	21.2	20.9	20.7	20.5	20.3	20.2	20.2	20.1
Total Deaths (April - March)	-	9.1	9.5	9.8	10.2	10.6	11.0	11.5	12.0	12.4
Total Natural Increase (April - March)	11.2	12.3	11.7	11.1	10.5	9.9	9.2	8.7	8.2	7.6
Total Households (as of April)	601.2	606.7	612.8	619.7	628.6	637.2	647.9	659.6	669.0	676.2
Total Household Formation (April - March)	3.4	5.5	6.1	6.9	8.9	8.6	10.7	11.7	9.4	7.2
Population by 5-year Cohort (thousands)										
0-4	99.3	101.4	102.8	104.0	104.8	105.2	104.4	103.7	103.1	102.4
5-9	98.7	99.1	98.9	98.7	98.8	99.4	101.7	103.4	104.7	105.6
10-14	86.7	89.3	92.5	95.6	98.6	100.7	101.9	102.5	102.5	102.3
15-19	85.7	84.4	84.4	85.2	87.0	89.4	93.3	97.8	101.6	104.4
20-24	98.3	95.0	92.6	91.1	91.0	90.9	91.9	94.1	95.8	97.0
25-29	124.2	119.5	115.3	110.9	107.2	105.0	104.7	105.5	105.6	105.1
30-34	141.3	139.6	136.7	133.9	132.3	129.5	127.4	126.0	123.3	119.5
35-39	131.2	134.6	138.4	141.8	144.3	145.0	145.2	144.3	142.7	141.1
40-44	118.1	119.7	122.0	125.2	129.0	133.4	138.1	143.4	147.6	150.1
45-49	109.3	112.1	114.1	115.5	117.5	118.9	121.4	124.5	128.3	132.1
50-54	108.5	106.9	105.7	105.3	106.2	108.8	112.0	114.5	116.2	118.2
55-59	104.1	105.3	106.5	107.6	107.6	106.7	105.4	104.4	104.2	105.1
60-64	84.1	89.1	93.1	96.3	98.9	101.1	102.3	103.7	104.9	104.8
65-69	63.1	64.8	67.5	71.3	75.9	80.4	85.3	89.3	92.4	94.9
70-74	40.9	44.8	48.5	51.9	55.3	58.5	60.3	63.0	66.7	70.8
75-79	28.3	29.3	30.9	32.3	34.1	36.3	39.9	43.3	46.4	49.3
80-84	20.7	20.9	21.1	21.6	22.2	23.0	24.0	25.5	26.7	28.1
85-89	13.7	13.9	14.0	14.0	14.1	14.2	14.5	14.7	15.2	15.6
90-99	7.0	7.5	8.1	8.7	9.4	9.9	10.3	10.7	10.9	11.0
100+	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.6
Total	**1,563.0**	**1,577.4**	**1,593.4**	**1,611.3**	**1,634.4**	**1,656.7**	**1,684.5**	**1,714.8**	**1,739.3**	**1,758.0**

Numbers may not add up due to rounding.

Table 6 City of Calgary: Demographic Driven Housing by Housing Type

Corporate Economics has provided estimates of housing requirements by housing type since producing our Fall 2012 Calgary and Region Economic Outlook; see Appendix B (p. 100) of that publication for the methodology employed.

This year, City Clerks made available to us a table showing the occupancy of Calgary dwellings by type of dwelling and age cohort which eliminated the need for us to estimate this information using statistical techniques. One of the problems with the prior methodology was that each year the projections had to be calibrated to the current housing stock profiles with adjustment factors. Using this newly available data from City Clerks eliminates the need to calibrate the model.

It is perhaps a validation of our prior methodology that this new methodology does not significantly impact our expectations for housing requirements in Calgary over the forecast horizon. The model still indicates no need for additional apartment/condo type units for an extended period. We understand some construction of this type of dwelling is ongoing and will continue as specific projects may have location or cost advantages over existing housing stock. That said, those new units add supply to a market with a high vacancy rate and will push back our expected date of more balanced conditions to after 2023. The same can be said of Conversions.

Single family housing continues to be the preferred type of housing in the Calgary market. Differential price impacts in different markets will likely have impacts on this projection. It is likely that at least some people who would prefer a single-family dwelling, will for financial reasons, opt instead for a duplex or townhouse. As such we will not be surprised if actuals for single family are lower than these projections while the actuals for Duplex and Townhouse come in above these projections.

Expected Number of Total Occupied Units (as of April each year)										
	Estimate	FORECAST								
(thousand units)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Single Family	272	276	279	282	286	291	296	300	305	309
Duplex (per dwelling)	32	32	33	33	33	34	34	35	35	36
Apt./ Condo units	99	99	100	100	101	103	104	106	107	108
Townhouse / multi	50	51	51	52	52	53	54	54	55	56
Conversion	13	13	13	13	13	13	14	14	14	14
Other (institutions)	4	4	4	4	4	4	4	5	5	5
Total	**471**	**475**	**480**	**485**	**491**	**498**	**506**	**514**	**521**	**528**
Expected Number of Completions of New Housing Construction (as of April each year)										
	Estimate	FORECAST								
(units)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Single Family	2,115	3,182	3,302	3,410	4,211	4,680	4,790	4,586	4,397	4,194
Duplex (per dwelling)	687	295	303	312	426	495	517	492	460	430
Apt./Condo units * , **	4,295	0	0	0	0	0	288	1,481	1,346	1,251
Townhouse / multi	433	368	373	385	589	717	758	714	655	602
Conversion	-	0	0	3	87	137	157	148	128	109
Other residential ***	81	38	51	57	73	88	116	120	115	115
Total	**9,628**	**3,883**	**4,028**	**4,167**	**5,387**	**6,116**	**6,625**	**7,542**	**7,100**	**6,701**

* New units may be constructed during this period as builders may serve a niche market or offer lower prices. To the extent that thishappens the market is expected to return to balance at a further date in the future than indicated in this forecast.

** This implicitly assumes that the current vacancy rate of 9.74 per cent for this type of dwelling continues into the future. Given the population forecast a lower vacancy rate among appt/condo units would advance the need for more appt/condo units at the expense of reducing the expected demand for single family and duplex units.

*** This includes manufactured homes, hotels, nursing homes, institutional residences and other dwellings.

Table 7 City of Calgary: Estimated Number of Disabled Persons

In the Fall Outlook Corporate Economics published last year we presented a table showing a projection of the number of disabled persons in Calgary for the extended forecast horizon. Please see Appendix 2 on page 33 of Fall 2016 Calgary and Region Economic Outlook for description of our methodology. This year we update that table showing our projection for the number of disabled persons in Calgary by severity of disability and age cohort. This year our population forecast is lower than last year's with a reduced expectation of net migration to Calgary. Consequently, this year's projection for the number of disabled persons in Calgary shows slightly fewer younger people as disabled and a slightly higher proportion of the more aged population being disabled. The general trend is unaffected though. Today about 8.25 percent of the Calgary population is disabled and we anticipate this proportion of the population to increase to what is average among North American cities, 10 per cent, by around 2050.

City of Calgary: Estimated Number of Disabled Persons

		Mild Disability			Moderate Disability			Severe Disability			Very Severe Disability		
(persons)		15 to 24	25 to 64	65+	15 to 24	25 to 64	65+	15 to 24	25 to 64	65+	15 to 24	25 to 64	65+
2017	Estimate	2,127	20,777	13,776	1,560	11,216	10,234	1,106	13,425	7,133	605	11,726	9,226
2018	FORECAST	2,075	21,064	14,330	1,522	11,386	10,608	1,079	13,661	7,393	590	11,935	9,565
2019		2,044	21,304	14,962	1,499	11,530	11,038	1,062	13,858	7,688	581	12,109	9,950
2020		2,030	21,520	15,641	1,489	11,656	11,490	1,055	14,034	8,002	576	12,263	10,358
2021		2,044	21,774	16,337	1,498	11,800	11,950	1,062	14,218	8,321	580	12,427	10,771
2022		2,073	22,063	17,030	1,519	11,960	12,421	1,077	14,411	8,648	588	12,601	11,196
2023		2,118	22,360	17,711	1,553	12,125	12,929	1,099	14,608	9,006	601	12,783	11,652
2024		2,170	22,661	18,389	1,591	12,294	13,439	1,127	14,816	9,366	616	12,972	12,110
2025		2,220	22,978	19,056	1,628	12,475	13,938	1,153	15,051	9,716	630	13,180	12,557
2026		2,263	23,303	19,736	1,659	12,664	14,449	1,176	15,305	10,078	642	13,408	13,015

Estimated using 2017 City of Calgary Corporate Economics Population projections and 2012 Canada National Census

Appendices

High Case Scenario Forecast Tables

The following selected forecasts are based on the assumptions of higher than the base case WTI prices.

ASSUMPTIONS	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
West Texas Intermediate - WTI (US$/bbl)	52.8	58.3	66.0	67.0	69.0	70.2	71.4	72.6	73.7	74.9

Table 1 High Case Scenario: Calgary Economic Region

	Estimate	FORECAST								
Forecast completed August 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Calgary Economic Region (CER)										
Real Gross Domestic Product Growth (%)	3.5	3.2	3.6	4.3	3.1	2.5	1.7	1.7	1.7	1.9
Total Employment ('000 Persons)	889	921	954	981	1,005	1,023	1,042	1,061	1,081	1,100
Total Employment Growth (%)	3.5	3.6	3.6	2.8	2.4	1.9	1.8	1.8	1.9	1.8
Calgary Census Metropolitan Area (CCMA)										
Unemployment Rate (%)	8.7	6.1	5.7	5.1	5.3	5.2	5.6	5.6	5.6	5.6
Calgary CPI Inflation (%)	1.6	2.4	2.4	2.2	2.2	2.2	2	2.2	2.2	2.2

Table 2 High Case Scenario: City of Calgary

	Estimate	FORECAST								
Forecast completed August 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Demography										
Total Population ('000 persons)	1,246	1,261	1,274	1,294	1,313	1,337	1,360	1,382	1,404	1,426
Total Population Growth (%)	0.9	1.2	1.0	1.6	1.5	1.8	1.7	1.7	1.5	1.6
Net Migration ('000 persons)	1.0	4.0	2.9	10.4	9.3	14.6	13.5	13.8	12.3	13.1
Household Formation ('000 units)	7.5	3.4	4.9	7.6	7.1	9.0	8.6	8.7	8.1	8.3
Real Estate										
Residential Market										
Housing Starts ('000 units)	6.5	4.8	4.9	6.5	8.8	10.5	11.0	11.2	11.0	10.8
Total Building Permits mid point ($billion)	4.6	4.1	4.5	4.9	4.7	4.8	4.9	5.0	5.1	5.1

Table 3 High Case Scenario: City of Calgary Population Projections

City of Calgary (thousand persons)	Estimate	Forecast								
Completed September 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Population (as of April)	1,246.3	1,260.8	1,273.8	1,293.9	1,312.7	1,336.6	1,359.5	1,382.4	1,403.8	1,425.8
Total Population Growth Rate (April - March) %	0.9	1.2	1.0	1.6	1.5	1.8	1.7	1.7	1.5	1.6
Total Net Migration (April - March)	1.0	4.0	2.9	10.4	9.3	14.6	13.5	13.8	12.3	13.1
Total Births (April - March)	16.2	17.5	17.4	17.2	17.2	17.2	17.3	17.4	17.5	17.5
Total Deaths (April - March)	6.0	7.0	7.2	7.5	7.6	7.8	8.0	8.2	8.4	8.6
Total Natural Increase (April - March)	10.2	10.5	10.1	9.7	9.6	9.3	9.3	9.2	9.1	8.9
Total Households (as of April)	471.2	474.5	479.4	487.0	494.1	503.1	511.7	520.3	528.4	536.6
Total Household Formation (April - March)	7.5	3.4	4.9	7.6	7.1	9.0	8.6	8.7	8.1	8.3
Population by 5-year Cohort (thousands)										
0-4	86.4	87.0	87.1	86.8	86.4	85.9	85.7	85.7	86.0	86.3
5-9	78.2	80.0	81.4	82.7	84.2	86.1	86.6	86.7	86.4	86.0
10-14	68.7	70.7	73.1	75.5	77.4	78.8	80.7	82.1	83.4	85.0
15-19	67.5	66.6	66.5	67.2	68.3	70.1	72.5	75.1	77.6	79.5
20-24	78.1	75.9	73.8	73.7	73.4	74.0	74.5	75.5	76.3	77.6
25-29	100.3	97.3	93.9	92.5	90.1	90.6	91.2	91.9	92.1	92.6
30-34	114.1	113.4	111.3	110.8	110.5	110.6	110.3	110.3	109.5	108.4
35-39	109.8	112.5	115.1	118.7	120.8	122.6	124.0	124.4	124.3	124.8
40-44	98.9	100.6	102.7	106.3	110.2	115.3	119.6	124.2	128.2	131.1
45-49	86.7	90.0	92.7	95.1	97.9	100.7	103.1	106.2	110.1	114.4
50-54	86.0	84.8	83.9	83.8	84.5	86.8	90.4	93.5	95.9	98.9
55-59	77.0	78.6	80.5	81.7	82.3	81.8	80.3	79.3	79.2	80.0
60-64	62.2	65.6	68.3	69.9	71.0	71.5	72.3	73.3	74.2	74.5
65-69	47.9	48.9	50.5	52.8	55.5	57.9	60.8	62.8	64.2	65.1
70-74	31.1	33.9	36.7	39.0	41.2	43.4	44.1	45.4	47.5	49.9
75-79	21.7	22.4	23.5	24.3	25.3	26.5	28.9	31.1	33.1	35.0
80-84	15.9	16.0	16.1	16.3	16.6	17.0	17.4	18.1	18.8	19.5
85-89	10.5	10.6	10.7	10.5	10.4	10.3	10.3	10.3	10.5	10.6
90-99	5.4	5.6	5.9	6.2	6.3	6.4	6.4	6.3	6.3	6.3
100+	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Total	1,246.3	1,260.8	1,273.8	1,293.9	1,312.7	1,336.6	1,359.5	1,382.4	1,403.8	1,425.8
Youth (12-18)	80.0	80.8	82.0	84.2	87.3	90.1	92.6	94.4	96.9	99.1
Primary School Age 6-17	171.1	173.5	177.1	181.5	186.0	190.4	194.5	197.9	200.8	202.9
Working Age 15-65	880.5	885.4	888.7	899.7	909.1	924.1	938.3	953.6	967.5	981.8
Seniors 65-85	132.6	137.6	143.5	149.2	155.6	161.7	168.1	174.3	180.5	186.6
Super Seniors 85+	16.0	16.4	16.8	16.8	17.0	16.9	16.9	16.9	17.0	17.2
Female Super Seniors 85+	10.2	10.3	10.5	10.6	10.6	10.6	10.6	10.6	10.7	10.8

Numbers may not add up due to rounding

Table 4 High Case Scenario: Calgary Economic Region Population Projections

Calgary Economic Region (thousands persons)	Estimate	Forecast								
Completed September 2017	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Total Population (as of April)	1,563.0	1,579.6	1,595.7	1,625.7	1,650.1	1,676.0	1,705.6	1,739.7	1,766.6	1,788.9
Total Population Growth Rate (April - March) %	0.6	1.1	1.0	1.9	1.5	1.6	1.8	2.0	1.5	1.3
Total Net Migration (April - March)	(2.4)	4.3	4.3	18.8	13.7	15.8	19.9	25.1	18.2	14.1
Total Births (April - March)	-	21.4	21.3	21.0	21.0	20.9	20.8	20.7	20.8	20.7
Total Deaths (April - March)	-	9.1	9.5	9.8	10.3	10.7	11.1	11.6	12.1	12.6
Total Natural Increase (April - March)	11.2	12.3	11.8	11.2	10.7	10.2	9.6	9.1	8.7	8.2
Total Households (as of April)	601.2	607.6	613.7	625.3	634.7	644.6	656.0	669.1	679.5	688.0
Total Household Formation (April - March)	3.4	6.4	6.2	11.5	9.4	10.0	11.4	13.1	10.3	8.6
Population by 5-year Cohort (thousands)										
0-4	99.3	101.4	103.0	104.5	105.7	106.5	106.1	105.9	105.7	105.3
5-9	98.7	99.1	98.9	98.8	99.0	99.7	102.0	103.9	105.4	106.6
10-14	86.7	89.4	92.6	96.6	99.4	101.5	102.6	103.3	103.1	103.0
15-19	85.7	84.6	84.5	86.3	88.2	90.8	94.8	99.5	103.4	106.2
20-24	98.3	95.4	92.9	93.4	93.2	93.3	94.3	96.7	98.4	99.9
25-29	124.2	120.0	115.8	113.6	110.0	108.4	108.3	109.6	109.9	109.7
30-34	141.3	139.9	137.1	135.9	134.6	132.4	130.8	130.0	127.7	124.5
35-39	131.2	134.8	138.6	143.3	146.0	147.1	147.6	147.2	146.0	144.9
40-44	118.1	119.9	122.1	126.2	130.2	135.0	139.9	145.5	150.0	152.9
45-49	109.3	112.2	114.2	116.1	118.2	119.9	122.5	125.9	129.9	134.0
50-54	108.5	107.0	105.8	105.6	106.6	109.3	112.6	115.3	117.1	119.3
55-59	104.1	105.3	106.5	107.8	107.8	106.9	105.7	104.8	104.6	105.7
60-64	84.1	89.1	93.1	96.4	99.0	101.2	102.5	103.9	105.1	105.1
65-69	63.1	64.8	67.6	71.5	76.0	80.6	85.5	89.4	92.6	95.1
70-74	40.9	44.8	48.5	52.0	55.4	58.7	60.5	63.3	66.9	71.1
75-79	28.3	29.3	30.9	32.5	34.3	36.4	40.1	43.6	46.6	49.6
80-84	20.7	21.0	21.1	21.8	22.4	23.2	24.2	25.7	26.9	28.3
85-89	13.7	13.9	14.0	14.1	14.2	14.3	14.6	14.9	15.3	15.8
90-99	7.0	7.5	8.1	9.0	9.6	10.2	10.6	11.0	11.2	11.3
100+	0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.7
Total	**1,563.0**	**1,579.6**	**1,595.7**	**1,625.7**	**1,650.1**	**1,676.0**	**1,705.6**	**1,739.7**	**1,766.6**	**1,788.9**

Numbers may not add up due to rounding

Low Case Scenario Forecast Tables

The following selected forecasts are based on the assumptions of lower than the base case WTI prices.

ASSUMPTIONS	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
West Texas Intermediate - WTI (US$/bbl)	46.5	41.3	43.5	43.7	43.6	49.4	52.0	54.5	56.0	58.0

Table 1 Low Case Scenario: Calgary Economic Region

	Estimate	FORECAST								
Forecast completed August 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Calgary Economic Region (CER)										
Real Gross Domestic Product Growth (%)	2.9	1.0	2.3	4.1	3.5	3.1	2.0	1.7	1.5	1.8
Total Employment ('000 Persons)	867	885	914	941	968	987	1,004	1,021	1,039	1,057
Total Employment Growth (%)	1.0	2.1	3.3	3.0	2.8	2.0	1.8	1.6	1.8	1.7
Calgary Census Metropolitan Area (CCMA)										
Unemployment Rate (%)	8.9	7.9	6.6	5.8	5.7	5.4	5.8	5.9	6.0	5.9
Calgary CPI Inflation (%)	1.6	2.1	2.1	1.9	2.0	2.0	1.7	1.8	1.8	1.8

Negative numbers in brackets.

Table 2 Low Case Scenario: City of Calgary

	Estimate	FORECAST								
Forecast completed August 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Demography										
Total Population ('000 persons)	1,246	1,252	1,258	1,266	1,279	1,294	1,311	1,327	1,344	1,359
Total Population Growth (%)	0.9	0.4	0.5	0.6	1.0	1.2	1.3	1.2	1.3	1.1
Net Migration ('000 persons)	1.0	(4.9)	(3.6)	(0.9)	4.8	7.1	9.8	8.7	9.8	8.4
Household Formation ('000 Units)	7.5	0	2.3	3.0	4.9	5.6	6.5	6.0	6.3	5.6
Real Estate										
Residential Market										
Housing Starts ('000 units)	5.9	3.2	2.3	3.7	6.0	8.3	9.3	9.4	9.1	8.8
Total Building Permits mid point ($billion)	4.4	3.4	3.5	3.6	3.2	3.5	3.4	3.3	3.3	3.2

Negative numbers in brackets.

Table 3 Low Case Scenario: City of Calgary Population Projections

City of Calgary (thousand persons)	Estimate	Forecast								
Completed September 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Population (as of April)	1,246.3	1,251.9	1,258.0	1,266.1	1,279.2	1,294.1	1,311.4	1,327.3	1,344.0	1,359.0
Total Population Growth Rate (April - March) %	0.9	0.4	0.5	0.6	1.0	1.2	1.3	1.2	1.3	1.1
Total Net Migration (April - March)	1.0	(4.9)	(3.6)	(0.9)	4.8	7.1	9.8	8.7	9.8	8.4
Total Births (April - March)	16.2	17.5	17.0	16.5	16.0	15.8	15.7	15.6	15.5	15.5
Total Deaths (April - March)	6.0	7.0	7.3	7.5	7.8	8.0	8.2	8.4	8.6	8.8
Total Natural Increase (April - March)	10.2	10.5	9.7	8.9	8.3	7.8	7.5	7.2	6.9	6.6
Total Households (as of April)	471.2	471.2	473.5	476.5	481.5	487.1	493.6	499.6	505.8	511.5
Total Household Formation (April - March)	7.5	0	2.3	3.0	4.9	5.6	6.5	6.0	6.3	5.6
Population by 5-year Cohort (thousands)										
0-4	86.4	87.0	86.8	85.9	84.4	82.5	80.6	79.2	78.2	77.6
5-9	78.2	80.0	81.4	82.7	84.3	86.2	86.8	86.5	85.6	84.1
10-14	68.7	70.6	72.8	75.0	77.0	78.3	80.4	81.8	83.2	84.8
15-19	67.5	66.2	65.9	66.2	67.2	68.8	71.2	73.8	76.4	78.3
20-24	78.1	74.1	70.9	68.9	68.6	68.7	69.7	70.7	72.1	73.3
25-29	100.3	94.2	88.8	83.9	80.7	79.6	79.9	80.0	80.8	81.2
30-34	114.1	111.4	107.6	104.2	102.2	99.9	97.9	96.1	94.5	92.4
35-39	109.8	110.6	111.8	112.9	114.1	114.1	114.7	113.7	112.6	111.4
40-44	98.9	99.5	100.6	102.6	105.4	109.1	112.2	115.5	118.6	120.4
45-49	86.7	89.6	91.9	93.5	95.7	97.7	99.4	101.5	104.6	107.8
50-54	86.0	84.6	83.5	83.0	83.5	85.5	88.9	91.5	93.6	95.9
55-59	77.0	79.4	81.7	83.5	83.9	83.4	81.3	79.9	79.3	79.9
60-64	62.2	66.2	69.4	71.8	73.4	74.5	75.7	76.9	77.8	77.8
65-69	47.9	49.0	50.9	53.5	56.5	59.4	62.8	65.2	67.0	68.3
70-74	31.1	34.1	37.0	39.5	41.9	44.1	44.8	46.3	48.5	51.3
75-79	21.7	22.5	23.7	24.7	25.9	27.2	29.7	32.0	34.0	35.9
80-84	15.9	16.1	16.3	16.6	16.9	17.4	17.9	18.7	19.4	20.2
85-89	10.5	10.7	10.8	10.8	10.7	10.6	10.7	10.7	10.9	11.1
90-99	5.4	5.8	6.2	6.6	6.8	7.0	6.9	6.9	6.8	6.8
100+	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Total	1,246.3	1,251.9	1,258.0	1,266.1	1,279.2	1,294.1	1,311.4	1,327.3	1,344.0	1,359.0
Youth (12-18)	80.0	80.5	81.5	83.3	86.3	89.1	91.6	93.4	96.0	98.3
Primary School Age 6-17	171.1	173.1	176.4	180.5	185.0	189.3	193.5	197.1	199.8	201.3
Working Age 15-65	880.5	875.9	872.0	870.6	874.7	881.2	890.7	899.8	910.1	918.6
Seniors 65-85	132.6	138.4	145.0	151.9	158.9	165.9	172.9	180.0	186.8	193.9
Super Seniors 85+	16.0	16.6	17.2	17.5	17.7	17.8	17.8	17.8	18.0	18.2
Female Super Seniors 85+	10.2	10.5	10.8	10.9	11.1	11.1	11.1	11.2	11.3	11.4

Numbers may not add up due to rounding. Negative numbers in brackets.

Table 4 Low Case Scenario: Calgary Economic Region Population Projections

Calgary Economic Region (thousand persons)	Estimate	Forecast								
Completed September 2017	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total Population (as of April)	1,563.0	1,570.0	1,576.4	1,585.7	1,602.8	1,619.8	1,642.9	1,666.6	1,688.3	1,704.1
Total Population Growth Rate (April - March) %	0.6	0.5	0.4	0.6	1.1	1.1	1.4	1.4	1.3	0.9
Total Net Migration (April - March)	(2.4)	(5.3)	(5.3)	(1.5)	7.1	7.7	14.5	15.8	14.4	9.1
Total Births (April - March)	-	21.4	21.0	20.5	20.0	19.7	19.3	19.1	19.0	18.8
Total Deaths (April - March)	-	9.1	9.4	9.7	10.0	10.4	10.8	11.2	11.7	12.1
Total Natural Increase (April - March)	11.2	12.3	11.6	10.8	10.0	9.3	8.6	7.9	7.3	6.7
Total Households (as of April)	601.2	603.9	606.3	609.9	616.5	623.0	631.9	641.0	649.4	655.4
Total Household Formation (April - March)	3.4	2.7	2.4	3.6	6.6	6.5	8.9	9.1	8.3	6.1
Population by 5-year Cohort (thousands)										
0-4	99.3	101.2	102.2	102.8	102.9	102.6	100.9	99.4	98.1	96.8
5-9	98.7	99.0	98.8	98.5	98.5	98.9	101.0	102.3	103.2	103.4
10-14	86.7	88.8	91.4	94.2	97.1	99.2	100.6	101.2	101.3	101.2
15-19	85.7	83.9	83.1	83.2	84.7	86.8	90.4	94.6	98.5	101.5
20-24	98.3	93.8	89.9	87.4	86.8	86.4	87.4	89.2	91.1	92.4
25-29	124.2	118.1	112.1	106.2	101.6	98.7	97.8	97.8	98.0	97.7
30-34	141.3	138.6	134.3	130.2	127.5	123.8	120.8	118.2	115.0	110.9
35-39	131.2	133.8	136.6	139.0	140.8	140.8	140.4	138.6	136.5	134.2
40-44	118.1	119.2	120.7	123.3	126.6	130.4	134.6	139.2	143.0	145.1
45-49	109.3	111.8	113.4	114.3	115.9	117.0	119.1	121.8	125.2	128.7
50-54	108.5	106.8	105.4	104.7	105.4	107.8	110.7	112.9	114.4	116.1
55-59	104.1	105.2	106.3	107.4	107.2	106.2	104.8	103.7	103.3	104.0
60-64	84.1	89.1	92.9	96.1	98.7	100.8	102.0	103.3	104.4	104.3
65-69	63.1	64.7	67.4	71.1	75.6	80.1	85.0	88.9	92.0	94.5
70-74	40.9	44.7	48.3	51.6	54.9	58.2	59.9	62.6	66.2	70.4
75-79	28.3	29.2	30.7	32.1	33.8	35.9	39.5	42.9	45.9	48.8
80-84	20.7	20.9	21.0	21.4	21.9	22.7	23.7	25.1	26.3	27.7
85-89	13.7	13.8	13.9	13.8	13.9	13.9	14.2	14.4	14.9	15.2
90-99	7.0	7.3	7.7	8.2	8.9	9.4	9.8	10.2	10.5	10.6
100+	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.5
Total	**1,563.0**	**1,570.0**	**1,576.4**	**1,585.7**	**1,602.8**	**1,619.8**	**1,642.9**	**1,666.6**	**1,688.3**	**1,704.1**

Numbers may not add up due to rounding. Negative numbers in brackets.

Historical Data Tables

Table 1 Selected Economic Indicators

Completed September 2017	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Global Economy										
World Real Gross Domestic Product Growth (%)	5.6	3.0	-0.1	5.4	4.2	3.5	3.4	3.5	3.4	3.2
The United States										
U.S. Real Gross Domestic Product Growth (%) (chained 2009 dollar)	1.8	(0.3)	(2.8)	2.5	1.6	2.2	1.7	2.6	2.9	1.5
Canada										
Canada Real Gross Domestic Product Growth (%) (chained 2007 dollar)	2.2	1.0	(3.2)	2.9	3.1	1.6	2.3	2.6	0.8	1.4
Prime Business Loan Rate (%)	6.1	4.7	2.4	2.6	3.0	3.0	3.0	3.0	2.8	2.7
Exchange Rate (US$ per Cdn$)	0.9	0.9	0.9	1.0	1.0	1.0	1.0	0.9	0.8	0.8
Alberta										
Alberta Real Gross Domestic Product Growth (%) (chained 2007 dollar)	2.1	1.3	(5.3)	5.1	6.7	4.0	5.8	4.9	(3.7)	(3.8)
Total Employment Growth (%)	4.3	3.3	(0.9)	(0.4)	3.3	3.7	2.5	2.2	1.4	(1.6)
Unemployment Rate (%)	3.5	3.5	6.3	6.7	5.5	4.6	4.6	4.7	5.9	8.0
Housing Starts ('000 Units)	48.3	29.2	20.3	27.1	25.7	33.4	36.0	40.6	37.3	24.5
Alberta CPI Inflation (%)	4.9	3.2	(0.1)	1.0	2.4	1.1	1.4	2.6	1.2	1.1
West Texas Intermediate - WTI (US$/bbl)	72.3	99.7	62.0	79.5	94.9	94.1	98.0	93.2	48.7	43.3
Western Canadian Select - WCS (US$/bbl)	49.6	79.6	52.1	64.6	78.4	71.8	73.5	74.5	35.7	29.5
Alberta Natural Gas Price - AECO/NIT (C$/GJ)	6.1	7.7	3.8	3.8	3.4	2.3	3.0	4.3	2.6	2.0
Industrial Product Price Index (%)	1.5	4.4	(3.5)	1.5	6.9	1.1	0.4	2.5	(0.8)	(0.2)
Raw Materials Price Index (%)	7.5	13.2	(22.9)	13.0	19.5	(4.1)	0.9	1.6	(19.9)	(4.6)
Alberta Average Wage Rate Increase for all industries (%)	6.9	5.1	(3.5)	2.7	4.3	5.7	4.9	4.5	(2.1)	(1.4)
Calgary Economic Region (CER)										
Real Gross Domestic Product Growth (%)	2.5	1.7	(4.7)	3.8	4.6	6.1	4.2	5.4	(3.7)	(1.2)
Total Employment ('000 persons)	744	766	762	753	773	811	836	855	878	859
Total Employment Growth (%)	3.9	2.9	(0.5)	(1.1)	2.6	4.9	3.1	2.3	2.6	(2.1)
Unemployment Rate ('%) (CER)	3.2	3.2	6.4	7.0	5.8	4.8	4.8	4.9	6.1	9.0
Calgary Census Metropolitan Area (CMA)										
Calgary CPI Inflation (%)	5.0	3.2	-0.1	0.8	2.2	1.0	1.7	3.0	1.2	1.0
Building Permints ($billions)	6.5	4.7	4.3	3.5	5.2	5.2	7.1	7.3	7.2	5.4
Housing Starts ('000 units)	13.5	11.4	6.3	9.3	9.3	12.8	12.6	17.1	13.0	9.2
Non-Residential Building Price Inflation (%)	17.7	13.7	(7.7)	(2.2)	2.7	3.7	1.2	1.3	(0.6)	(2.6)

Numbers may not add up due to rounding. Negative numbers in brackets.
Source: International Monetary Fund, U.S, Energy Inforamtion Administration, Statistics Canada, GLJ, Conference Board of Canada, Corporate Economics
Total population, census divisions and census metropolitan areas, 2001 Census boundaries

Table 2 Selected Indicators for the City of Calgary

Completed September 2017	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Demography										
Total Population ('000 Persons)	1,020	1,043	1,065	1,072	1,091	1,120	1,150	1,195	1,231	1,235
Total Population Growth (%)	2.8	2.3	2.2	0.6	1.8	2.7	2.6	4.0	3.0	0.4
Net Migration ('000 Persons)	17.6	13.3	12.9	(4.2)	9.6	19.7	26.2	28.0	24.9	(6.5)
Household Formation ('000 Units)	5.2	9.7	9.1	5.9	5.2	6.4	5.0	6.2	9.6	7.1
Real Estate										
Residential Market										
Housing Starts ('000 units)	10.9	9.6	4.9	7.2	7.7	10.3	9.3	13.8	10.6	7.7
Housing Completions ('000 units)	13.1	14.2	8.2	11.0	7.7	9.6	12.1	13.8	14.5	13.2
Average Residential MLS® Price Change (%)*	17.4	(3.13)	(4.06)	4.06	1.22	3.33	6.78	5.46	(2.88)	2.47
Total Building Permits mid point ($billion)	5.6	4.0	3.7	2.9	4.5	4.4	6.1	6.3	6.3	4.7
Office Space Market										
Calgary Downtown Office Vacancy Rate	0.9	3.1	6.4	10.1	6.8	5.2	3.8	5.3	10.0	18.2

Negative numbers in brackets.
* Source: CREB, Corporate Economics

Table 3 Selected Commodity Price Inflation

(Year-over-year percentage change)

Completed September 2017	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Commodities										
Construction Commodities										
Iron and steel products	(2.3)	15.7	(3.0)	(0.9)	1.9	(1.3)	(1.2)	2.8	5.7	3.2
Aluminium products	(5.5)	(0.4)	(19.8)	7.0	(2.3)	(0.1)	0.1	7.9	7.8	(8.7)
Wood	8.7	(3.5)	11.0	(1.6)	2.0	2.1	6.9	3.2	1.6	4.0
Asphalt*	9.1	61.8	(25.4)	13.1	(0.7)	13.6	(5.4)	14.5	(9.6)	(25.4)
Operational Commodities										
Rubber	7.3	13.0	(9.2)	69.2	32.8	(27.5)	(14.3)	(24.6)	(7.9)	6.4
Diesel Oil	2.1	26.0	(31.6)	11.7	23.3	(0.5)	5.2	7.9	(21.8)	(10.2)
Vehicle Parts	7.9	4.6	5.3	1.7	1.8	2.6	0.1	0.9	2.1	1.3

* Based on Ontario Ministry of Transportation Asphalt Price Index

Numbers may not add up due to rounding. Negative numbers in brackets.

Glossary

AECO C

► Is the central natural gas spot market price for Alberta, measured in CAN$ per gigajoule. Joule is the international measure of energy. One gigajoule corresponds to one billion joules.

Advanced economies

► Currently composed of 31 developed countries: Australia, Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Greece, Hong Kong SAR, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovenia, Spain, Sweden, Switzerland, Taiwan Province of China, United Kingdom and the United States.

Aggregate demand

► The sum of consumer, government and business spending and net exports.

Baby-Boomer Generation (BBG)

► Those born between January 1st 1946 and December 31st 1964.

Calgary Economic Region (CER)

► See Economic region.

Census metropolitan area (CMA)

► Urban Census metropolitan area (CMA) is an area consisting of one or more neighbouring municipalities situated around a major urban core. A CMA must have a total population of at least 100,000 of which 50,000 or more live in the urban core.

Commodities

► Goods usually produced and/or sold by many different companies. It is uniform in quality between companies that produce/sell it in the sense that we cannot tell the difference between one firm's product and another. Examples of commodities include oil, electricity, metals, cement and agricultural products, such as wheat, corn, rice.

Consumer price index (CPI)

► The Consumer Price Index (CPI) is an indicator of the consumer prices encountered by consumers. It is obtained by calculating, on a monthly basis, the cost of a fixed "basket" of goods purchased by a typical consumer during a given month. The basket contains products from various categories, including shelter, food, entertainment, fuel and transportation. Since the contents of the basket remain constant in terms of quantity and quality, the changes in the index reflect price changes. The CPI is a widely used indicator of inflation (or deflation) and indicates the changing purchasing power of money in Canada.

Core inflation rate

► Rate of inflation in the Consumer Price Index excluding food and energy.

Defined benefit plan (DB)

► A defined benefit plan provides a retiree with a pre-determined percentage of his/her working salary when he/her retires.

Dependency ratio

► The ratio of the sum of the population under 15 years and over 64 years divided by the working age population (15 years to 64 years).

Economic region

► The area generally correspondent to a region used by the province for administrative and statistical purposes.

Economy

► The term economy refers to the institutional structures, rules and arrangements by which people and society choose to employ scarce productive resources that have alternative uses in order to produce various goods over time and to distribute them for consumption, now and in the future, among various people and groups in society. In a free market economy like Canada's the laws of supply and demand determine what, how and where goods and services should be produced, who should consume them and when. A "strong' or "healthy" economy is usually one that is growing at a good pace.

Employment rate

► The number of employed persons expressed as a percentage of the working age population.

Euro zone

► Denomination given to the European Union members that adopt the Euro as their currency. As of 2007 there were 15 countries in the Euro Area: Belgium, Germany, Ireland, Greece, Spain, France, Italy, Cyprus, Luxembourg, Malta, The Netherlands, Austria, Portugal, Slovenia and Finland.

European Union (EU)

► Composed of 28 countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Romania, and United Kingdom.

Emerging economies

► This is a reference to countries that, due to growth performance, are considered in transition between developing and developed countries. The most important emerging economies are Brazil, China, India and Russia, sometimes referred to as BRIC.

Fiscal policy

► Also called budgetary policy, the overall program for directing government spending and taxation for the purpose of keeping the actual Gross Domestic Product (GDP) close to the potential full employment GDP, but without overreaching that potential and causing inflation.

Fixed exchange rate

► Sometimes called a pegged exchange rate, is a type of exchange rate regime wherein a currency's value is matched to the value of another single currency or to a basket of other currencies, or to another measure of value, such as gold.

Goods-producing industry

► Includes agriculture, forestry, fishing, mining, oil and gas extraction, utilities (electric, gas and power), construction and manufacturing.

Gross domestic product (GDP)

► GDP is a measure of the value of all goods and services produced by the economy. Unlike Gross National Product (GNP), GDP only includes the values of goods and services earned by a region or nation within its boundaries.

Home market value

► An indicator to compare houses across the country. This indicator is based on an 1,800 sq. ft., seven-room, three-bedroom, two-bath home in a suburban community where middle income Canadian families of four reside.

Housing markets

► Consists of two markets: new house and re-sale markets referred to as MLS (Multiple Listing Service). Each is described by different parameters and followed closely by different statistical bodies: the Planning and Building Department with The City of Calgary and Statistics Canada for new houses, and The Canadian Real Estate Association for the re-sale market.

Housing units

► A general term that refers to single-family houses, townhouses, mobile homes and/or condominiums.

Index

► An economic tool that allows for data comparison over time. An index number is used to indicate change in magnitude (cost or price) as compared with the magnitude at some specified time.

Inflation rate

► A measure of the percentage change in the Consumer Price Index for a specific period of time.

In-migrants

► Persons currently living within a census metropolitan area (CMA), that five years earlier lived elsewhere in Canada or abroad.

Labour force

► The working age population, which includes employed and unemployed people.

Labour force participation rate

► The participation rate refers to the number of people who are either employed or are actively looking for work. It is the ratio between the labour force and the working age population.

Major advanced economies (G7)

► Composed of seven countries: Canada, France, Germany, Italy, Japan, United Kingdom, and the United States

Migrants

► Persons who lived in a different census subdivision (CSD) than the one they lived in five years earlier (internal migrants) or who lived outside Canada (external migrants or immigrants).

Monetary policy

► Refers to government measures undertaken to affect financial markets and credit conditions with the ultimate objective of influencing the overall behaviour of the economy. Monetary policy is usually the responsibility of the central banks, such as the Bank of Canada.

Non-accelerating inflation rate of unemployment (NAIRU)

► This is the rate of unemployment consistent with an economy that is growing at its long-term potential so there is no upward or downward pressure on inflation. It changes over time primarily because of demographic shifts and technological advancements.

OECD

► It is the acronym for Organization of Economic Cooperation and Development. It currently has 30 members, all from developed economies in Europe, North America, Asia and Oceania. It was created in 1961 and aims to foster prosperity and fight poverty through economic growth and financial stability.

OPEC

► Organization of Petroleum Exporting Countries. It has 12 country members; Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

Old age dependency ratio

► The ratio of the population over 64 years divided by the working age population (15 years to 64 years).

Recession

► A period in which the economy experiences two consecutive quarters of gross domestic product decreases. During this temporary period there is a decline in industrial production and trade.

Who We Are

Clyde Pawluk
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Clyde has a B.A. in Economics (1992), M.A. in Economics (1995), a LL.B. (2003) and was called to the Alberta Bar in 2004. Clyde has completed 20 years with the City of Calgary. Over that time he has worked in several departments on a multitude of projects. Clyde's current research interests includes population forecasting, housing analysis and dynamic simulations. When he is away from his desk you might find him hiking, skiing or riding his motorbike.

Patrick Walters
City Economist - on leave
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Patrick Walters has an interest in applying quantitative methods to solve operational questions. He is experienced in building forecasting and simulation models and has presented to professional bodies such as the System Dynamics Society.
Before joining The City of Calgary, he served as Senior Economist and Economist with The City of Edmonton, the Alberta Government and Environment Canada. Patrick earned a Master's degree in Economics from York University with specializations in Labor Economics, Industrial Relations and International Economics. He has a bachelor's degree from the University of Toronto.

Ivy Zhang
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Ivy joined The City as an economist in 2005, after working as an engineer and then a marketing manager in Beijing. She specializes in municipal finance, forecasting, energy market analysis, and labour economics. Ivy's report "A Case of Fiscal Imbalance: The Calgary Experience" studied the fiscal imbalance between the local government and the provincial or federal government. In 2011, she presented her findings at the Fiscal Issues Session of the 45th Annual Conference of the Canadian Economic Association in Ottawa. Ivy has a B.Sc. in physics, a MBA in marketing, and a M.A. in Economics.

Wendy Fan
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Wendy currently focuses on financial and public policy analysis, economic modelling and consulting, and econometric and statistical analysis. Wendy has provided analytical assistance to various City business units including the City Manager's Office, Law Department, Community Services, Corporate Financial Reporting and many other business units, as well as external stakeholders such as Calgary Economic Development and Calgary Parking Authority. Wendy also provides monthly economic monitoring reports of Calgary and Alberta's economy. Wendy has a B.A. in Insurance and Actuarial Science, M.A. in Economics, and studied in the Ph.D. program in Economics.

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Chukwudi's current areas of interest include urban and regional planning, econometric modeling, nonparametric and wavelet applications, and public policy. Chukwudi started lecturing in 1992 in Statistics and Econometrics, while completing his master's program in Economics at the University of Windsor, Ontario in 1993. He started his Ph.D. at University of Western Ontario and completed it at Wayne State University in Detroit Michigan in 2001. He was a visiting lecturer at University of Michigan-Dearborn, an adjunct professor at Lawrence Technological University in Southfield Michigan, lectured at Wayne State University in Detroit Michigan and Imo State University, Imo State Nigeria, and worked as an Econometrician for Power Information Network an affiliate of JD Powers and Associates in Troy Michigan. Chukwudi holds a B.Sc. degree with a major in Physics (1991) from University of Windsor. Chukwudi enjoys spending lots of time with his four children, and working on his automobiles whenever he is chanced.

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Jorjeta's is interested in data management and analysis and is involved in several research projects and reports while managing the databases for the team. Her interest in macroeconomics is closely linked to her background. Jorjeta holds a B.A. and M.A. in Political Science from Free University Berlin and studied in the Ph.D. program there with specialization on the EU and it's primary law. Jorjeta holds also a Master's degree in German Linguistics from State University Sofia and received the German DAAD scholarship in Psycholinguistics. Priorly, Jorjeta worked as professor, researcher, parliamentarian assistant and analyst for both the government and the business. Just as she is passionate about her work, so she is about arts and fencing.

Corporate Economics provides services in four areas: forecasting, information provision, policy analysis and consulting. We also monitor the current economic trends which allows us to develop unique insights on how external events are impacting the local economy and the Municipal government. We are experienced at researching different economic topics and have developed reliable methods of forecasting and analysis.

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- Calgary & Region Economic Outlook
- Energy Reports on Natural Gas and Crude Oil

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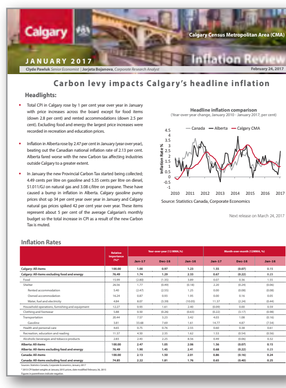

- Labour Market Review
- Inflation Review
- Current Economic Analysis
- Housing Review

Policy Analysis

- A Case of Fiscal Imbalance: The Calgary Experience
- Diesel Fuel Price Pass-Through Calgary
- Calgary Residential and Commercial Real Estate Market

Sources:
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