

**Calgary**



# **Calgary & Region Economic Outlook**

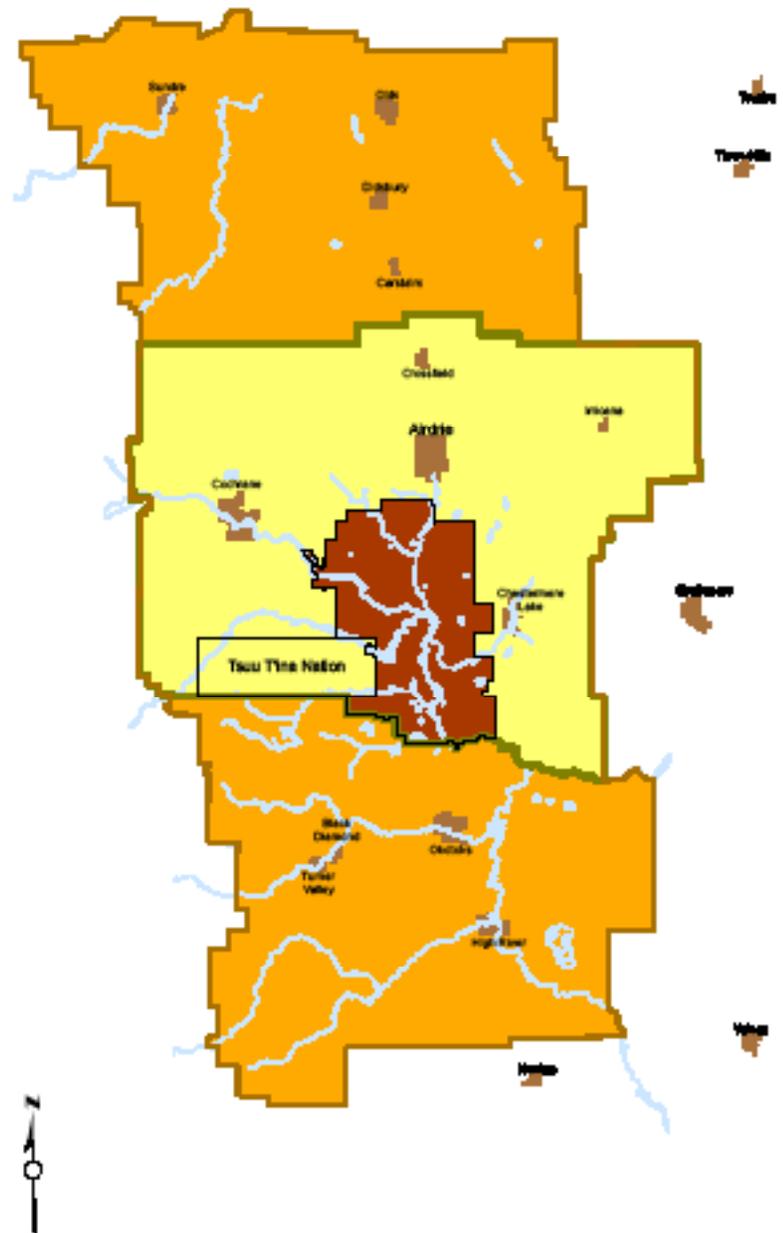
**2016 - 2021**

**Fall 2016**

## Table of Contents

|                               |   |
|-------------------------------|---|
| Introduction                  |   |
| Executive Summary             |   |
| Forecast Risks                |   |
| Forecast                      |   |
| City of Calgary               |   |
| Calgary Economic Region (CER) | 1 |
| Assumptions                   | 2 |
| Alberta                       | 2 |
| Canada                        | 2 |
| United States of America      | 2 |
| World                         | 2 |
| Forecast Tables               | 2 |
| Appendix 1                    | 3 |
| Appendix 2                    | 3 |
| Glossary                      | 3 |

## Calgary Economic Region Map



Forecast completed in September 2016

# Introduction

The City of Calgary monitors economic indicators throughout the year to develop insights on how external events are impacting the local economy. The results of this process are published as the Economic Outlook: once in the spring and then again in the fall.

This document provides an 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 created to serve as a reference document to support The City of Calgary in financial and physical planning of the city. It also provides a common basis from which decisions could be made. By monitoring and reporting on the economic region and its environment, decision makers are kept abreast of the opportunities and threats that the region faces.
- ▶ This report fills an important information gap as no other publication currently provides a comprehensive analysis of the local economy. Several research institutions restrict their analyses to the Alberta economy and few forecasts and analyses are available for the urban areas within the province.

This report attempts to answer a number of questions such as:

- A. What would be the overall rate of growth of the local economy?
- B. What would be the drivers of the local economy?
- C. How many jobs would be created?
- D. What would be the size of the city and region populations?
- E. What would be the inflation rate?

## Assumptions

The study area for the economic forecast is the Calgary Economic Region (CER). The CER is a small open economy and is therefore affected by changes outside its borders. For example, political and economic instability in the world's oil producing regions can produce a sharp fluctuation in oil prices and in turn, this affects the cash flow of Alberta's energy industry and investment in the local economy.

The economic forecast is built on assumptions regarding changes in the world outside of the CER over the forecast period. The key assumptions are as follows:

1. World economic expansion throughout the forecast period, and
2. Economic growth and job creation in the rest of Canada over the forecast period.

If one or both of these assumptions are not fulfilled then the level of economic activity that is charted in this report would not be realized. For example, if the world economy would grow at a sharply slower rate the local economic activity would follow suit. Calgary is not immune to changes outside of its borders.



# Executive Summary

## Forecast

### City of Calgary

- ▶ The 2016 civic census placed the City of Calgary's population at 1.235 million persons, down from the preliminary 2016 estimate of 1.246 million but up from the 2015 census count of 1.231 million.
- ▶ Calgary's population is projected to grow from 1.235 million in 2016 to 1.313 million in 2021, up by 78,000 persons. Below average net migration levels would weigh on population growth in the early stages of the forecast.
- ▶ Net migration is expected to total 1,558 persons in 2017 and 1,479 persons in 2018 and then increase to 12,529 by 2021, up from -6,526 persons in 2016.
- ▶ The forecast calls for natural increase (births less deaths) to reach 10,712 persons in 2017 and 8,980 persons by 2021.
- ▶ The total number of households is expected to reach 470,419 units in 2017 and 494,845 units by 2021, up by 24,426 units over this period.
- ▶ The forecast for housing starts is expected to total 6,000 units for 2016 as a whole and fall to 4,600 units in 2017 and 4,300 units in 2018, before recovering to 10,200 units by 2021.
- ▶ The total value of building permits issued by The City of Calgary in the first six months of 2016 was measured at \$1.7 billion, down from \$2.6 billion for the same period in 2015. The forecast for 2016 as a whole is for total permit values to range from \$3.1 to \$4.1 billion and increase gradually to \$3.7 to \$4.7 billion by 2018.

### Calgary Economic Region (CER)

- ▶ The forecast for the CER's shows that GDP will contract by 3.2 per cent in 2016 and grow by 1.2 per cent in 2017. Economic activity would be weighed down by reduced investment expenditures and job layoffs.
- ▶ Stronger economic growth from 2018 onward would result in employment growing faster than the labour force and pushing the unemployment rate down from the current high levels. The reduction in the unemployment rate would cause labour incomes to grow and boost consumer spending.
- ▶ The consumer price inflation rate would remain below 2.0 per cent in 2016, held in check by weak economic performance in the local economy. Excess capacity in labour, housing and other local markets should add very little to price pressures. While, a relatively low Canada/US exchange rate should add some upward pressure to consumer prices.
- ▶ The wage inflation rate should average -0.6 per cent in 2016 and -1.1 per cent in 2017 and improving to 0.4 per cent in 2019 and 1.4 per cent in 2020 as the unemployment rate falls.
- ▶ The depreciation of the Canadian dollar has resulted in increased prices for construction materials. Lower fuel prices and increased availability of construction labor will allow some softening of prices this year and next but the overall lower activity level in Alberta will constrain construction price escalation.
- ▶ The forecast for household formation has been revised downwards from the preliminary forecast. The downward revision is driven by lower population growth rates.
- ▶ Total employment is expected to decline in both 2016 and 2017, falling from 878,000 in 2015 to 855,000 in 2016 and 861,000 in 2017.
- ▶ The available data shows that the average unemployment rate for the first seven months of 2016 is estimated at 8.5 per cent. The unemployment rate for 2016 as a whole is expected to be 8.5 per cent, increasing to 9.0 per cent in 2017 before trending down to 6.0 per cent by 2021.

## Assumptions

### Alberta

- ▶ Alberta’s economy is expected to contract by another 2 per cent this year, after declining 4 per cent in 2015. The economic downturn turns out to be deeper and longer than previously expected.
- ▶ Crude oil prices have decreased by more than 60 per cent since June 2014, one of the largest declines on record. This prolonged oil price plunge is adversely affecting the Alberta economy.
- ▶ Year-to-date WTI prices averaged US\$40/bbl from January to August. Our baseline assumption is for WTI to average US\$43/barrel in 2016 and \$US49/barrel in 2017, before the price rises steadily to above US\$60/barrel beyond 2018.
- ▶ The North American natural gas market continues to be oversupplied. Inventories are above historical averages due to a warmer than usual winter in the beginning of 2016.
- ▶ We expect the AECO-C to average \$1.90/GJ in 2016 and \$2.63/GJ in 2017.

### Canada

- ▶ Economic growth in Canada decelerated in 2015 and 2016, mainly dragged down by the collapse of crude oil prices.
- ▶ Starting from 2017, the impact of low oil prices should begin to subside. GDP growth is expected to bounce back to around 2 per cent over the forecast period.

### US

- ▶ In the forecast period, the U.S. economy is expected to grow between 2.1 per cent to 2.3 per cent, driven by increases in business investment, consumer spending and residential investment.

### World

- ▶ The 2017 growth forecast for the world economy is 3.5 per cent, up 0.3 basis points from 2016 and expected to grow at an average annual rate of 3.7 per cent between 2018 and 2021. The corresponding economic growth for advanced economies is projected at 2.0 per cent in 2017 and an average annual rate of 1.9 per cent between 2018 and 2021.

## Forecast Risks (All forecasts are subject to risk)

### Downside

- ▶ **China experiences a hard landing:** If China’s economy grows below expectations, it would contribute to the prolonging of the global commodity price slump and would continue to have a negative impact on the Alberta and Calgary economies.
- ▶ **Disintegration of the European Union:** In the event of the European Union falling apart and land borders were reimposed, trade flows and economic cooperation would be restricted.

### Upside

- ▶ **Faster growth in the emerging economies:** Faster growth in the emerging economies would provide a major boost for global commodity prices, resulting in welcome relief for many commodity producers such as Alberta.

# Forecast

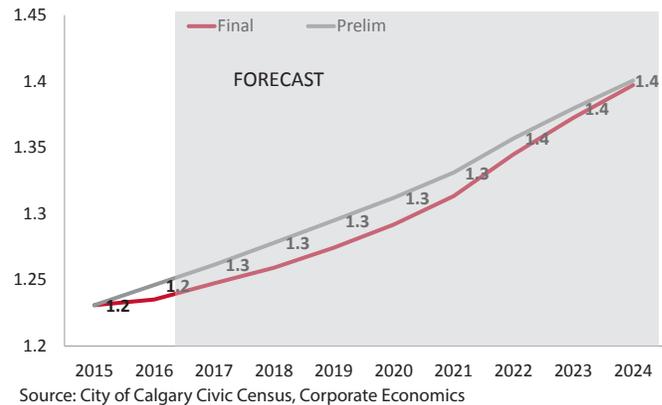
## City of Calgary

### City of Calgary: Population

- ▶ The 2016 civic census placed the city of Calgary's population at 1.235 million persons, down from the 2016 estimate of 1.246 million but up from the 2015 census count of 1.231 million. The below average population increase (of 4,256 persons) is explained by a weak economy and depressed labour market.
- ▶ The combination of weak job creation and high unemployment rates is a deterrent for job seekers and potential migrants to Calgary in the short-term.
- ▶ Calgary's population is anticipated to grow from 1.235 million in 2016 to 1.313 million in 2021, up by 78,000 persons. This is below the population growth for the 2010 - 2015 period of 144,200 persons. Below average net migration levels would be a drag on population growth from 2017 to 2021 as job creation remains weak and the unemployment rate stays stubbornly high.

### City of Calgary Population

(2015 - 2024, millions of persons)

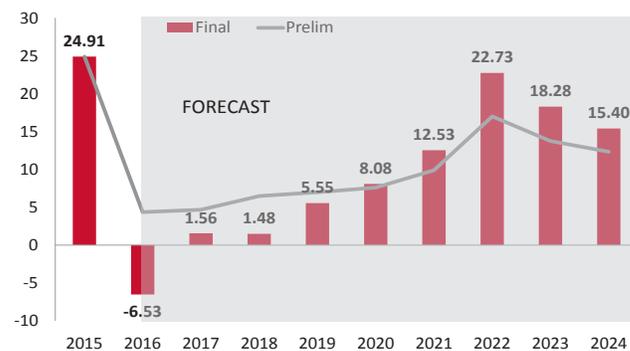


### City of Calgary: Net Migration

- ▶ Net migration will total 1,558 persons in 2017 and 1,479 persons in 2018 and then increase to 12,529 by 2021, up from -6,526 persons in 2016. Annual net migration for the 2017 to 2021 period is expected to fall below the average (16,947 persons) for the 2005 to 2015 period.
- ▶ Below average net migration levels would lower population growth in the early years of the forecast (2017 – 2020), as Calgary's unemployment rate remains high relative to the national rate. Specifically, net inter-provincial migrants would be discouraged from coming to Calgary in search of employment because of limited job opportunities.
- ▶ From 2020 and beyond, Calgary's unemployment rate should decline relative to the national rate as employment growth exceeds labour force growth.
- ▶ Net migration is expected to return to more normal levels from 2021 onwards as job creation improves and the unemployment rate falls.

### City of Calgary Net Migration

(2015 - 2024, thousands of persons)

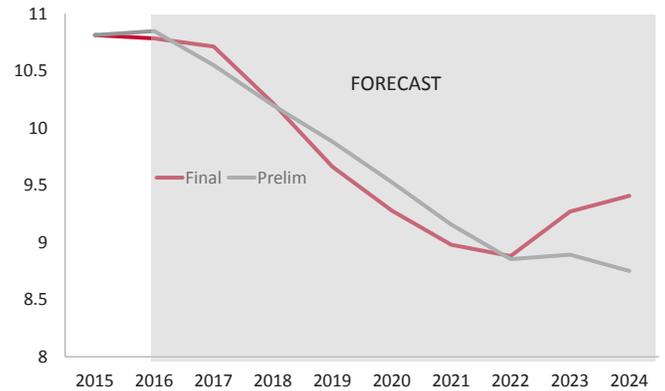


## City of Calgary: Natural Increase

- ▶ Natural increase (births less deaths) is anticipated to reach 10,712 persons in 2017 and 8,980 persons by 2021.
- ▶ Natural increase will fall throughout the forecast period (2017 – 2021) as deaths rise relative to births. During this period, the population will continue to age and move into those cohorts with higher death rates and lower fertility rates. The numbers of women in the childbearing cohort will decline because of reduced migration levels. A reduction in migration levels implies a decrease in births. The age structure data for migrants shows that a significant proportion of this cohort tend to be young and therefore in their family formation years.

### City of Calgary Natural Increase

(2015 - 2024, thousands of persons)



Source: City of Calgary Civic Census, Corporate Economics

### City of Calgary Population Growth Rate

(2015 - 2024, per cent)



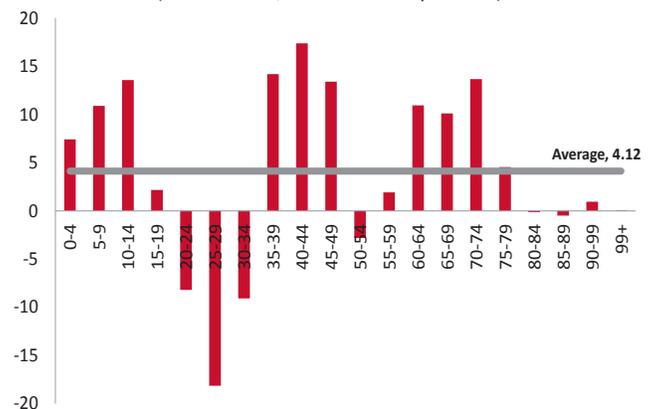
Source: City of Calgary Civic Census, Corporate Economics

## City of Calgary: Population Growth

- ▶ The aggregate statistics mask the changes that will occur over the next 5 years.
- ▶ When the population is disaggregated by age, three groups are projected to experience above average growth: 0-14, 35-49 and 60-74.
- ▶ Public and private sector organizations that provide goods and services to those groups would experience a growing demand for services over the forecast period.

### City of Calgary Population Growth

(2015 - 2021, thousands of persons)



Source: City of Calgary Civic Census, Corporate Economics

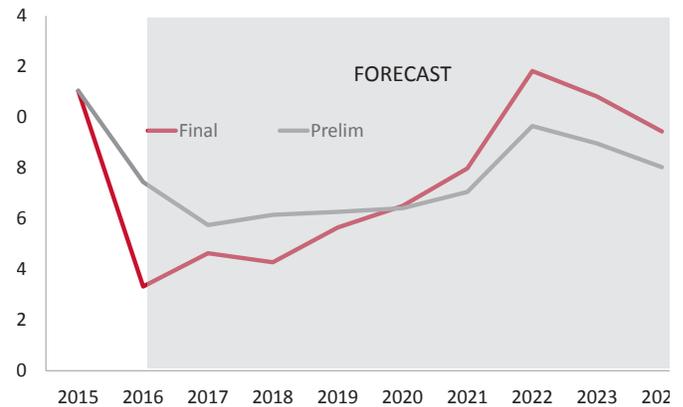
## Real Estate

- ▶ The total number of households in Calgary should reach 470,419 units in 2017 and 494,845 units by 2021, up by 24,426 units over this period. Household formation will average 6,106 units annually over the period, which is below the average (8,633 units) for the last decade (2005 – 2015).
- ▶ The rates of household formation in Calgary is expected to be depressed by relatively low rates of population growth in general and net migration in particular.
- ▶ Lower rates of household formation would reduce the need for new residential space and depress the levels of housing starts and building permit applications from levels experienced in the recent past.

## City of Calgary: Housing Starts

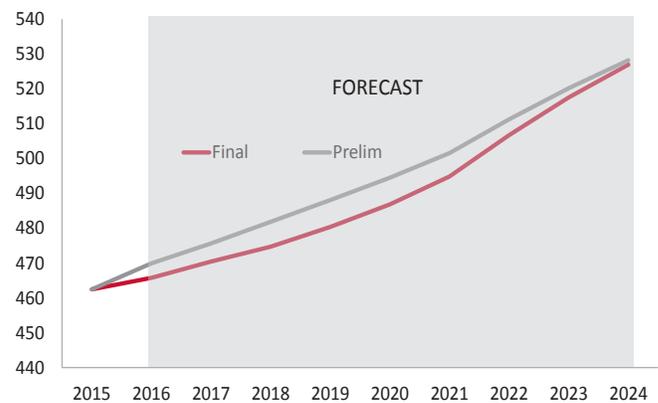
- ▶ Total housing starts for the city of Calgary were estimated at 3,118 units for the first six months of 2016, down from 5,033 units for the same 2015 period. The forecast is for housing starts to total 6,000 units for 2016 as a whole and fall to 4,600 units in 2017 and 4,300 units in 2018 before recovering to 10,200 units by 2021.
- ▶ Housing starts in 2016 and 2017 will be weighed down by high vacancy rates in the rental market. For example, the Canada Housing and Mortgage Corporation estimates the apartment vacancy rate in Calgary for 2015 at 5.3 per cent, up from 1.4 per cent in 2014. The current vacancy rate is above the average vacancy rate for 2000 - 2015 (2.4 per cent).
- ▶ Falling population growth rates would reduce the demand for additional residential space. The current forecast represents a reduction from the spring outlook.

**City of Calgary Household Formation**  
(2015 - 2024, thousands of units)



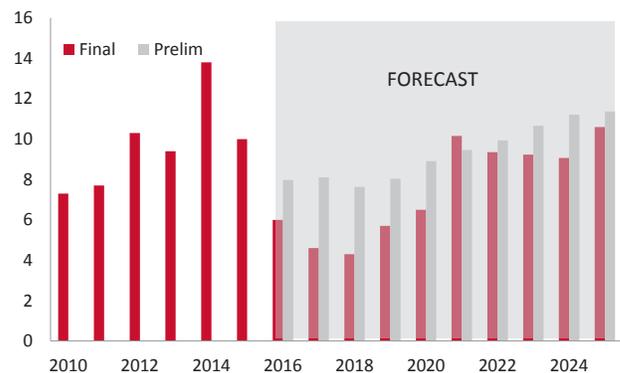
Source: Corporate Economics

**City of Calgary Households**  
(2015 - 2024, thousands of units)



Source: Corporate Economics

**City of Calgary Total Housing Starts**  
(2010 - 2024, thousands of units)



Source: CMHC, Corporate Economics

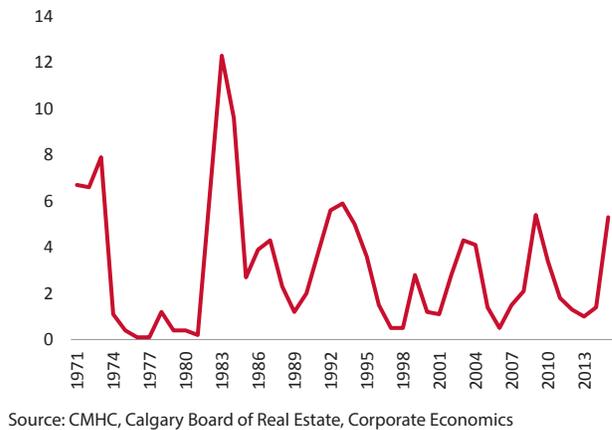
## City of Calgary: Office Vacancy

- ▶ Calgary’s office vacancy rate for Q3 2016 is estimated at 20 per cent up from 10.5 per cent a year earlier.
- ▶ The steady rise in the office vacancy rate since September 2014 came as result of the addition of new space to inventory and a reduction in occupied office space. Since September 2014, about 3 million square feet of new office space was completed and tenants also vacated 4.6 million square feet of space.
- ▶ The data shows that about 3 million square feet of office space is currently under construction and a significant portion of this has already been pre-leased. However, the addition of the directly available space to inventory will cause the office vacancy rate to rise above 22 per cent in coming quarters.

**Calgary Office Vacancy Rate**  
(September 2006 - September 2016, per cent)



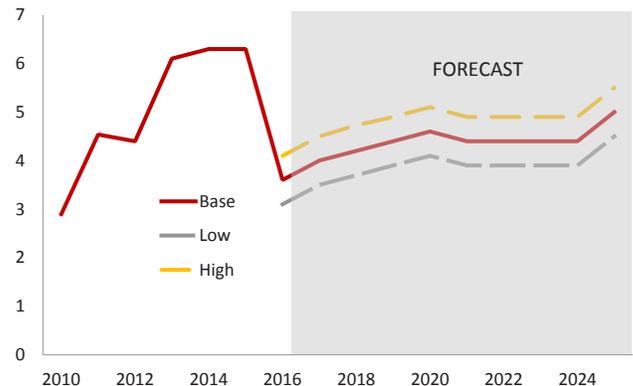
**Calgary CMA - Apartment Vacancy Rate**  
(1971 - 2016, per cent)



## City of Calgary: Building Permit Value

- ▶ The City of Calgary issued \$1.7 billion in building permits for the first six months of 2016, down from \$2.6 billion for the same period 2015. The forecast for 2016 as a whole is for the total permit values to range from \$3.1 to \$4.1 billion and increase gradually to \$3.7 to \$4.7 billion by 2018.
- ▶ Slower population and employment growth would weigh on the demand for new space and building permit values. Also, above average vacancy rates in various segments of the real estate market would reduce the need for added space.

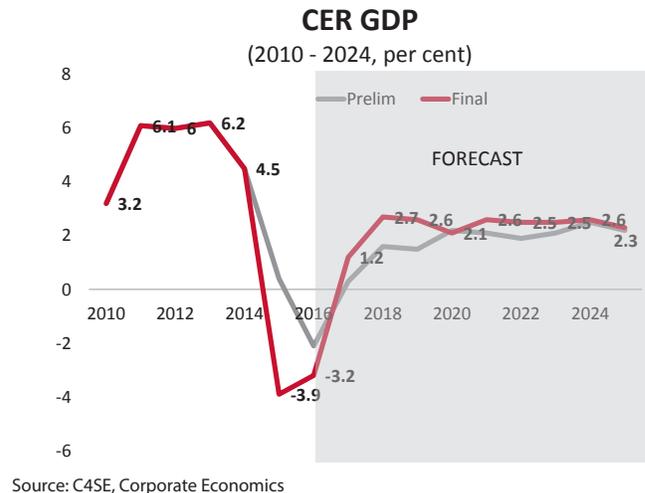
**City of Calgary Building Permit Values**  
(2010 - 2024, \$billions)



## Calgary Economic Region (CER)

### CER: Gross Domestic Product

- ▶ Lower oil prices have had an adverse effect on cash flow for Alberta energy companies - and they and related suppliers have responded by reducing capital expenditures and cutting staffing levels. These actions have resulted in lower levels of economic and employment activity in the CER.
- ▶ The CER's GDP is expected to contract by 3.2 per cent in 2016 and grow by 1.2 per cent in 2017. Economic growth will be weighed down by reduced investment and consumer expenditures. The economy is therefore expected to be about 7 per cent smaller in 2017 compared to its pre-recession peak in 2014. The economy is expected to experience a long and slow period of recovery that extend from 2017 to 2019.

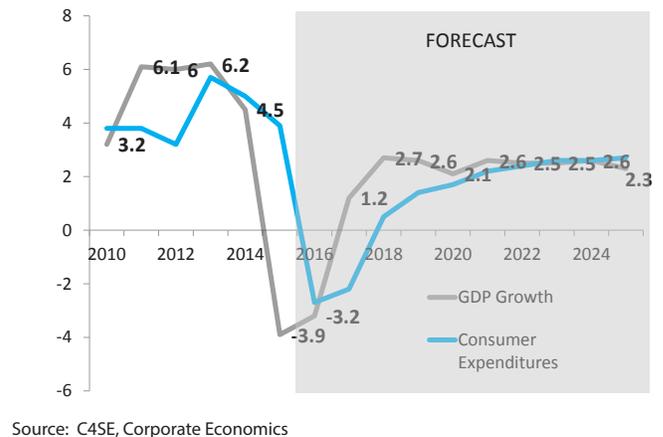


### CER: GDP Growth & Consumer Expenditures

- ▶ The relatively slow pace of job creation in the early stages of the forecast would constrain growth in consumer spending and act as a restraint on overall economic activity.
- ▶ Consumer expenditures account for about 60 per cent of the region's economic activity and is a significant contributor to current and future economic growth. The decline in employment levels, the related rise in the unemployment rate and the fear of job losses have contributed to falling consumer confidence.
- ▶ As economic growth gains momentum from 2018 onward, employment would grow faster than the labour force and push the unemployment rate down from the high current levels. An improving job market along with increasing wage rates in the latter stages of the forecast would attract migrants, particularly inter-provincial migrants who are relatively more mobile than their international counterparts.
- ▶ The combination of stronger population growth and rising labour income would provide support for increased growth in consumer spending and overall economic activity from 2020 to 2021.

### CER - GDP Growth & Consumer Expenditures

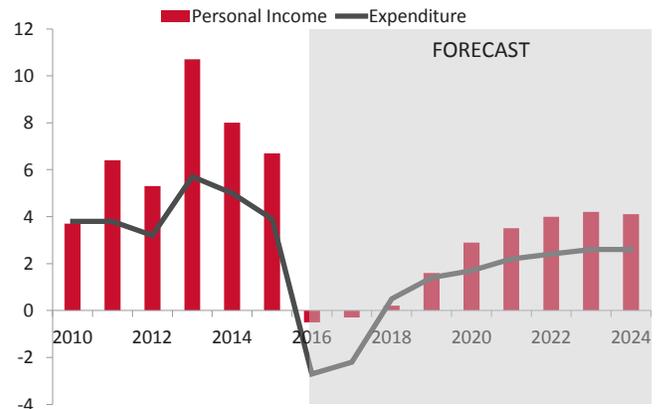
(2010 - 2024, per cent)



## CER: Consumer Expenditures & Personal Income

- ▶ The reduction in the unemployment rate after 2018 would contribute to growth in labour incomes and boost consumer spending. The growth in consumer spending in the later stages of the forecast would also be supported by increased population growth.
- ▶ Higher unemployment rate in 2016 and the fear of job loss have depressed consumer confidence and contributed to lower spending on goods and services. Reduced employment levels and lower wage rates combined to weigh on labour income.
- ▶ The reduction in consumer spending would weigh on the rate of economic growth in the early stages of the forecast.
- ▶ The current rate of growth in total consumer expenditures is also restrained by slower population growth.

**CER Consumer Expenditure & Personal Income**  
(2010 - 2024, per cent)

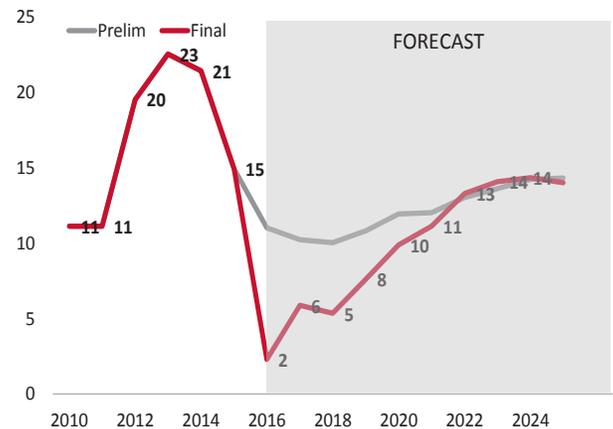


Source: C4SE, Corporate Economics

## CER: Household Formation

- ▶ Household formation in the CER should total 6,000 units in 2017 and 11,000 units by 2021, up from 2,300 units in 2016. The rate of household formation should gather momentum as the forecast moves further into the long-term. The boost would come from high levels of population growth driven by higher net migration and natural increase.
- ▶ The forecast for household formation has been revised downwards from the preliminary forecast. The downward revision results from lower economic and population growth rates. The lack of job opportunities in the local economy will be a disincentive to potential job seekers and would-be migrants in 2017 and 2018 as the unemployment rate remains relatively high.

**CER Household Formation**  
(2010 - 2024, thousands of units)

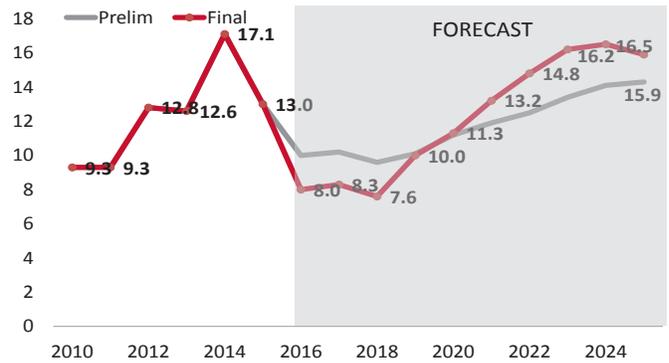


Source: C4SE, Corporate Economics

## CER: Housing Starts

- ▶ Housing starts in 2016 should total 8,000 units down from the levels recorded in 2015 and 2014. Housing starts should begin to recover from 2018 and grow in line with household formation. However, the annual housing starts for the entire forecast period would remain below the 2014 total of 17,100. Slower population growth and high vacancy rates in residential markets would weigh against new home construction.
- ▶ The current housing starts estimates are lower than what was calculated in the preliminary forecast. The downward revision is a result of reductions to the population and household formation forecasts. Slower population growth will reduce the need for the construction of new residential space.

**CER Housing Starts**  
(2010 - 2024, thousands of units)

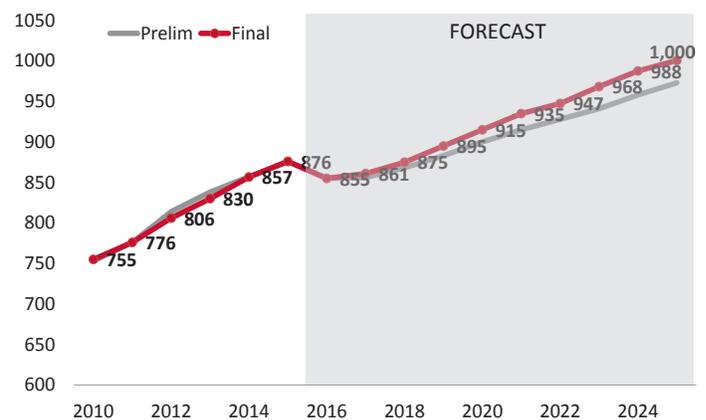


Source: C4SE, Corporate Economics

## CER: Employment

- ▶ Total employment is expected to decline from 876,000 in 2015 to 855,000 in 2016. The reduced employment level is directly linked to lower oil prices and lower capital expenditures.
- ▶ The forecast is for total employment to rebound to 875,000 in 2018 and 935,000 in 2021 in response to higher level of economic activity. Total employment is expected to grow by 80,000 persons for the 2016 - 2021 period; this is down from 121,000 for the 2010 - 2015 period.

**CER Employment**  
(2010 - 2024, thousands of persons)



Source: C4SE, Corporate Economics

## CER: Employment by Industry

- ▶ Total employment for the first seven months of 2016 averaged at 852,600 persons, down from 879,200 for the same period 2015. The forecast calls for total employment to average 855,000 persons for the whole of 2016, down from 876,100 in 2015. Job losses would be broadly based.
- ▶ Construction (-6,000) and other primary industries (-6,400) including forestry, mining, oil and gas would experience the largest declines in employment.
- ▶ Health and welfare services (+1,600) would experience the largest job gains.

| Calgary Economic Region: Employment by Industry |                |                |                |
|---|----------------|----------------|----------------|
| Industry  | 2015           | 2016           | Change         |
|   | Persons ('000) | Persons ('000) | Persons ('000) |
| <b>Total</b>                                    | <b>876.1</b>   | <b>855</b>     | <b>-21.1</b>   |
| Agriculture                                     | 5.9            | 5.7            | -0.2           |
| Other Primary                                   | 59.8           | 53.4           | -6.4           |
| Oil and Gas                                     | 42.3           | 27.3           | -15.0          |
| Other Primary                                   | 17.5           | 26.1           | 8.6            |
| Manufacturing                                   | 48.9           | 46.3           | -2.6           |
| Construction                                    | 83.7           | 77.7           | -6.0           |
| Utilities                                       | 9.4            | 9.3            | -0.1           |
| Transportation/Warehousing                      | 59.2           | 59.0           | -0.2           |
| Trade   | 124.1          | 122.2          | -1.9           |
| Finance, Insurance and Real Estate              | 45.0           | 44.7           | -0.3           |
| Professional, Scientific and Managerial         | 124.9          | 122.3          | -2.6           |
| Accommodation and Food Services                 | 60.7           | 60.2           | -0.5           |
| Education Services                              | 47.8           | 46.9           | -0.9           |
| Health and Welfare Services                     | 103.0          | 104.6          | 1.6            |
| Other Services                                  | 77.7           | 77.0           | -0.7           |
| Government Services                             | 26.0           | 25.9           | -0.1           |

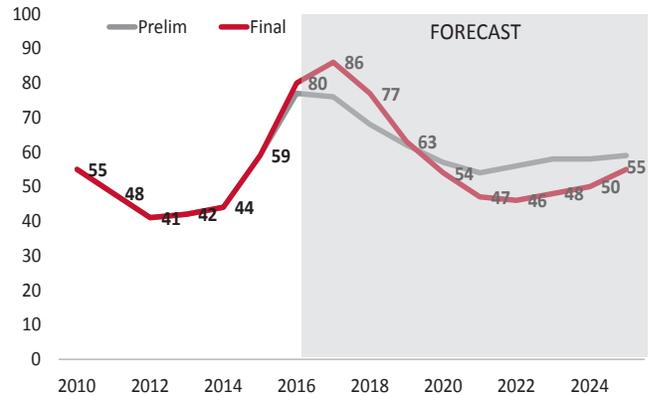
*Source: Centre for Spatial Economics, June 2016*

## CER: Number of Unemployed Persons

- ▶ The number of unemployed individuals is expected to be larger than what was forecasted in the spring of 2016. Job creation has weakened as investment levels in both the residential and non-residential sectors stagnate.
- ▶ The numbers of unemployed are expected to climb to 80,000 persons in 2016 and 86,000 persons in 2017 respectively, up from 44,000 in 2014. The growth in the numbers of unemployed is driven by weak job creation in the 2015 - 2017 period.

### CER Number of Unemployed Persons

(2010 - 2024, thousands of persons)



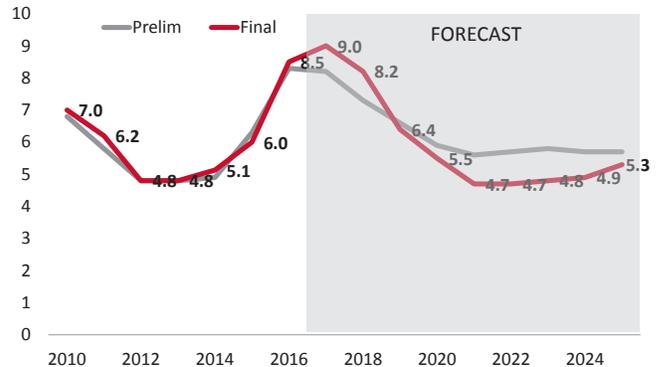
Source: C4SE, Corporate Economics

## CER: Unemployment Rate

- ▶ The unemployment rate for the first seven months of 2016 averaged at 8.5 per cent. The unemployment rate for 2016 as a whole should average 8.5 per cent and then increase to 9.0 per cent in 2017 before trending down to 6.0 per cent by 2021. Employment growth in 2017 is expected to remain weak relative to labour force growth.
- ▶ The lack of job creation and the growth of the labour force will result in the unemployment rate increasing in 2016 and 2017. Payroll cuts in the oil and gas sector have contributed to reduced levels of investment and employment.
- ▶ Positive economic growth from 2018 to the end of the forecast period will result in employment growing at faster pace than the labour. As a result, the unemployment rate would decrease over time.
- ▶ The final forecast for the unemployment rate is higher than the preliminary forecast for the 2016-2019 period.

### CER Unemployment Rate

(2010 - 2024, per cent)

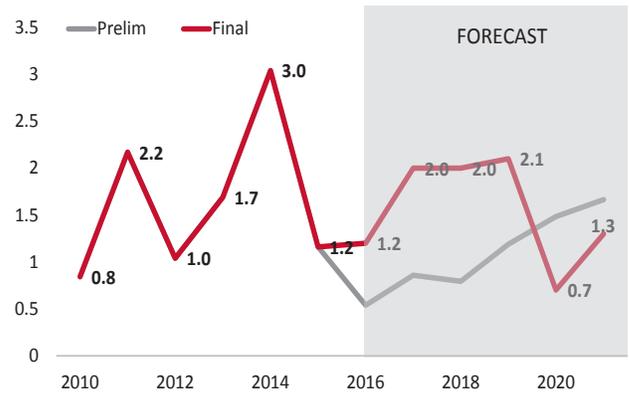


Source: C4SE, Corporate Economics

## CER: Consumer Inflation Rates

- ▶ The inflation rate, as measured by the consumer price index, is expected to average 1.2 per cent in 2016, up from the preliminary estimate of 0.5 per cent.
- ▶ Depressed by weak economic performance in the local economy, the inflation rate would remain below 2.0 per cent for 2016. Excess capacity in labour, housing and other local markets should add very little to price pressures, while a relatively low Canada/US exchange rate should add some upward pressure to consumer prices. The Inflation rate would rebound to 2.0 per cent in 2017 and remain around that level until 2019.

**CER CPI Inflation Rate**  
(2010 - 2024, per cent)

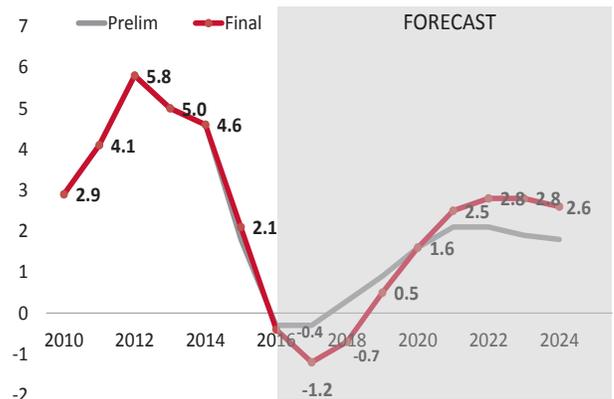


Source: C4SE, Corporate Economics

## CER: Wage Inflation Rate

- ▶ The wage inflation rate would be less than the consumer inflation rate over the 2016-2018 period. This is a result of the weakness in the local economy in general and the labour market in particular. Specifically, the unemployment rate would rise from 6.0 per cent in 2015 to 8.5 per cent in 2016 and 9.0 per cent in 2017 before trending down to 6.0 per cent by 2021. With the unemployment rate above the long-term (1988 – 2015) average of 6.2 per cent downward pressure would be exerted on wage rates and cause the wage inflation rate to be close to zero.
- ▶ Real wages (that is wages adjusted for inflation) should decline over the 2016-2018 period as wages increase at a slower pace than consumer prices. This would have a negative impact on consumer purchasing power and overall economic activity in Calgary.

**CER Wage Inflation Rate**  
(2010 - 2024, per cent)



Source: C4SE, Corporate Economics

## CER: Non-Residential Building Price Inflation

- ▶ The depreciation of the Canadian dollar has resulted in increased prices for construction materials. Lower fuel prices and increased availability of construction labor will allow for some softening of prices this year and next but the overall lower activity level in Alberta will constrain construction price escalation.
- ▶ By 2020 we anticipate builders will no longer be able to absorb cost increases of foreign sourced materials and construction prices will experience some cost push inflation.

## Commodities

### Asphalt

- ▶ Last year futures contract prevented prices from falling to about where they should be. Today an increase in Provincial stimulus projects across the Prairies focused on road building activity is supporting prices about \$100 higher than they should be.
- ▶ Though prices are now down to the mid \$500's from the \$700 range we anticipate some price escalation next year as oil prices slowly rise and road construction increases with the final segment of Calgary's ring road starting construction.

### Vehicle Parts

- ▶ Recent changes in electricity prices in Ontario have caused issues in Ontario manufacturing. Further, auto manufacturers are facing union animosity this year in Ontario. With the downturn in Alberta, though there is little room for auto prices to increase this year. Next year we anticipate an inflationary bump but only modest changes to prices thereafter.

### Diesel

- ▶ Diesel prices in Calgary are hovering around the 80 to 90 cents range this year. Diesel prices have shown much greater tie to local oil prices than local gasoline prices.
- ▶ Our diesel fuel price model indicates increased price volatility in Alberta. We anticipate prices to be quite volatile from day to day annual averages in the low 90's until 2020. In 2020 we anticipate increased oil prices combined with increased demand for diesel will combine to push the annual average diesel price up to the low 100's, as a result of recovery in the Alberta economy.

### Wood

- ▶ Construction of single family units in the US has finally increased enough to impact the Canadian price of construction materials. However, construction of single family dwellings in Calgary is down by about 30 per cent. The tug of war on prices from these two opposing forces is dragging prices for wood products up slightly and slowly in Calgary.
- ▶ We anticipate a slightly higher price increase next year as US activity continues to increase and Canadian producers become more adept at supplying US markets. Beyond 2017 we anticipate prices will stabilize in Calgary.

### Steel

- ▶ The vast majority of wells being drilled in North America today are being drilled in Alberta. Still, drilling activity in Alberta is less than 25% of what it was only 2 or 3 years ago. Manufacture of pipe used in wells, and machinery and equipment for oil sands production are affected, consequently the outlook for steel demand in North America is down this year.
- ▶ Canadian prices for steel, however, have been uplifted by the shrinking Canadian dollar recently. In 2017 and 2018 we anticipate increased steel prices on international markets as production of automobiles increases in response to the recovering US economy.
- ▶ Longer term, Canadian steel prices will be buoyed by the Federal Government's plan to invest \$140 billion in physical infrastructure in Canada over the next 10 years, focusing on projects that typically demand a lot of steel like public transportation and water resources.

# Calgary's Economic Challenges

## An Article by Calgary Economic Development

Calgary is facing challenging economic times. With unemployment and office vacancy rates reaching historic levels many are wondering what the community is doing in response to the downturn. Calgary Economic Development, in partnership with stakeholders from City Administration, our Civic Agency partners, other orders of government, Calgary's post-secondary institutions, not-for-profit organizations and the private sector, is leading the implementation of Building on our Energy: the 10-year Economic Strategy for Calgary. This year, with additional support from The City of Calgary and the provincial and federal governments we are able to accelerate our programming in business development and trade and investment attraction. These programs are focused on Accelerating Diversification, Telling Calgary's Story, selling Calgary as a Talent Hub and addressing Downtown Office Vacancy. Calgary has considerable opportunity to grow and diversify the economy in several sectors including transportation and logistics, creative industries, agribusiness, financial services and renewable energy.

### Calgary is Canada's Centre for Clean Energy Technology

Clean energy technology represents an unprecedented opportunity for Calgary to leverage its strengths in energy and technology, realign its economic trajectory, and renew its reputation as a world leader in cutting-edge technological innovation which addresses the effects of climate change. Clean Energy technology refers to any process, product, or service that reduces negative environmental impacts through significant energy efficiency improvements, the sustainable use of resources, or environmental protection activities. According to Analytica advisors, the global market for clean energy technology goods has doubled over the past ten years to \$1.1 trillion in 2014, up from \$550 billion in 2005. In Canada alone, the innovation-based firms that make up the industry reported almost \$12 billion in revenues across 10 clean technology sectors and directly employing over 55,600 people in almost 800 firms across Canada. Calgary is well-equipped to support growth in the clean energy technology sector growth—including both renewable energy, and unconventional hydrocarbon resources—through a combination of human, financial, and environmental resources. Calgary is Canada's energy capital bringing tremendous knowledge and decision making power to the clean energy technology sector making it a logical choice to meet diversification and growth objectives.

- ▶ Calgary has considerable opportunity to grow and diversify the economy in several sectors including transportation and logistics, creative industries, agribusiness, financial services and renewable energy.
- ▶ Calgary is perfectly positioned to be the transportation hub and inland port for Western Canada. Calgary lies at the crossroads of the TransCanada and CanaMex highways; we are home to CP and Westjet and has the fourth busiest airport in Canada serving vital destinations in Asia and the United States. Targets will include distribution and third party logistics companies.
- ▶ Activity in film and television, music and digital industries has been expanding rapidly in Calgary and Alberta. Have recently opened the Calgary Film Centre and National Music Centre and buoyed by a low Canadian Dollar, creative industries shows a great deal of promise for growth.
- ▶ Long a mainstay of the Alberta economy, Agribusiness also shows potential for growth in Calgary. Anchored by firms such as Agrium, Bayer Crop Science and Dow Chemical and supported by a growing demand for food worldwide, we believe there are opportunities to unlock in crop science, food and beverage manufacturing and agricultural technologies.
- ▶ Calgary is home to several global firms in the Financial Services sector. While there will be opportunities to attract new financial services firms to Calgary, this sector also plays a vital role in supporting other sectors to grow and prosper.
- ▶ Calgary, Alberta and Canada are entering into a positive policy environment for growth in re-

renewable energy. Calgary based companies own and operate approximately half of Canada's installed wind generation capacity. On the technology side, Calgary is well positioned to advance new technologies including battery technology facilitating growth in renewable energy.

Calgary is recognized as one of the most cost-effective places to do business in North America. In addition, Calgary has one of the youngest and most highly educated workforces in North America. Finally, we currently have considerable levels of office vacancy making it easier to secure office space in Calgary. To capitalize on these assets, Calgary Economic Development has launched a Headquarter Attraction Strategy and the Talent Hub Initiative. Calgary Economic Development is working with government and private sector stakeholders to launch an aggressive headquarter attraction plan – focused on our key sector strengths. At the same time we have launched Talent Hub, an initiative that matches the skills of our displaced workers with projects and companies experiencing a demand for workers. With these initiatives Calgary is on a path to sustainable diversification growth and prosperity.

# Assumptions

## Alberta

### Alberta: Natural Gas Prices

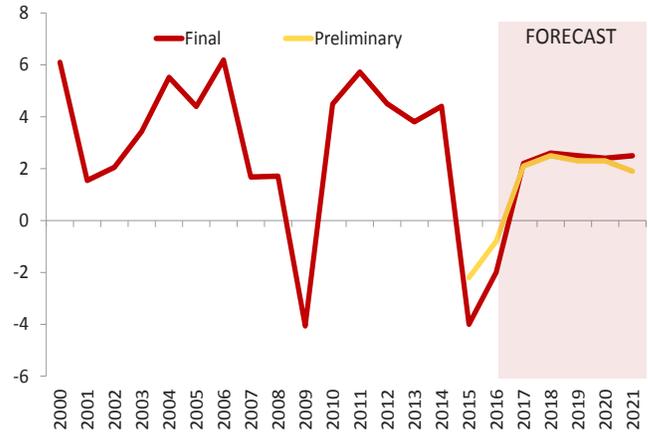
- ▶ Alberta’s economy is expected to contract by another 2 per cent this year, after declining by 4 per cent in 2015. The economic recession has proven to be deeper and longer than previously expected.
- ▶ The weakness in the energy sector has spread to other sectors in the economy. Non-residential construction and manufacturing have been negatively affected. In addition, decreasing incomes and uncertainty about the economy are causing consumers to cut spending. Retail sales are expected to decline again in 2016 with a large drop from durable goods, especially motor vehicles.
- ▶ On top of weaker crude oil prices, forest fires swept through Northern Alberta in May, causing evacuation of Fort McMurray and severe disruption to crude oil production and local economic activity. The effort to rebuild should have a positive impact on the provincial economy in 2017. Fiscal and monetary stimulus should also propel infrastructure investment and support job creation opportunities in the short to medium term and help position Alberta for long term growth. The low exchange rates should also support export-focused industries like agriculture, manufacturing, forestry, and tourism.

### Alberta: Crude Oil Price

- ▶ Crude oil prices have decreased by more than 60 per cent since June 2014, one of the largest declines on record. This prolonged oil price plunge is having a substantial impact on the Alberta economy. Alberta oil sands operations were further affected by the wildfires, which stopped production and distribution and severely decreased government revenues.
- ▶ Crude oil prices continue to be under pressure from high inventory levels. Unplanned disruptions to global supply including the wildfires in Northern Alberta and outages in Nigeria and Venezuela have provided a temporary lift to prices. However, sharp increases in production from Iran and other OPEC countries have offset the supply shortage. Meanwhile, the increase in oil demand remains weak from both advanced economies and developing markets.
- ▶ Year-to-date WTI prices averaged US\$40/bbl from January to August. Our baseline assumption is for WTI to average US\$ 43/barrel in 2016 and \$US49/barrel in 2017, before the prices rise steadily to above US\$60/ barrel beyond 2018.

**Alberta: Real GDP Growth Rate**

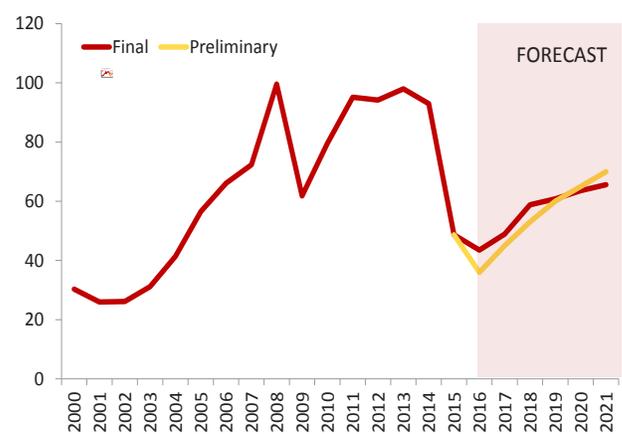
(2000 - 2021, per cent)



Source: Statistics Canada, Center for Spatial Economics, Corporate Economics

**WTI Crude Oil Price Forecast**

(2000 - 2021, US\$/bbl)



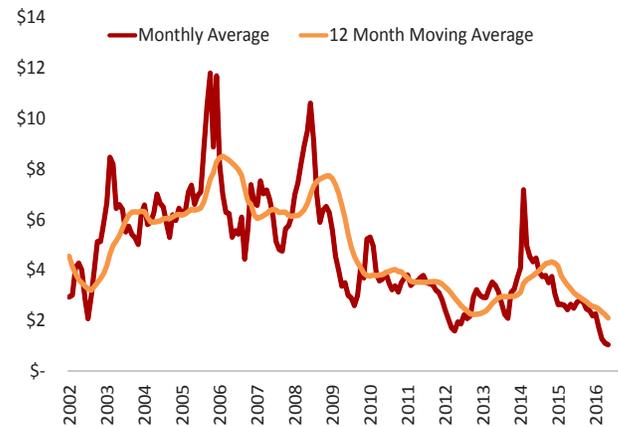
Source: U.S. Energy Information Administration, Bloomberg, Corporate Economics

## Alberta: Natural Gas Prices

- ▶ Natural gas prices have been on a downward trend since early 2014; as inventories on North American natural gas market sit above historic levels due to weak demand and increased supplies. Strong U.S. production, ample inventories and reduced heating demand are expected to keep natural gas price soft for most of 2016.
- ▶ With natural gas prices remaining depressed, Alberta natural gas deliverability is expected to decline in the near-term as reduced drilling activity and continued U.S. competition further challenge Alberta output. We expect the AECO-C to average \$1.90/GJ in 2016 and \$2.63/GJ in 2017.

### AECO Spot Market Prices

(C\$/GJ, January 2002 - August 2016)



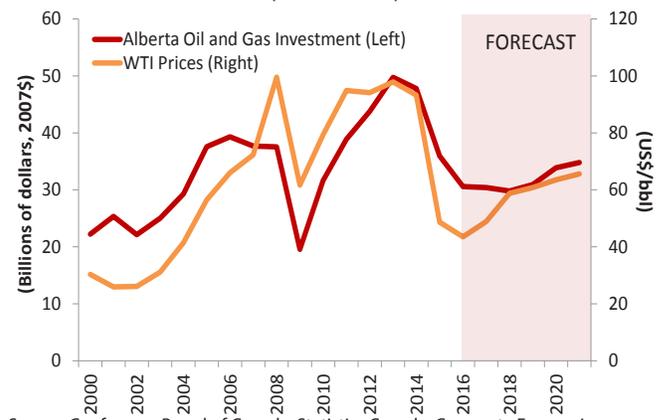
Source: GLJ Energy Publications, Corporate Economics

## Alberta: Investment

- ▶ Business investment in Alberta in 2016 is expected to decline for the second straight year. The continued weakness in energy prices will weigh on investment decisions. Investment in oil and gas is expected to contract by over 40 per cent off its peak 2014 level by the end of 2016. The weak activity in capital spending has spread beyond oil and gas to other industries in the province. This will become a major constraint on output over the medium term.
- ▶ Energy investment is expected to focus on the maintenance of existing operations and the completion of projects under construction. Companies are expected to be cautious about capital spending, and some consolidation within the energy industry is likely to happen. As prices improve in 2017, investment is expected to begin recovering but remain well below the pre-recession levels.

### Alberta Oil and Gas Investment Curtailed by Weak Energy Prices

(2000 - 2021)



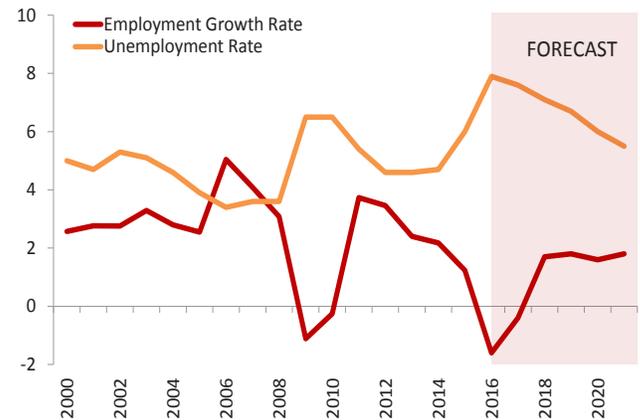
Source: Conference Board of Canada, Statistics Canada, Corporate Economics

## Alberta: Labour Market

- ▶ Alberta’s labour market has been hit hard by the slowing economy and declining investment. Job losses are expected to continue into the end of 2016, though at a decelerating pace compared to earlier in 2016 and late 2015. Total employment in Alberta is forecast to decrease by 1.6 per cent in 2016 and grow modestly by 0.4 per cent in 2017, after remaining resilient for most of 2015. Employment should continue to recover in 2018, with an annual growth rate of 1.7 per cent.
- ▶ The unemployment rate is expected to increase for the rest of 2016, to average 7.9 per cent as labour force growth exceeds employment growth. The wildfire disruptions in the Fort McMurray-Wood Buffalo region have kept the unemployment rate artificially high in 2016 but this effect would disappear from the data in 2017 as construction begins.
- ▶ The slack in the labour market has weighed on earnings. While service sector earnings remain resilient, some higher-paying goods sector industries have experienced salary cuts due to disproportionately large job losses. Despite recent declines, Alberta average incomes are expected to remain well above the national average. Earnings in Alberta are expected to improve gradually starting in 2017.

### Alberta: Labour Market

(2000 - 2021, per cent)



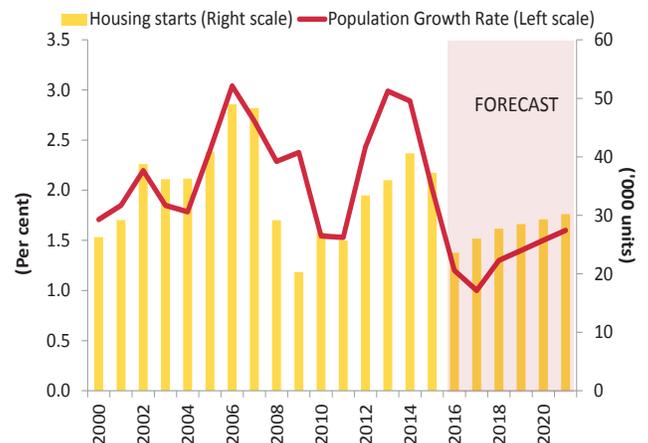
Source: Statistics Canada, Corporate Economics

## Alberta: Population Growth and Housing Starts

- ▶ Alberta’s weak labour market is a deterrent to job seekers from other provinces. In addition, better economic conditions in Ontario and British Columbia is supporting the out-migration of job seekers from Alberta. Net outflows of non-permanent residents will also weigh on population growth mainly because of changes to the federal Temporary Foreign Worker Program.
- ▶ Alberta’s population growth is expected to moderate to 1.2 per cent in 2016 and 1.0 per cent in 2017, supported mainly by natural increase. Due to fewer job openings, Alberta should expect negative net interprovincial migration in 2016 and 2017.
- ▶ Moderating population growth, as well as declining incomes, will reduce demand for new housing in the province. Housing starts are forecast to fall to 23,600 in 2016 and 26,000 in 2017. Beyond 2017, an improvement in labour market and population growth will lead to a gradual recovery in housing starts.

### Alberta: Housing Starts & Population Growth Rate

(2000 - 2021)

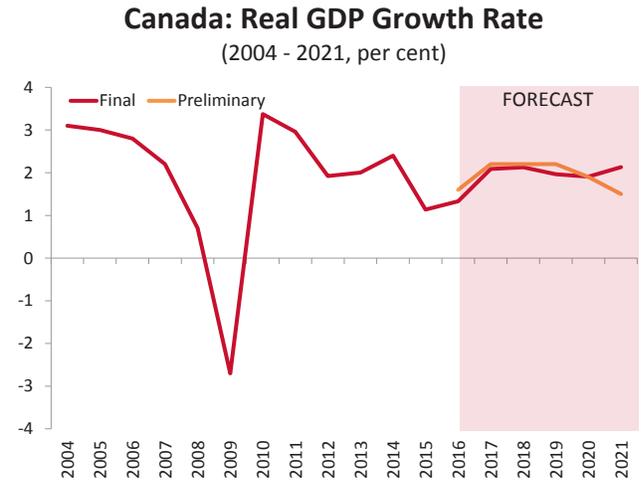


Source: Statistics Canada, Alberta Treasury Board and Finance, Corporate Economics

# Canada

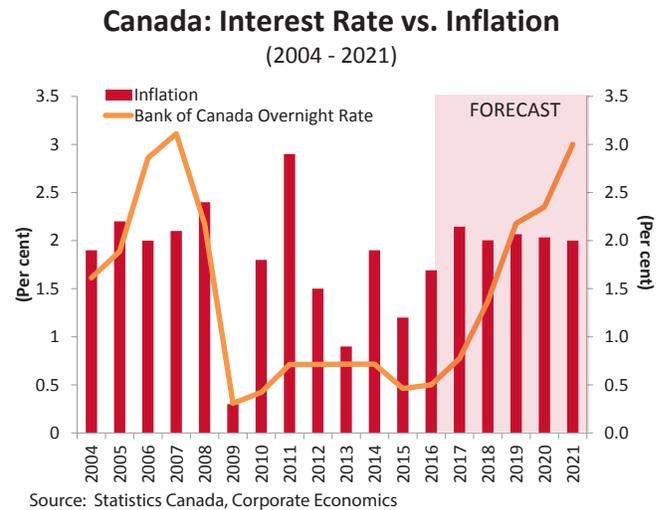
## Canada: Gross Domestic Product

- ▶ GDP growth in Canada decelerated in 2015 and 2016, mainly dragged down by the collapse of crude oil prices. Cancellations in energy project investment and losses in related jobs largely offset the growth in exports and residential investment. The Alberta wildfires in May and the disruption of production and shipment of oil weighed on economic activity in the first half of 2016, but rebuilding efforts should support growth the second half of this year.
- ▶ Starting from 2017, the impact of low oil prices should begin to subside. GDP growth is expected to bounce back to a new normal of around 2 per cent over the forecast period. Contributions to GDP growth should come increasingly from business investments and exports, supported by increasing business confidence, higher demand from the U.S. and a cheaper Canadian dollar. However, growth in consumption and residential investment should decelerate, given the weakness in regional labour markets and record high household mortgage debts.



## Canada: Interest Rate and Inflation

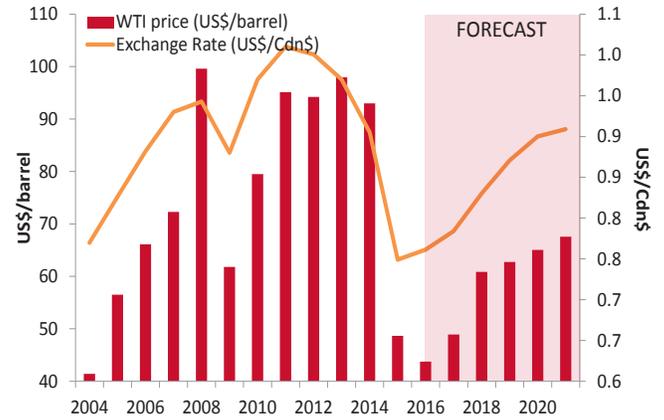
- ▶ Despite the positive inflationary effects from the depreciation of the Canadian dollar, inflation in Canada in 2016 has remained subdued. Reductions in energy prices, especially gasoline were the main reasons for low inflation. Cut backs in energy and related investments also left extra capacities in the economy and less upward pressure on wages and prices. Adjusting to low commodity prices, the reallocation of investment and employment will eventually make progress and push up inflation near 2 per cent over the next few years.
- ▶ The Bank of Canada, facing uncertainties from foreign trade partners and slacks in Canadian economy, has kept interest rate low to stimulate growth. Starting from 2017, however, the Bank of Canada is likely to follow the Fed to hike up interest rates, with expectations of higher inflations in the coming years.



### Canada: Exchange Rate and Crude Oil Price

- ▶ The Canadian dollar has depreciated considerably against the U.S. dollar since late 2014 mainly in response to sharply lower crude oil prices, reaching as low as 70 cents (U.S.) in January 2016. This was partly driven by the resurgence of the U.S. dollar against all major currencies. A weaker dollar is good for non-energy export sectors and should act as a shock absorber for energy producers. However, it hurts consumers with higher prices for imported goods and services.
- ▶ Over the next five years, the Canadian/ U.S. exchange rate is expected to fluctuate between 76 and 90 cents (U.S.), with strengthening oil prices and better performance of the national economy.

**Canada: Exchange Rate and Crude Oil Price**  
(2004 - 2021)



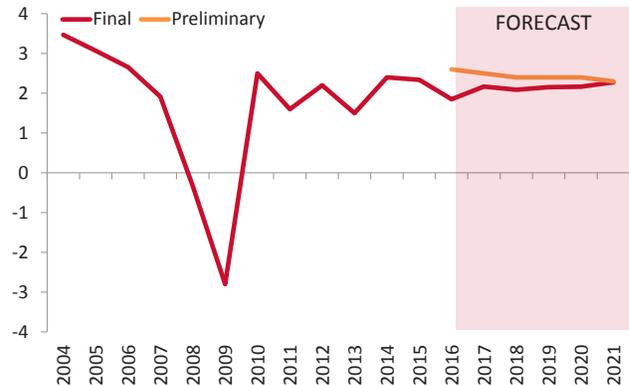
Source: GLJ, Statistics Canada, Corporate Economics

## United States of America

### USA: Gross Domestic Product Growth

- ▶ The forecast for GDP growth in the U.S. has been downgraded this fall compared to the spring outlook due to the increased uncertainties in the Euro zone economies from the Brexit and refugee crisis. Contributions to real GDP growth have been mainly from consumptions in durable goods, and investments in residential housing over the past two years.
- ▶ In the forecast period, the U.S. economy is expected to grow between 2.1 per cent to 2.3 per cent, driven by increases in business investment in equipment and software, and intellectual properties in addition to those in residential investment and consumption.

**U.S.: Real GDP Growth Rate**  
(2004 - 2021, per cent)

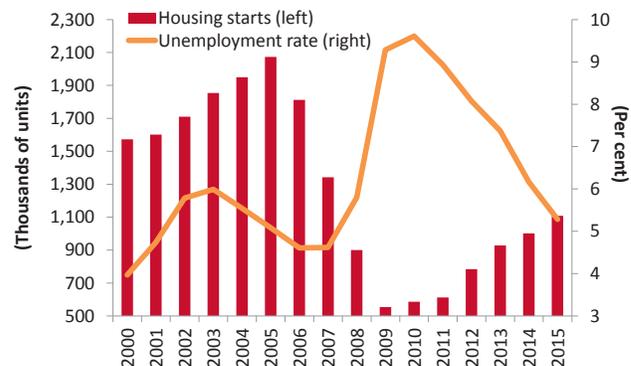


Source: Federal Reserve Bank of St. Louis, C4SE, Corporate Economics

### USA: Unemployment Rate and Housing Starts

- ▶ The U.S. job market has fully recovered from its losses during the Great Recession. Total non-farm employees' payroll surpassed the pre-recession peak of 138 million persons in June 2008 to 144 million persons in June 2016. The unemployment rate has declined steadily since recovery, from the peak of 10 per cent in October 2009 to current level of 4.9 per cent in August 2016.
- ▶ Housing starts in the U.S., after dipping below 1 million units a year for six years (2008-2013), finally bounced back to 1 million units in 2014 and 1.1 million units in 2015. Increased employment income, higher consumer confidence, and pent-up demand were behind this growth. Looking ahead to the next few years, the same factors should still support higher investment activities in the U.S. housing market.

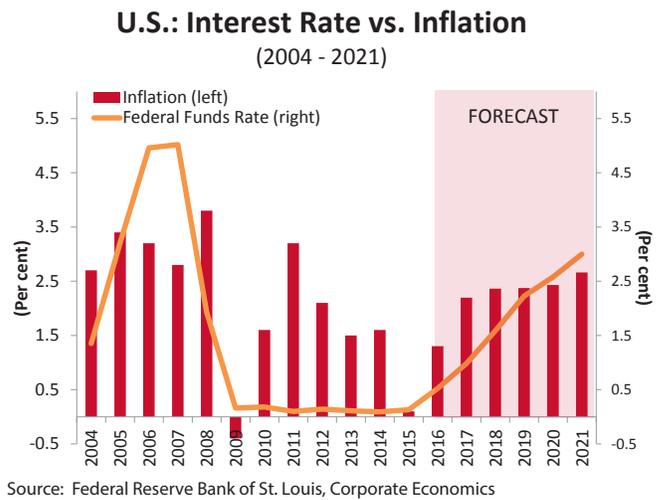
**U.S.: Unemployment Rate vs. Housing Starts**  
(2000 - 2015)



Source: Federal Reserve Bank of St. Louis

## USA: Interest Rate and Inflation

- ▶ Consumer price inflation in the U.S. has been mostly between 1.5 per cent and 3.5 per cent since 2010, with a downward surprise of 0.1 per cent in 2015 due to the crash of crude oil prices. With energy prices stabilizing and the labour market tightening, it is expected that U.S. inflation will heat up in the next few years.
- ▶ The Federal Open Market Committee has kept short term interest rates low since the onset of the 2008 recession. With expectations of higher inflation rates ( 2.2 per cent to 2.7 per cent) in the coming years , the Fed should start to raise short-term interest rates. However, current uncertainties in the world economy, and the appreciation of the U.S. dollar should weigh against the U.S. Federal Reserve increasing short term interest rates.

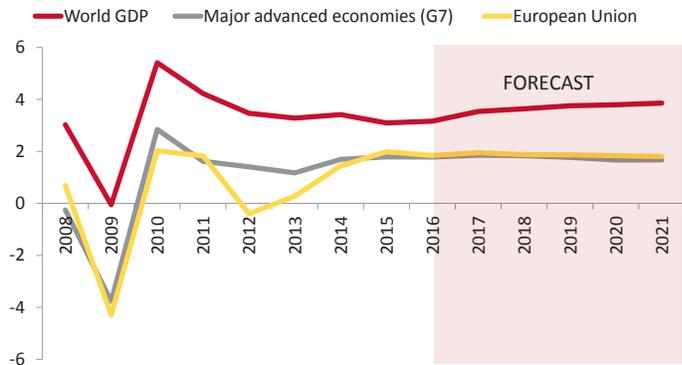


# World

## Economic Growth

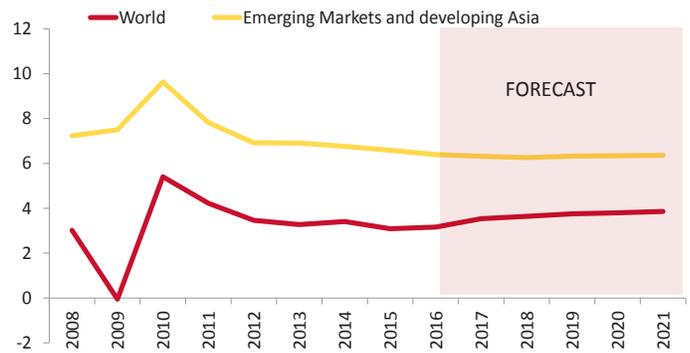
- ▶ The world growth forecast for 2017 is 3.5 per cent, up 0.3 basis points from 2016 and expected to grow at an average annual rate of 3.7 per cent between 2018 and 2021.
- ▶ The major advanced countries (G7) are forecast to grow at 1.9 per cent for 2017 and average 1.7 per cent between 2018 and 2021, while the European Union is expected to grow at 1.9 per cent in 2017 and average 1.8 per cent between 2018 and 2021.
- ▶ The economic growth forecast for emerging economies is 6.3 per cent for 2017 and is expected to grow at an average annual rate of 6.3 per cent between 2018 and 2021. The emerging economies have provided a relatively stronger growth path which has driven world economic growth, and should continue this path into the period 2017-2021.

**GDP Growth, Constant Prices**  
(2008 - 2021, per cent)



Source: International Monetary Fund, World Economic Outlook Database Update 2016

**GDP Growth, Constant Prices**  
(2008 - 2021, per cent)

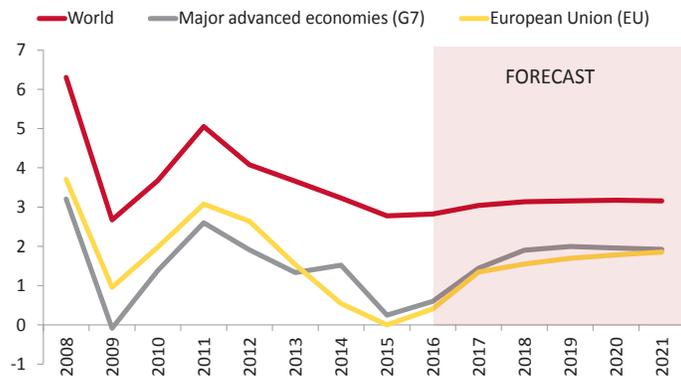


Source: International Monetary Fund, World Economic Outlook Database Update 2016

## Inflation

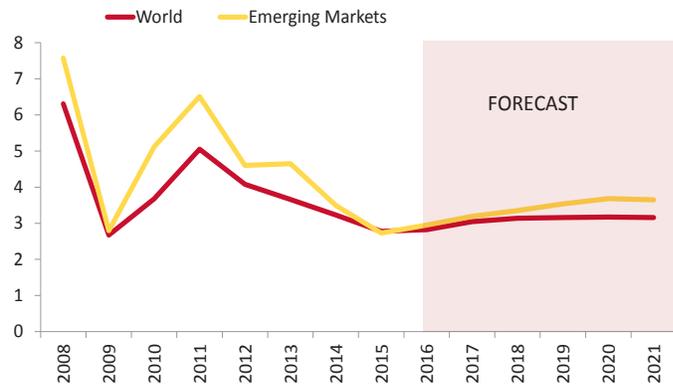
The world inflation sits above 3 per cent for the forecast period 2017-2021 and inflation averages between 1.3 and 2 per cent for advanced economy groups within the same period. For the other economy groups, inflation averages between 3.2 per cent and 7 per cent during the forecast period.

**Inflation**  
(2008 - 2021, per cent)



Source: International Monetary Fund, World Economic Outlook Database Update 2016

**Inflation**  
(2008 - 2021, per cent)



Source: International Monetary Fund, World Economic Outlook Database Update 2016

# Forecast Tables

## Table 1 Selected Economic Indicators

Rest of the World, United States, Canada, Alberta, Calgary Economic Region & Calgary CMA  
Forecast completed September 2016

|   |       |       |       |       |       |       | FORECAST |       |       |       |       |  |
|---|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|--|
|   | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017     | 2018  | 2019  | 2020  | 2021  |  |
| <b>ASSUMPTIONS</b>  |       |       |       |       |       |       |          |       |       |       |       |  |
| <b>Global Economy</b>   |       |       |       |       |       |       |          |       |       |       |       |  |
| World Gross Domestic Product Growth (%)   | 4.2   | 3.5   | 3.3   | 3.4   | 3.1   | 3.2   | 3.5      | 3.6   | 3.8   | 3.8   | 3.9   |  |
| The United States   |       |       |       |       |       |       |          |       |       |       |       |  |
| U.S. Real Gross Domestic Product Growth (%) (chained 2009 dollars)  | 1.6   | 2.2   | 1.7   | 2.4   | 2.6   | 1.8   | 2.2      | 2.1   | 2.1   | 2.1   | 2.3   |  |
| <b>Canada</b>   |       |       |       |       |       |       |          |       |       |       |       |  |
| Canada Real Gross Domestic Product Growth (%) (chained 2007 dollars)  | 3.3   | 1.7   | 2.2   | 2.5   | 1.1   | 1.4   | 2.0      | 2.1   | 2.0   | 1.9   | 2.1   |  |
| Prime Business Loan Rate (%)  | 3.0   | 3.0   | 3.0   | 3.0   | 2.8   | 2.7   | 2.7      | 3.4   | 4.9   | 5.2   | 5.2   |  |
| Exchange Rate (US\$/Cdn\$)  | 1.01  | 1.00  | 0.97  | 0.91  | 0.75  | 0.77  | 0.79     | 0.82  | 0.84  | 0.86  | 0.88  |  |
| <b>Alberta</b>  |       |       |       |       |       |       |          |       |       |       |       |  |
| Alberta Real Gross Domestic Product Growth (%) (chained 2007 dollar)  | 5.7   | 4.5   | 3.8   | 4.4   | -4    | -2.0  | 2.2      | 2.6   | 2.5   | 2.4   | 2.5   |  |
| Total Employment Growth (%)   | 3.7   | 3.5   | 2.4   | 2.2   | 1.2   | -1.6  | 0.4      | 1.7   | 1.8   | 1.6   | 1.8   |  |
| Unemployment Rate (%)   | 5.4   | 4.6   | 4.6   | 4.7   | 6     | 7.9   | 7.6      | 7.1   | 6.7   | 6.0   | 5.5   |  |
| Housing Starts ('000 Units)   | 25.5  | 33.3  | 36.1  | 40.6  | 37.3  | 23.6  | 26.0     | 27.7  | 28.5  | 29.3  | 30.2  |  |
| Inflation Rate (%)  | 2.4   | 1.1   | 1.4   | 2.6   | 1.2   | 1.4   | 1.9      | 1.9   | 2.0   | 2.0   | 2.1   |  |
| Crude Oil Price - WTI (US\$/bbl)  | 95.13 | 94.21 | 97.97 | 92.97 | 48.67 | 43.47 | 48.90    | 58.79 | 60.78 | 63.55 | 65.60 |  |
| Western Canadian Select - WCS (US\$/bbl)  | 71.84 | 71.90 | 77.05 | 78.43 | 35.10 | 30.4  | 38.4     | 44.0  | 49.5  | 53.3  | 57.1  |  |
| Alberta Natural Gas Price - AECO/NIT (C\$/GJ)   | 3.15  | 2.19  | 3.06  | 3.84  | 2.56  | 1.90  | 2.63     | 3.03  | 3.32  | 3.55  | 3.72  |  |
| Industrial Product Price Index (%)  | 6.9   | 1.1   | 0.4   | 2.5   | -0.8  | 3.0   | 4.6      | 1.6   | 1.5   | 1.5   | 1.5   |  |
| Raw Materials Price Index (%)   | 19.5  | -4.1  | 0.9   | 1.6   | -19.9 | -1.9  | 9.6      | 1.7   | 4.8   | 4.7   | 3.6   |  |
| Alberta Average Wage Rate Increase for All Industries (%)   | 4.4   | 3.5   | 3.5   | 3.8   | 1.4   | 1.2   | 2.3      | 2.6   | 2.8   | 2.8   | 2.9   |  |
| <b>FORECAST</b>   |       |       |       |       |       |       |          |       |       |       |       |  |
| <b>Calgary Economic Region (CER)</b>  |       |       |       |       |       |       |          |       |       |       |       |  |
| Gross Domestic Product (%)*   | 6.1   | 6.0   | 6.2   | 4.5   | -3.9  | -3.2  | 1.2      | 2.7   | 2.6   | 2.1   | 2.6   |  |
| Total Employment ('000 persons)   | 773   | 811   | 830   | 855   | 878   | 855   | 861      | 875   | 895   | 915   | 935   |  |
| Total Employment Growth (%)   | 2.8   | 3.9   | 3.0   | 3.2   | 2.5   | -2.6  | 0.7      | 1.6   | 2.3   | 2.2   | 2.2   |  |
| Unemployment Rate (%)   | 6.2   | 4.8   | 4.8   | 5.1   | 6.0   | 8.5   | 9.0      | 8.4   | 7.0   | 6.5   | 6     |  |
| Inflation Rate (%) (CMA)  | 2.2   | 1.0   | 1.7   | 2.9   | 1.3   | 1.2   | 2.0      | 2.0   | 2.1   | 0.7   | 1.3   |  |
| Building Permits (\$billions)   | 5.5   | 5.6   | 7.5   | 7.7   | 7.5   | 4.3   | 4.8      | 5.0   | 5.2   | 5.5   | 6.0   |  |
| Low Forecast  | N/A   | N/A   | N/A   | N/A   |       | 3.8   | 4.3      | 4.5   | 4.7   | 5     | 5.5   |  |
| High Forecast   | N/A   | N/A   | N/A   | N/A   |       | 4.8   | 5.3      | 5.5   | 5.7   | 6.0   | 6.5   |  |
| Housing Starts '000 units) (CMA)  | 9.3   | 12.8  | 12.6  | 17.1  | 13    | 8.0   | 8.3      | 7.6   | 10.0  | 11.3  | 13.2  |  |
| Non-Residential Building Price Inflation (%) (CMA)  | 2.7   | 3.7   | 1.2   | 1.3   | -0.6  | -2.3  | -1.1     | 1.1   | 1.7   | 4.5   | 0.2   |  |
| Numbers may not add up due to rounding<br>* Source: Centre for Spatial Economics, Corporate Economics, International Monetary Fund<br>Total population, census divisions and census metropolitan areas, 2001 Census boundaries<br>Canada GDP (CANSIM380-0017) |       |       |       |       |       |       |          |       |       |       |       |  |

## Table 2 Selected Economic Indicators

Forecast completed September 2016

| City of Calgary   |       |       |       |       |       | FORECAST |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------|
|   | 2011  | 2012  | 2013  | 2014  | 2015  | 2016     | 2017  | 2018  | 2019  | 2020  | 2021  |
| <b>DEMOGRAPHY</b>   |       |       |       |       |       |          |       |       |       |       |       |
| Total Population ('000 Persons)                                 | 1,091 | 1,120 | 1,157 | 1,195 | 1,231 | 1,235    | 1,247 | 1,259 | 1,274 | 1,292 | 1,313 |
| Total Population Growth (%)                                     | 1.8   | 2.7   | 3.3   | 3.3   | 3.0   | 0.3      | 1.0   | 0.9   | 1.2   | 1.4   | 1.7   |
| Net Migration ('000 Persons)                                    | 9.6   | 19.7  | 26.2  | 28.0  | 24.9  | -6.5     | 1.6   | 1.5   | 5.6   | 8.1   | 12.5  |
| Household Formation ('000 Units)                                | 4.1   | 8.1   | 12.2  | 8.1   | 11.1  | 3.3      | 4.6   | 4.3   | 5.7   | 6.5   | 8.0   |
| <b>REAL ESTATE- Residential Market</b>                          |       |       |       |       |       |          |       |       |       |       |       |
| Housing Starts ('000 units)                                     | 7.7   | 10.3  | 9.4   | 13.8  | 10.0  | 6.0      | 4.6   | 4.3   | 5.7   | 6.5   | 10.2  |
| Total Building Permits mid point (\$billions)                   | 4.5   | 4.4   | 6.1   | 6.3   | 6.3   | 3.6      | 4.0   | 4.2   | 4.4   | 4.6   | 4.4   |
| Low Forecast  | 4.5   | 4.4   | 6.1   | 6.3   | 6.3   | 3.1      | 3.5   | 3.7   | 3.9   | 4.1   | 3.9   |
| High Forecast   | 4.5   | 4.4   | 6.1   | 6.3   | 6.3   | 4.1      | 4.5   | 4.7   | 4.9   | 5.1   | 4.9   |
| Non-Residential Building Price Inflation                        | 2.7   | 3.7   | 1.2   | 1.3   | -0.6  | -2.3     | -1.1  | 1.1   | 1.7   | 4.5   | 0.2   |
| Calgary Average Residential MLS sale price (MLS data from CREB) | 1.2   | 3.3   | 6.8   | 5.5   | -2.9  | -3.1     | -0.6  | 0.1   | 2.7   | 5.7   | 4.4   |

## Table 3 Selected Commodity Price Inflation

(Year-over-year per cent change)

Forecast completed September 2016

| City of Calgary   | FORECAST |       |       |       |       |       |      |      |      |      |      |      |      |
|---|----------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|
|   | 2011     | 2012  | 2013  | 2014  | 2015  | 2016  | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| <b>COMMODITIES</b>  |          |       |       |       |       |       |      |      |      |      |      |      |      |
| <b>Construction Commodities</b>                                   |          |       |       |       |       |       |      |      |      |      |      |      |      |
| <i>Iron and steel products</i>                                    | 1.9      | -1.3  | -1.1  | 3.1   | 5.3   | 1.6   | 8.7  | 9.5  | -0.4 | 8.8  | -1.1 | -1.1 | 4.3  |
| <i>Aluminium products</i>   | 4.3      | -9.5  | 2.4   | 6.6   | 7.0   | -8.1  | 8.8  | 5.2  | 0.0  | 6.6  | 6.2  | 3.4  | 1.3  |
| <i>Wood</i>   | 2.0      | 2.1   | 6.9   | 3.2   | 1.6   | 0.5   | 6.1  | 0.4  | 0.3  | 3.0  | 2.3  | -1.6 | 0.2  |
| <i>Asphalt*</i>   | -0.7     | 13.6  | -5.4  | 14.5  | -10.7 | -22.9 | 10.1 | 1.5  | 2.0  | 13.4 | -0.5 | -0.8 | 0.2  |
| <b>Operational Commodities</b>                                    |          |       |       |       |       |       |      |      |      |      |      |      |      |
| <i>Rubber</i>   | 32.8     | -27.5 | -14.3 | -24.6 | -7.9  | -2.6  | -2.5 | 13.3 | 8.6  | 16.6 | 1.0  | 1.0  | 1.0  |
| <i>Diesel Oil</i>   | 23.3     | -0.5  | 5.2   | 7.9   | -21.8 | -17.5 | 9.0  | 1.1  | 2.4  | 9.0  | -0.8 | 1.2  | 0.0  |
| <i>Vehicle Parts</i>  | 1.8      | 2.6   | 0.1   | 0.9   | 2.1   | 1.1   | 7.1  | -0.9 | -2.8 | 2.7  | 2.4  | 1.9  | 1.9  |
| Numbers may not add up due to rounding                            |          |       |       |       |       |       |      |      |      |      |      |      |      |
| * Based on Ontario Ministry of Transportation Asphalt Price Index |          |       |       |       |       |       |      |      |      |      |      |      |      |

## Table 4 City of Calgary Population Projections

| Forecast completed September 2016<br>(Persons) |                  | FORECAST         |                  |                  |                  |                  |                  |                  |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| <b>City of Calgary</b>                         | 2016             | 2017             | 2018             | 2019             | 2020             | 2021             | 2022             | 2023             |
| Total Population (as of April)                 | 1,235,200        | 1,247,400        | 1,259,100        | 1,274,400        | 1,291,700        | 1,313,200        | 1,344,800        | 1,372,400        |
| Total Population Growth Rate (April - March) % | 0.3              | 1.0              | 0.9              | 1.2              | 1.4              | 1.7              | 2.4              | 2.0              |
| Total Net Migration (April - March)            | -6,500           | 1,600            | 1,500            | 5,600            | 8,100            | 12,500           | 22,700           | 18,300           |
| Total Births (April - March)                   | 17,600           | 17,800           | 17,500           | 17,200           | 17,000           | 16,900           | 17,000           | 17,500           |
| Total Deaths (April - March)                   | 6,800            | 7,100            | 7,300            | 7,500            | 7,700            | 7,900            | 8,100            | 8,200            |
| Total Natural Increase (April - March)         | 10,800           | 10,700           | 10,200           | 9,700            | 9,300            | 9,000            | 8,900            | 9,300            |
| Total Households (as of April)                 | 465,800          | 470,400          | 474,700          | 480,400          | 486,900          | 494,800          | 506,700          | 517,500          |
| Total Household Formation (April - March)      | 3,300            | 4,600            | 4,300            | 5,700            | 6,500            | 8,000            | 11,800           | 10,800           |
| <b>Population by 5-Year Cohort</b>             |                  |                  |                  |                  |                  |                  |                  |                  |
| 0-4  | 85,600           | 86,500           | 87,200           | 87,200           | 86,800           | 85,900           | 85,000           | 84,900           |
| 5-9  | 77,900           | 80,300           | 81,900           | 83,000           | 84,000           | 85,400           | 86,100           | 86,800           |
| 10-14  | 67,700           | 68,900           | 70,900           | 73,500           | 76,100           | 78,300           | 81,100           | 82,800           |
| 15-19  | 66,800           | 66,000           | 65,500           | 65,900           | 66,900           | 68,700           | 70,700           | 73,300           |
| 20-24  | 77,400           | 74,300           | 71,900           | 71,100           | 70,900           | 71,800           | 74,700           | 76,300           |
| 25-29  | 100,500          | 97,000           | 92,900           | 90,000           | 87,800           | 86,500           | 90,100           | 92,400           |
| 30-34  | 112,000          | 111,700          | 110,500          | 108,900          | 107,500          | 107,500          | 109,400          | 110,100          |
| 35-39  | 108,200          | 109,800          | 111,200          | 113,600          | 116,000          | 117,900          | 122,300          | 124,800          |
| 40-44  | 98,600           | 99,500           | 101,000          | 103,500          | 107,100          | 111,800          | 116,400          | 120,700          |
| 45-49  | 84,900           | 87,900           | 91,200           | 94,000           | 96,600           | 99,500           | 101,700          | 104,600          |
| 50-54  | 86,200           | 85,700           | 84,700           | 83,900           | 83,800           | 84,600           | 88,200           | 92,100           |
| 55-59  | 77,800           | 79,700           | 81,000           | 82,100           | 82,800           | 82,500           | 80,600           | 79,100           |
| 60-64  | 60,100           | 63,700           | 67,400           | 70,100           | 72,100           | 73,200           | 73,500           | 73,400           |
| 65-69  | 47,700           | 49,800           | 50,500           | 51,900           | 53,900           | 56,400           | 59,200           | 62,100           |
| 70-74  | 30,600           | 32,300           | 35,300           | 38,200           | 40,800           | 43,300           | 44,800           | 45,200           |
| 75-79  | 21,000           | 21,800           | 22,700           | 23,900           | 25,000           | 26,300           | 27,400           | 29,700           |
| 80-84  | 16,000           | 16,100           | 16,200           | 16,200           | 16,400           | 16,400           | 16,900           | 17,500           |
| 85-89  | 10,500           | 10,700           | 10,700           | 10,700           | 10,600           | 10,400           | 10,300           | 10,200           |
| 90-99  | 5,400            | 5,800            | 6,100            | 6,300            | 6,500            | 6,600            | 6,400            | 6,200            |
| 99+  | 200              | 200              | 200              | 200              | 200              | 200              | 200              | 300              |
| <b>Total</b>                                   | <b>1,235,200</b> | <b>1,247,400</b> | <b>1,259,100</b> | <b>1,274,400</b> | <b>1,291,700</b> | <b>1,313,200</b> | <b>1,344,800</b> | <b>1,372,400</b> |
| <b>Youth (12 - 18)</b>                         |                  |                  |                  |                  |                  |                  |                  |                  |
| Youth (12 - 18)                                | 78,900           | 79,400           | 80,600           | 82,400           | 84,400           | 87,700           | 91,200           | 94,100           |
| <b>Primary School Age 6 - 17</b>               |                  |                  |                  |                  |                  |                  |                  |                  |
| Primary School Age 6 - 17                      | 168,500          | 171,500          | 175,300          | 179,400          | 183,400          | 188,000          | 193,000          | 197,300          |
| <b>Working Age 15 - 64</b>                     |                  |                  |                  |                  |                  |                  |                  |                  |
| Working Age 15 - 64                            | 872,600          | 875,400          | 877,500          | 883,300          | 891,500          | 904,000          | 927,500          | 946,800          |
| <b>Seniors 65+</b>                             |                  |                  |                  |                  |                  |                  |                  |                  |
| Seniors 65+                                    | 131,400          | 136,500          | 141,700          | 147,400          | 153,300          | 159,600          | 165,100          | 171,100          |
| <b>Super Seniors 85+</b>                       |                  |                  |                  |                  |                  |                  |                  |                  |
| Super Seniors 85+                              | 16,100           | 16,600           | 17,000           | 17,200           | 17,300           | 17,200           | 16,900           | 16,700           |
| <b>Female Super Seniors 85+</b>                |                  |                  |                  |                  |                  |                  |                  |                  |
| Female Super Seniors 85+                       | 10,200           | 10,500           | 10,700           | 10,800           | 10,800           | 10,800           | 10,600           | 10,500           |
| <b>Numbers may not add up due to rounding</b>  |                  |                  |                  |                  |                  |                  |                  |                  |

## Table 5 Calgary Economic Region Population Projection

| Forecast completed September 2016<br>(Persons)      | FORECAST  |           |           |           |           |           |           |           |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>Calgary Economic Region</b>                      | 2016      | 2017      | 2018      | 2019      | 2020      | 2021      | 2022      | 2023      |
| Total Population (as of April)                      | 1,554,200 | 1,569,500 | 1,583,300 | 1,603,100 | 1,628,700 | 1,657,500 | 1,692,000 | 1,728,500 |
| Total Population Growth Rate<br>(April - March) (%) | 0.4       | 1.0       | 0.9       | 1.3       | 1.6       | 1.8       | 2.1       | 2.2       |
| Total Net Migration (April -<br>March)              | -7,100    | 2,300     | 1,600     | 8,200     | 14,700    | 18,500    | 24,600    | 27,000    |
| Total Births (April - March)                        | 21,600    | 21,800    | 21,400    | 21,000    | 20,700    | 20,600    | 20,600    | 20,700    |
| Total Deaths (April - March)                        | 8,600     | 8,800     | 9,200     | 9,500     | 9,800     | 10,300    | 10,700    | 11,200    |
| Total Natural Increase (April -<br>March)           | 13,000    | 12,900    | 12,300    | 11,500    | 10,900    | 10,400    | 9,900     | 9,500     |
| Total Households (as of April)                      | 597,800   | 603,600   | 609,000   | 616,600   | 626,400   | 637,500   | 650,800   | 664,800   |
| Total Household Formation<br>(April - March)        | 2,300     | 5,900     | 5,300     | 7,600     | 9,800     | 11,100    | 13,300    | 14,000    |
| <b>Population by 5-Year Cohort</b>                  |           |           |           |           |           |           |           |           |
| 0-4   | 108,000   | 108,700   | 109,000   | 108,700   | 107,800   | 106,400   | 105,700   | 105,400   |
| 5-9   | 98,500    | 100,900   | 102,700   | 104,000   | 105,600   | 108,100   | 109,100   | 109,700   |
| 10-14   | 87,500    | 89,100    | 91,500    | 94,800    | 98,200    | 101,000   | 104,500   | 107,400   |
| 15-19   | 88,100    | 86,900    | 85,900    | 86,300    | 88,200    | 90,900    | 94,100    | 98,400    |
| 20-24   | 99,000    | 96,600    | 94,300    | 93,300    | 93,600    | 94,600    | 96,400    | 98,500    |
| 25-29   | 120,200   | 116,000   | 111,900   | 109,500   | 107,900   | 107,100   | 108,800   | 111,000   |
| 30-34   | 135,900   | 135,200   | 133,000   | 130,200   | 128,000   | 126,500   | 125,700   | 125,700   |
| 35-39   | 134,200   | 135,300   | 136,300   | 138,000   | 139,700   | 140,300   | 142,200   | 143,000   |
| 40-44   | 123,800   | 124,600   | 126,100   | 128,800   | 132,400   | 136,900   | 139,800   | 143,000   |
| 45-49   | 107,600   | 111,700   | 115,600   | 118,700   | 121,700   | 124,900   | 126,700   | 129,600   |
| 50-54   | 109,100   | 107,900   | 106,600   | 105,800   | 105,900   | 107,300   | 111,900   | 116,500   |
| 55-59   | 99,000    | 101,600   | 103,400   | 105,300   | 106,800   | 107,300   | 106,400   | 105,500   |
| 60-64   | 76,800    | 81,500    | 86,200    | 90,000    | 93,400    | 96,200    | 98,800    | 100,800   |
| 65-69   | 61,300    | 64,100    | 65,000    | 66,900    | 70,100    | 73,500    | 78,100    | 82,900    |
| 70-74   | 39,600    | 42,000    | 46,100    | 49,900    | 53,300    | 57,000    | 59,700    | 60,900    |
| 75-79   | 26,300    | 27,600    | 28,900    | 30,800    | 33,000    | 35,200    | 37,400    | 41,300    |
| 80-84   | 19,800    | 19,900    | 20,100    | 20,300    | 20,800    | 21,400    | 22,700    | 23,900    |
| 85-89   | 12,700    | 12,900    | 13,100    | 13,300    | 13,400    | 13,600    | 13,800    | 14,100    |
| 90-99   | 6,500     | 7,100     | 7,500     | 8,100     | 8,700     | 9,300     | 9,900     | 10,500    |
| 99+   | 200       | 200       | 200       | 200       | 300       | 300       | 400       | 500       |
| Total   | 1,554,200 | 1,569,500 | 1,583,300 | 1,603,100 | 1,628,700 | 1,657,500 | 1,692,000 | 1,728,500 |
| Numbers may not add up due to rounding              |           |           |           |           |           |           |           |           |

# Appendix 1

## Demographic Driven New Housing Demand by Housing Type

New this year: This year we re-estimated the model coefficients using 2016 City of Calgary Census data. In previous models we lumped all multi unit and multi family dwellings into the “other” category and did not provide a forecast for institutions. In this year’s run we include all multi-unit and multi-family new construction in with townhouse type structures and provide a new “other” forecast. “Other” dwellings in this year’s run include institutions like hospitals and hotels. Not surprisingly, given this definition the average occupancy count for these types of structures in Calgary tops 200. What is interesting though is that increased demand seen in this category over 2018-2028 is for nursing homes.

The forecast is fundamentally unchanged from prior analysis. Single family houses continue to be the dominant demanded type of dwelling in Calgary and we anticipate no new demand for apartment / condo units from today until late 2020. This is a large concern. While the 2016 Calgary Civic Census was being taken there were approximately 8,000 units under construction. We have presumed these units will be completed at least within the next couple years when preparing this forecast and as a result we do not anticipate any new demand for apartment / condo type dwellings until well into 2024.

## Demographic Driven New Housing Demand by Housing Type

Forecast completed September 2016

Demand for Dwellings in Calgary (as of April in each calendar year)

|                              |                | FORECAST       |                |                |                |                |                |                |
|------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| City of Calgary              | 2016 stock     | 2017           | 2018           | 2019           | 2020           | 2021           | 2022           | 2023           |
| <b>Total Units</b>           |                |                |                |                |                |                |                |                |
| Single Family                | 278,510        | 282,691        | 286,922        | 291,696        | 296,824        | 302,511        | 309,575        | 316,060        |
| Duplex (per dwelling)        | 33,222         | 33,760         | 34,321         | 34,945         | 35,598         | 36,280         | 37,051         | 37,800         |
| Appt/Condo units             | 111,543        | 111,549        | 111,234        | 111,348        | 111,752        | 112,873        | 115,844        | 118,114        |
| Townhouse / multi            | 57,294         | 58,175         | 59,079         | 60,103         | 61,192         | 62,383         | 63,774         | 65,113         |
| Conversion                   | 17,889         | 17,824         | 17,810         | 17,935         | 18,126         | 18,436         | 18,933         | 19,358         |
| Other (institutions)         | 764            | 771            | 780            | 791            | 803            | 818            | 838            | 856            |
| <b>Total</b>                 | <b>499,222</b> | <b>504,771</b> | <b>510,145</b> | <b>516,817</b> | <b>524,294</b> | <b>533,302</b> | <b>546,016</b> | <b>557,300</b> |
| <b>Annual Units Demanded</b> |                |                |                |                |                |                |                |                |
| Single Family                |                | 4,181          | 4,231          | 4,773          | 5,128          | 5,687          | 7,064          | 6,485          |
| Duplex (per dwelling)        |                | 538            | 561            | 624            | 653            | 683            | 771            | 748            |
| Appt/Condo units             |                | 0              | 0              | 0              | 0              | 0              | 0              | 0              |
| Townhouse / multi            |                | 881            | 903            | 1,025          | 1,089          | 1,191          | 1,391          | 1,339          |
| Conversion                   |                | 0              | 0              | 46             | 191            | 311            | 497            | 425            |
| Other (institutions)         |                | 7              | 8              | 11             | 13             | 15             | 20             | 17             |
| <b>Total</b>                 |                | <b>5,549</b>   | <b>5,703</b>   | <b>6,478</b>   | <b>7,073</b>   | <b>7,887</b>   | <b>9,743</b>   | <b>9,014</b>   |

## Appendix 2

### Disabled Persons in Calgary

Corporate Economics was asked to provide an estimate and forecast of the number of disabled persons in Calgary this year. In preparing these estimates we utilized our current forecast of the population of the City of Calgary and results of the 2012 Canadian Census. In particular we utilized data provided to the City of Calgary as a special disaggregation of the 2012 survey by Statistics Canada and applied these age and sex specific disability ratios to our forecast of Calgary population. The 2012 Statistics Canada information offered a further breakdown of disabled persons into 4 categories of severity of disability.

“Mild”, “Moderate”, “Severe”, and “Very Severe” levels of disability are employed by Statistics Canada in their 2012 Survey on Disability (catalogue number 89-654-x). The methodology used by Statistics Canada to categorize each individual into these categories depends upon individuals answers to survey questions concentrating on the social perspective of disability. Rather than focusing on items like blindness, the survey focused on how much difficulty an individual encounters in daily living: hearing, mobility, flexibility, dexterity, pain, learning, developmental, mental health, memory and other. A point scale is then used to arrive at an overall severity score. As a result, a person with many mild impairments may be listed as being “Very Severely Disabled” while a person experiencing a high score on a single dimension may be listed as having a “Mild Disability”.

We utilized these categories to provide age and sex based forecast for the number of disabled persons in Calgary. Our forecast indicates that roughly 8 per cent of the Calgary population currently falls into one category of disabled persons. Roughly 60 per cent of disabled persons in Calgary fall into Mild and Moderate categories while 40 per cent have Severe or Very Severe Disabilities. That distribution of disabilities among the population is expected to remain stable over the forecast horizon. However, it should come as no surprise that with a growing population of seniors the representation of seniors among the disabled population is expected to grow. We anticipate that the number of disabled persons in Calgary will grow from 8 per cent of the population today to 10 per cent over the next 30 years with the entirety of the increase coming from the senior population.

### Disabled Persons in Calgary

| Unit:     | Mild Disability |          |        | Moderate Disability |          |        | Severe Disability |          |        | Very Severe Disability |          |        |
|-----------|-----------------|----------|--------|---------------------|----------|--------|-------------------|----------|--------|------------------------|----------|--------|
|           | 15 to 24        | 25 to 65 | 65 +   | 15 to 24            | 25 to 65 | 65 +   | 15 to 24          | 25 to 65 | 65 +   | 15 to 24               | 25 to 65 | 65 +   |
| (Persons) |                 |          |        |                     |          |        |                   |          |        |                        |          |        |
| 2016      | 2,100           | 20,600   | 13,700 | 1,500               | 11,100   | 10,100 | 1,100             | 13,300   | 7,100  | 600                    | 11,600   | 9,100  |
| 2017      | 2,000           | 20,900   | 14,200 | 1,500               | 11,300   | 10,500 | 1,100             | 13,500   | 7,300  | 600                    | 11,900   | 9,500  |
| 2022      | 2,100           | 22,400   | 17,200 | 1,600               | 12,100   | 12,500 | 1,100             | 14,600   | 8,800  | 600                    | 12,800   | 11,300 |
| 2027      | 2,400           | 24,600   | 20,300 | 1,800               | 13,400   | 14,800 | 1,300             | 16,000   | 10,400 | 700                    | 14,100   | 13,400 |
| 2032      | 2,600           | 26,700   | 23,000 | 1,900               | 14,700   | 17,300 | 1,400             | 17,800   | 12,000 | 700                    | 15,600   | 15,500 |
| 2037      | 2,800           | 29,300   | 25,100 | 2,000               | 16,000   | 19,200 | 1,400             | 19,600   | 13,400 | 800                    | 17,200   | 17,200 |
| 2042      | 2,900           | 32,000   | 27,600 | 2,100               | 17,500   | 21,000 | 1,500             | 21,300   | 14,700 | 800                    | 18,700   | 18,900 |
| 2047      | 3,000           | 34,200   | 31,000 | 2,200               | 18,700   | 23,200 | 1,600             | 22,700   | 16,300 | 800                    | 19,900   | 20,900 |

Estimated using 2016 City of Calgary Corporate Economics Population projections and 2012 Canada National Census

# 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.

## Account surplus

Occurs when a nation's total exports of goods, services and transfers exceed its total imports of these items.

## 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.

## Baltic Dry Index (BDI)

The Baltic Dry Index (BDI) is a popular financial barometer to track worldwide international shipping prices of various dry bulk cargoes. It is a number issued daily by the London-based Baltic Exchange. The index provides an assessment of the price of moving the major raw materials by sea.

## Baby-Boomer Generation (BBG)

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

## 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.

## Defined contribution plan (DC)

A defined contribution plan (DC) provides with a pension benefit based on the accumulated contributions from both an employee and his/her employer and investment income by the pension administrator.

## 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)

## Double-dip recession

A double-dip recession refers to a recession followed by a short-lived recovery, followed by another recession. The technical measurement of double-dip is when gross domestic product (GDP) slides back to negative after several quarters of positive growth.

## 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.

### **Eurostat (Statistical Office of the EU)**

It produces data for the European Union and promotes harmonization of statistical methods across the member states of the European Union.

### **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).

## **Quantitative Easing (QE)**

This is an unconventional approach to providing monetary stimulus. It is used when the conventional approach of lowering the overnight rate is no longer an option because the rate is already at or near zero per cent. It involves a central bank buying large quantities of securities from banks to inject new cash into them. Like lowering interest rates, it stimulates the economy by encouraging banks to make more loans.

## **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.

## **Reserve currency**

A reserve currency, or anchor currency, is a currency that is held in significant quantities by many governments and institutions as part of their foreign exchange reserves. It also tends to be the international pricing currency for products traded on a global market, and commodities such as oil, gold, etc.



## WHO WE ARE

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.

For more information, please contact:

**Patrick Walters**  
403.268.1335

patrick.walters@calgary.ca

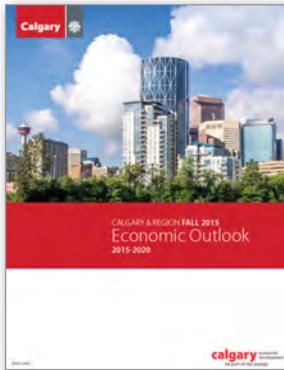
**Ivy Zhang**  
403.268.2005

ivy.zhang@calgary.ca

**Jorjeta Bojanova**  
403.268.5556

jorjeta.bojanova@calgary.ca

## Forecasting



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

## Information Provision



- ▶ 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 in Calgary
- ▶ Calgary Residential and Commercial Real Estate Markets

Many of our publications are available at [www.calgary.ca/economy](http://www.calgary.ca/economy)

Corporate Research Analyst: Jorjeta Bojanova

The City of Calgary provides this information in good faith. However, the aforementioned organization makes no representation, warranty or condition, statutory express or implied, takes no responsibility for any errors and omissions which may contained herein and accepts no liability for any loss arising from any use or reliance on this report.

Sources:

Statistics Canada, CMHC, CREB, MLS, Bank of Canada, Conference Board of Canada, GLJ Energy Publications, The City of Calgary, Centre for Spatial Economics, IHS Global Insight, U.S. Federal Bank Reserve of St. Louis, International Money Fund (World Economy Outlook), World Bank, Central Plan Bureau Netherlands, and others.