Calgary

Fall 2020

Calgary and Region Economic Outlook

2020-2025

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Introduction

Preamble

The City of Calgary tracks economic indicators throughout the year to develop insights about the impacts of external events on the local economy. The results from this process are published semi-annually as the Calgary and Region Economic Outlook: one in the spring and one in the fall.

The Outlook presents forecasts for a selected number of economic variables. It 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

We create and publish this outlook to assist The City of Calgary in the financial and physical planning of the city. The forecast enables the municipal government to take into consideration the current economic conditions and potential economic outlook to plan prudently and responsibly the financial path forward while understanding risks and opportunities.

The Outlook presents a comprehensive economic analysis of Calgary's local economy, which most other economic reports exclude. Unlike most research institutions, which restrict their analyses to the Alberta economy and a few urban areas within the province, this Outlook answers the following key questions:

- What is the overall forecast for the rate of growth of Calgary's local economy?
- What are the drivers of Calgary's local economy?
- How many jobs is the Calgary Economic Region (CER) expected to create?
- What is the forecast for population growth in the city of Calgary and the CER?
- What is the expected consumer price inflation in the Calgary Census Metropolitan Area (CMA)?
- What are the implications of the forecast, and how will it impact municipal finance?

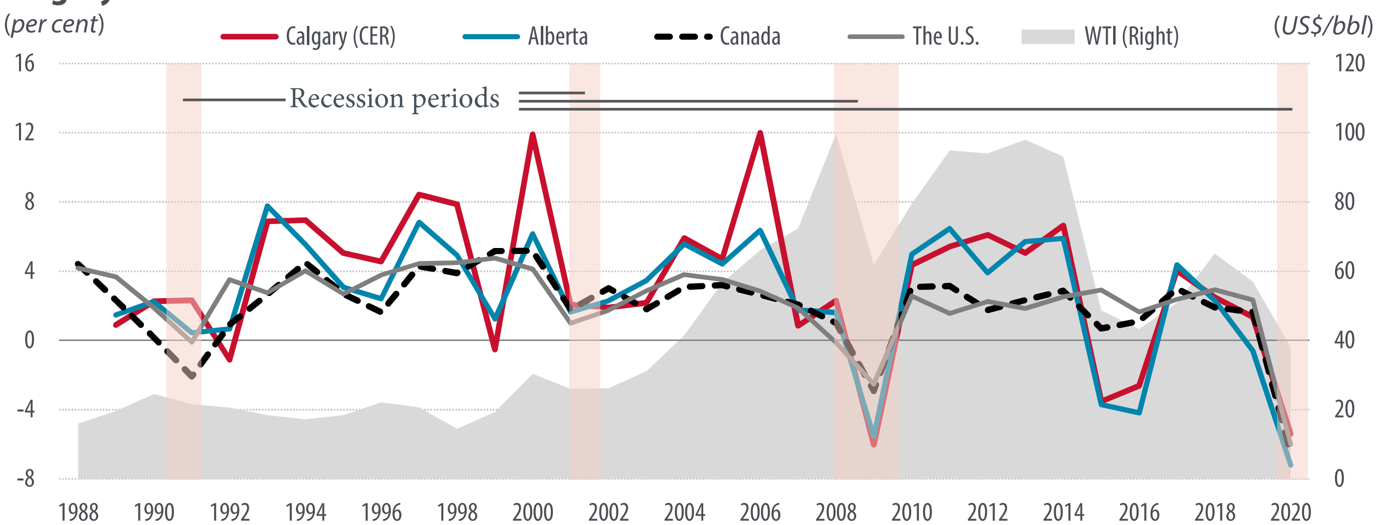
Calgary as a small open economy

Calgary is a small open economy and therefore is affected by changes outside its borders. The growth of Calgary's local economy is driven by its participation in international trade, especially the exports of Alberta's crude oil and other commodities to the outside markets. Compared to their trade partners, Calgary and Alberta are small players and thus price takers. The volatility of crude oil prices in the world market and exports of goods and services to its major trading partners affect Calgary's economic growth and job market condition relative to the rest of Canada.

Our forecast is therefore built on the economic and market conditions outside the CER over the forecast period. The critical external forces are as follows:

1. World crude oil price changes throughout the forecast period, and
2. Change of economic growth in the rest of Canada and the U.S. over the forecast period.

Calgary's Growth Drivers



Executive Summary

The COVID-19 pandemic has been with us for nine months. It is not expected to disappear any time soon until vaccines or treatments are widely available. Broad-based lockdowns worldwide to contain the spread of the coronavirus proved to be expensive, both financially and economically. According to the International Monetary Fund (IMF)[1], the global decline in work hours was equivalent to the loss of 130 million full-time jobs in Q1 2020, and it was likely to be equal to more than 300 million full-time jobs in Q2 2020. More than two-thirds of governments worldwide have scaled up their fiscal support since April to mitigate the economic fallout, providing income support to households and subsidies to businesses to preserve jobs and prevent bankruptcies. The combination of revenue decreases with sizable fiscal support programs resulted in soaring government deficits and public debts. In 2020, the average overall fiscal deficit is expected to be 14 per cent of GDP, 10 percentage points higher than last year; the global public debt is projected to be 101 per cent of GDP, a surge of 19 percentage points from a year ago.

Declining COVID-19 death rates amidst massive job losses and business closures made addressing the health crisis and doing what it can to support the economy a priority for decision-makers. Starting from May 2020, governments worldwide gradually reopened their economies in phases, even with the pandemic intensifying and new cases increasing in many countries and regions. In Canada, provinces reopened in May when COVID-19 cases began falling. Calgary ended its state of local emergency on June 12, one month after the province and is now in stage 2 of Alberta's 3-stage relaunch.

Since the economic relaunch, more than half of the jobs lost at the start of the pandemic have returned in Calgary. The unemployment rate in the Calgary CMA was still the highest among major Canadian CMAs; however, the gaps between Calgary and other CMAs narrowed as the COVID-19 lockdowns have pushed up unemployment rates in all other Canadian CMAs. Today, Calgary's labour market participation rate and employment rate remain the highest among Canadian CMAs. With small hospitality, travel, and tourism sectors, Calgary may fare better than other large Canadian CMAs like Toronto and Vancouver as job recovery in contact-intensive service sectors remains depressed post-COVID-19 lockdowns.

Six months after COVID-19 was declared a global pandemic, extreme uncertainty around Calgary's economic outlook persists. The coronavirus continues to spread across the world through community transmission. A widely available COVID-19 vaccine is not expected until 2022, and the fear of a second broad-based lockdown has deterred the recovery in contact-intensive industries.

Since the Spring Outlook, recent developments indicate that the risks around Calgary's economic outlook appear to be tilted to the downside. As a result, in this Fall Outlook we provide both a base-case scenario and a worse-case scenario. The different assumptions under the two scenarios are whether or not there is a broad-based second lockdown.

In our base-case scenario, we assume there will not be a broad-based second lockdown because of the spread of the virus. By the middle of 2022, vaccine or effective treatments will be widely available, and the COVID-19 pandemic will run its course. Real GDP in the CER is forecast to contract by 5.4 per cent in 2020, slightly better than Alberta and Canada because of the resilience in Calgary's residential and non-residential investment. After a 5.7 per cent decline, the region's total employment is expected to grow in the next five years, recovering all the job losses by 2023. The city's total population is expected to grow steadily, albeit at a slower rate than the past three years. By 2025, Calgary's total population is expected to reach 1.39 million.

In a worse-case scenario, we assume a widespread second wave of COVID-19 eventually results in a broad-based reversion in reopening stages from stages 2-3 to stage 1, or even a closure of all non-essential businesses again in Canada and its major trading partners in 2020. Calgary's GDP growth is expected to be 2.1 percentage points lower than the base-case scenario. Total employment is projected to drop by an additional 16,500 this year and 14,200 next year. Due to negative net-migrations in the next two years and higher deaths from COVID-19, the city's total population is projected to be 20,300 persons lower than the base-case scenario in 2021, reaching 1.34 million by 2025.

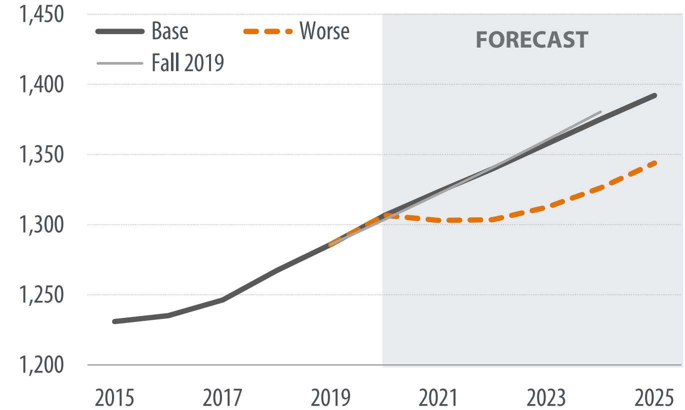
1 IMF (June 24, 2020) "World Economic Outlook Update, June 2020"

Executive Summary

Forecast Table: Selected Key Indicators

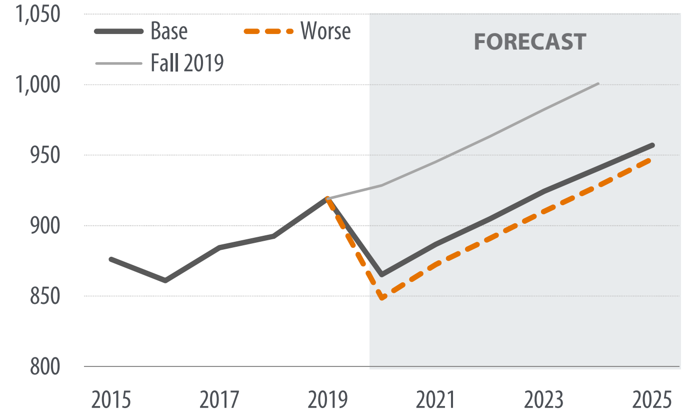
	2019	2020	2021	2022	2023	2024	2025
World: GDP (%)	2.9	-4.9	5.4	2.9	3.3	3.6	3.6
The U.S.: GDP(%)	2.3	-6.0	4.2	3.3	2.2	1.9	2.0
Canada: GDP (%)	1.6	-6.5	5.2	2.5	2.2	2.2	2.0
Alberta: GDP (%)	-0.6	-7.2	4.8	2.9	2.2	2.2	2.3
Calgary Economic Region: GDP (%)	1.3	-5.4	3.7	2.5	2.3	2.5	1.7
Calgary Economic Region: Unemployment Rate (%)	7.1	11.6	9.9	9.6	9.2	9.0	8.9
Calgary Census Metropolitan Area: CPI (%)	1.4	1.1	1.9	1.9	2.0	1.9	1.9
City of Calgary: Total Building Permits ($billion)	5.2	4.0	4.4	4.3	4.3	4.4	4.6
City of Calgary: Total Population ('000 persons)	1,285.7	1,306.7	1,323.4	1,339.9	1,357.5	1,375.1	1,392.1
City of Calgary: Housing Starts ('000 units)	10.6	8.5	8.9	9.0	9.1	9.3	9.6

City of Calgary: Total Population
(thousands of persons)



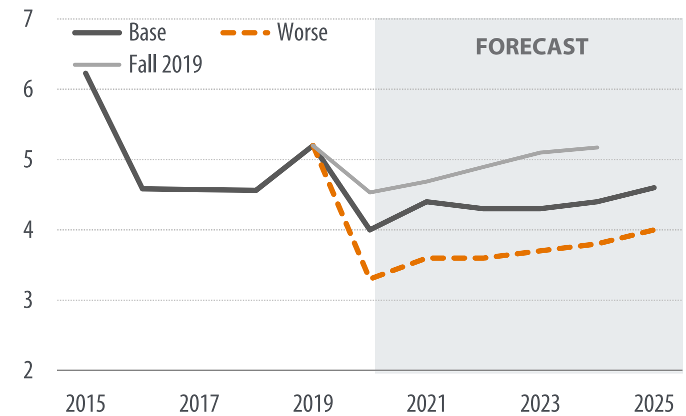
Source: The City of Calgary Civic Census, Corporate Economics

Calgary Economic Region: Total Employment
(thousands of persons)



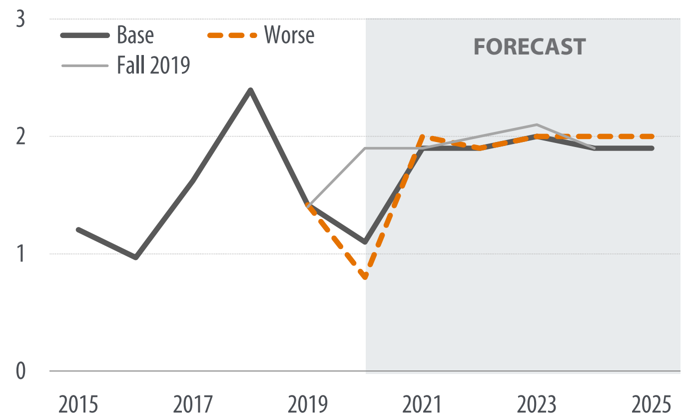
Source: Statistics Canada, Corporate Economics

City of Calgary: Total Building Permit Values
(billions of dollars)



Source: The City of Calgary, Corporate Economics

Calgary CMA: Inflation Rate
(per cent)



Source: Statistics Canada, Corporate Economics

Forecast Implications

Averages: Actual (2015 to 2018) vis-à-vis Forecast (2019 to 2022) Budget Cycle

Economic Indicator	Actual Previous City of Calgary Budget Cycle [2015 to 2018] Average	Forecast Current City of Calgary Budget Cycle [2019 to 2022] Average	Forecast Implications
Assumptions			
World			
Real Gross Domestic Product Growth (%)	3.5	1.6	A slower global growth will result in slower growth in demand for commodities. Resource based economies will face more challenges than those more diversified economies in creating jobs and income.
The United States			
Real Gross Domestic Product Growth (%)	2.5	1.0	Deceleration in demand growth for Canadian exports in line with a deceleration in growth for Canada's most significant trading partner.
Canada			
Real Gross Domestic Product Growth (%)	1.7	0.7	The average rate of economic growth in Canada will be slower in this budget cycle than the previous one.
Prime Business Loan Rate (%)	3.0	3.0	Rates have dipped during the pandemic, but we expect rates to recover very quickly when the pandemic ends. Similar average borrowing costs for The City's suppliers would keep The City's debt financing costs stable this cycle relative to the last one.
Exchange Rate (US$ for 1C$)	0.77	0.74	Exchange rate stability would keep the price of imported goods stable limiting the need to hedge.
Alberta			
Real Gross Domestic Product Growth (%)	-0.3	0.5	The Alberta economy would leave the recession behind and eventually move into a phase of modest economic expansion.
Total Employment Growth (%)	0.7	-0.1	The pace of job growth would be slower in this cycle as it takes time to recover from the COVID-19 shock.
Unemployment Rate (%)	7.1	9.1	The unemployment rate would be higher with a slower pace of job creation than the growth of labour force.
Housing Starts ('000 Units)	29.4	24.5	Inventory build-up would ease the pace of housing starts to the pace of household formation.
Inflation Rate (%)	1.6	1.5	Inflation rate would decrease slightly during an extended period of a very low interest rate set by the Bank of Canada.
West Texas Intermediate - WTI (US$/bbl)	52.0	48.6	Dual demand and supply shocks on the crude oil market from COVID-19 and the OPEC + price war in March 2020 caused oil price to plunge. The average WTI price is expected to be lower this budget cycle than last one.
Western Canadian Select - WCS (US$/bbl)	35.4	35.8	The WCS discount to WTI is expected to ease towards the end of the forecast period as additional pipeline capacity is brought online. As a result, WCS prices are expected to be stable while WTI prices are lower this cycle than previous one, reducing the differential.
Alberta Natural Gas Price - AECO/NIT ($/GJ)	2.1	2.1	Flat natural gas prices are expected to keep operating costs and franchise fee revenue stable.
Industrial Product Price Index (%)	1.5	0.9	Price growth for finished products would be lower than the previous budget cycle, due to slower recovery in demand than supply
Raw Materials Price Index (%)	-1.1	-1.0	Raw material prices would remain weak in this new phase of increased protectionism.
Alberta Average Wage Rate Increase for All Industries (%)	0.0	1.2	Eventual economic expansion and job growth would lead to moderate rates of nominal wage inflation.

Forecast Implications

Averages: Actual (2015 to 2018) vis-à-vis Forecast (2019 to 2022) Budget Cycle

Economic Indicator	Actual Previous City of Calgary Budget Cycle [2015 to 2018] Average	Forecast Current City of Calgary Budget Cycle [2019 to 2022] Average	Forecast Implications
Forecast			
Calgary Economic Region			
Real Gross Domestic Product Growth (%)	0.1	0.5	Recession hit Calgary in both budget cycles, with the COVID-19 driven one deeper but shorter. The pace of growth in Calgary's regional economy is slightly higher this cycle than last one, but still behind the rate of growth for its major trading partners
Total Employment ('000 persons)	878.5	893.9	Larger employment base brings increased consumer base and demand for housing in the region.
Total Employment Growth (%)	1.0	0.4	Job growth would be slower in the current budget cycle than the previous one.
Unemployment Rate (%)	7.9	9.6	Higher unemployment rate is expected due to job creations lower than labour force increases in the region. Relative high unemployment rate would reduce the pressure of competing for skilled workers, but increase demand for social services.
Calgary Census Metropolitan Area (CMA)			
Housing Starts ('000 units)	11.2	11.3	Housing investments on average are expected to keep the same level this budget cycle as the last one.
Inflation Rate (%)	1.5	1.6	The local inflation rate would keep increases in the cost of living to below the two per cent threshold.
Non-Residential Building Construction Inflation (%)	-0.1	-0.1	The rate of escalation for construction costs would be the same the current cycle compared to the last one.
City of Calgary			
Demography			
Total Population ('000 Persons) *at the end of the cycle*	1,244.9	1,313.9	Larger total population means demand for municipal services would be higher and the residential property tax base would increase.
Total Population Growth (%)	1.5	1.4	The pace of population growth would be slightly slower due to low oil prices impacting the local economy and border closures in response to the pandemic. Yet Calgary is relatively better off than other Alberta municipalities and as such should see increased intra-provincial migration.
Net Migration ('000 Persons)	7.8	9.9	With international borders closed international migration will be reduced during the pandemic. But on average, net-migration level is higher this budget cycle than the previous one.
Household Formation ('000 Units)	7.9	6.5	The rate of household formation would decrease as the population ages and the number of natural deaths starts to accelerate more than the number of births.
Real Estate			
Residential Market			
Housing Starts ('000 units)	9.1	9.3	The City's revenues from residential building permits would be stable.
Average Residential MLS Sale Price (% change)	-0.3	-1.9	Housing market is titled towards a buyer's market.
Building Permits (city) ($billion)	5.0	4.5	The City's residential taxable assessment base would grow more slowly.
Non-Residential Market			
Downtown Office Vacancy Rate (%)	18.9	26.4	The downtown office vacancy rate would remain elevated compared to the average for the previous cycle.

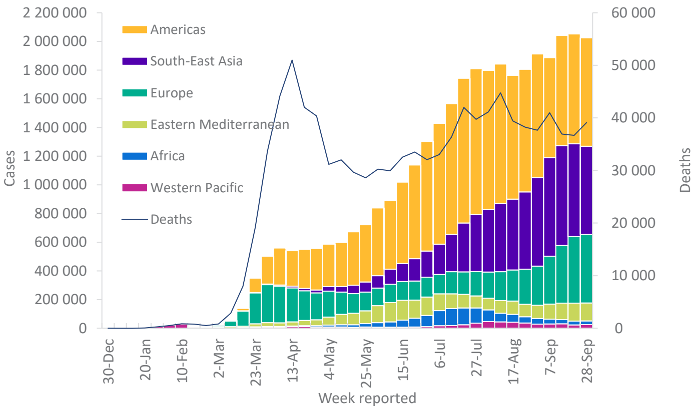
Numbers may not add up due to rounding.

Forecast (Context)

Context:

Relaunch after the COVID-19 lockdown

Number of COVID-19 cases reported weekly by WHO Region, and global deaths, 30 December 2019 through 04 October 2020



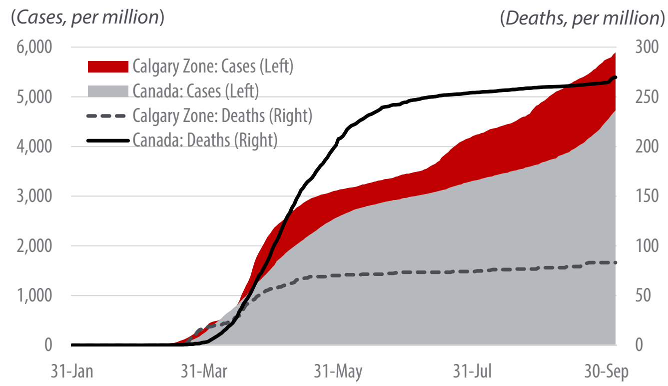
Source: WHO Weekly COVID-19 Epidemiological Update, 5 October 2020

The COVID-19 pandemic in spring 2020 triggered unprecedented government policy responses globally to protect human lives by closing non-essential businesses, schools, universities, and government facilities. These lockdowns helped contain the spread of the coronavirus but pushed the global economy into its worst recession since the Great Depression in the 1930s. In Canada, following a 2.1 per cent decline in Q1 2020, real GDP in Q2 2020 fell by another 11.5 per cent, the most profound quarterly decline in 60 years. Between February and April 2020, total employment in Canada declined by 3 million persons, representing 9.7 per cent of the country's 31 million working-age population. Of those job losses, 1.9 million were full-time positions.

The COVID-19 pandemic has been with us for nine months. It is not expected to disappear until vaccines or treatments are widely available, which is not expected any time soon. Global new cases continue to increase largely due to community transmission, while death rates have stabilized and begun to decline. For the week ending Oct 4, the World Health Organization (WHO) reported over 2 million new COVID-19 cases and 39,079 new deaths. There has been an accumulated total of 34.8 million COVID-19 cases and over one million (1,030,738) deaths worldwide so far.

The cumulative COVID-19 cases per million population reached 4,310 in Canada by Oct 4, much lower than the 21,922 per million in the U.S. As a result, the Canadian Government extended its border closure to non-essential travel from the U.S. until at least Oct 21. At the same time, the official Global Travel Advisories from the Federal Government are still in place, asking Canadians to avoid non-essential travel and all cruise ship travel outside Canada until further notice.

Number of COVID-19 Cases and Deaths (per million) for Calgary Zone and Canada, 31 January 2020 through 4 October 2020



Source: Government of Alberta, Government of Canada, Statistics Canada, Corporate Economics.

Declining COVID-19 death rates amidst massive job losses and business closures made society coexisting with the coronavirus a reality for decision-makers. Means to minimize COVID-19 fatalities while opening up economies have been sought. Starting from May 2020, governments worldwide gradually reopened their economies in phases, even with the pandemic intensifying and new cases increasing in many countries and regions.

On May 14, the Alberta Government relaunched its economy along with the economic reopening of other provinces in Canada. By the end of August, Alberta was in stage 2 of its relaunch, while Ontario, British Columbia, and Quebec had all reopened to stage 3[2]. The City of Calgary ended its State of Local Emergency (SOLE) on June 12, one month later than the province's relaunch and three months after declaring SOLE on March 15.

Governments everywhere recognized the need to balance the efforts of saving people's lives with protecting their livelihoods. Mandatory public health measures were introduced to prevent the spread of coronavirus while economies gradually reopen. In Alberta, the provincial government required a physical distancing for two meters in all three relaunch stages. In Calgary, City Council passed a face covering bylaw, requiring the wearing of face coverings or masks in indoor public areas and public vehicles from Aug 1.

2 Phase 3 is defined differently in different provinces. For example, in BC there are 4 stages defined here: B.C.'s reopening stage.

Forecast (Context)

Monetary Policy Signals from the Bank of Canada

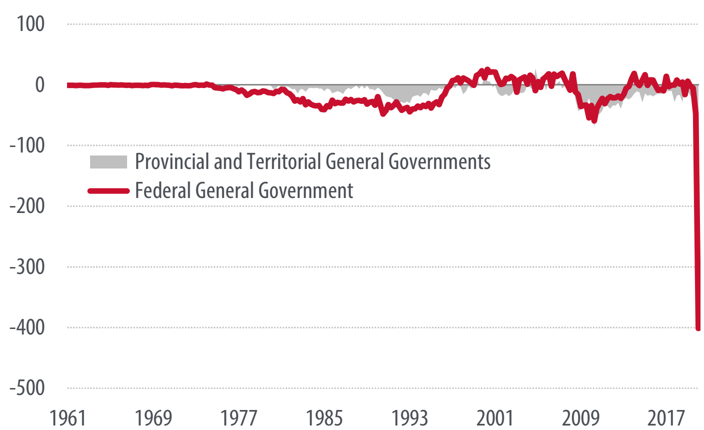
The Bank of Canada (BoC), in its July 15 Monetary Policy Report and Sep 9 interest rate announcement, sent an overriding message to Canadians that the Bank was committed to providing monetary stimulus for an extended period until the middle of 2022. The BoC's central scenario assumes that there will not be a broad-based second wave of the pandemic in Canada or globally, but regional outbreaks may lead to local lockdowns.[3] Observing the recent near zero CPI inflation and changing consumer spending patterns, the BoC was concerned about the downward pressure on inflation from a recovery with demand weaker than supply. With its policy interest rate already close to the effective lower bound of 0.25 per cent, the BoC has pledged to continue purchasing at least $5 billion of Canadian government bonds each week until a sustainable economic recovery is reached. The policy actions taken by the Bank of Canada are aimed to lower domestic interest rates and make it cheaper for households to borrow and businesses to invest, which will contribute to a sustained economic recovery.

Unprecedented Government Deficits due to the Policy Responses to the COVID-19 Pandemic

Unprecedented fiscal policy responses to the COVID-19 pandemic from the three levels of the Canadian Government have resulted in record-breaking government deficits since the start of the data in 1961. The same deficit situation applies to all governments worldwide, in both advanced and developing countries.

Federal and Provincial Governments Net Lending/Borrowing Positions in Canada

($billion, Q2 1961-Q2 2020)



3 Bank of Canada *Monetary Policy Report* July 2020, page 2.

On July 8, the Federal Government of Canada provided an update of the economic and fiscal outlook to the end of the current 2020-2021 fiscal year. Compared to last year's estimates, the federal government projected that the COVID-19 driven economic recession would lower the country's nominal GDP level (a broad measure of the country's tax base) by $231 billion in 2020, and $153 billion in 2021. The federal government estimated its total deficit for this fiscal year to hit $343 billion (15 per cent of the 2019 nominal GDP level of $2,304 billion), primarily due to the $228 billion COVID-19 Economic Response Plan spending (including the Canada Emergency Response Benefit and Canada Emergency Wage Subsidy programs). The dual impact of COVID-19 and oil price collapse also reduced the federal budgetary revenue and increased its regular program spending, adding another $81 billion to the 2020-2021 fiscal year deficit.

The Alberta Government, in its August 27th Fiscal Update, estimated a budget deficit of $24 billion in the 2020-21 fiscal year, including the $3 billion additional operating expense from the COVID-19 Recovery Plan. The province's net financial debt by the end of the current fiscal year (March 31, 2021) is estimated to be $67 billion, with an increase of $27 billion from the greater borrowing required to deal with the economic and fiscal impacts of the COVID-19 pandemic. Alberta's net debt to GDP ratio is expected to reach 22 per cent, up from 11.6 per cent in the 2019-2020 fiscal year.

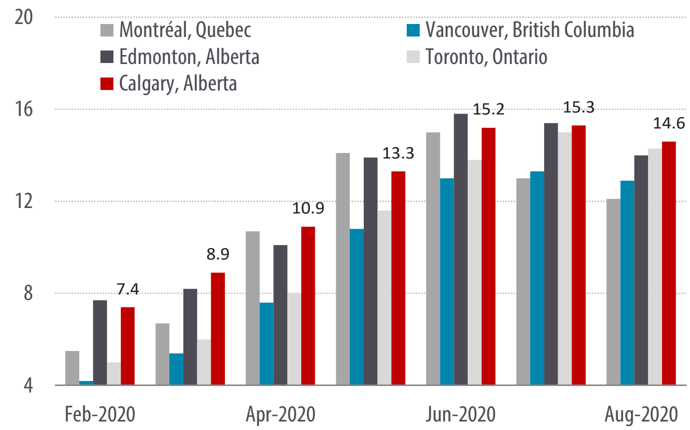
The City of Calgary, in its Sep 14 report to Council, estimated a deficit of $171 million by 2020 year-end. The projected deficit was a combination of $251 million lost revenue due to the COVID-19 lockdowns, partially offset by $81 million in expenditure savings. From March 12 to Aug 24, the COVID-19 pandemic has cost the city $117 million in lost revenue from the closures of recreation facilities, less demand for transit, and reductions in building permits. At the same time, incremental expenses added up to $19 million. As a result, The City has reported an $81 million deficit in the first eight months of 2020, even after $55 million savings were found through staff reductions and cost-cutting. In September, the province announced its plans to spend about $300 million of the $1.3 billion allocated through the federal government's Safe Restart Agreement on municipalities to help with transit initiatives and to recover some operating losses. Nonetheless the City of Calgary has to make difficult budgetary decisions to pay for the current year's deficit and balance the budget within the next four years.

Forecast (Context)

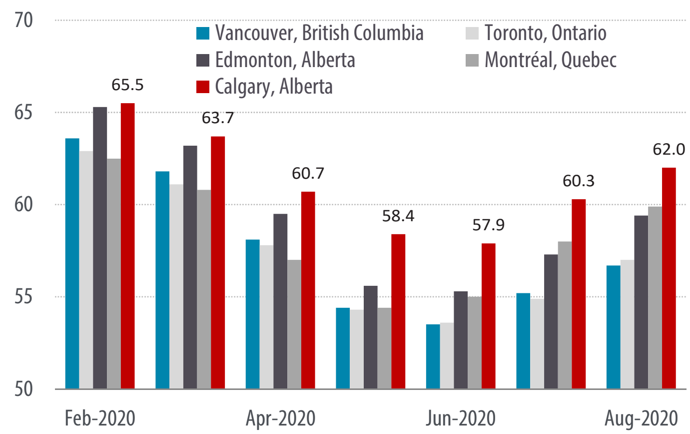
Calgary's Recovery from the Dual Impact of COVID-19 and Collapse of Crude Oil Prices

The world crude oil markets so far have recovered better than we expected in our Spring Outlook this year. WTI prices bounced back from the bottom of the monthly average of US$16.6/bbl in April 2020 to US$42.4/bbl in August 2020. Over the same period, Western Canadian Select (WCS) prices recovered from a monthly average of US$6.8/bbl in April to US$31.2/bbl in August. However, both crude oil prices are still much lower than last year's averages of US$57/bbl and US$44.3/bbl, respectively.

Unemployment Rates in Largest Canadian CMAs
(per cent)



Employment Rates in Largest Canadian CMAs
(per cent)



Calgary, as the headquarter city of Canada's oil industry, has been hit hard by the dual impact of the COVID-19 pandemic and the collapse of crude oil prices. Job losses in Calgary lasted four months from February to June, and the unemployment rate peaked in June.

By August, more than half of the jobs lost at the start of the pandemic returned. The unemployment rate, defined as percentage of labour force who are currently unemployed, in the Calgary CMA was still the highest among major Canadian CMAs; however, the gaps between Calgary and other CMAs narrowed. The COVID-19 lockdowns have pushed up unemployment rates in all big Canadian CMAs: in August, the unemployment rate was 14.6 per cent in Calgary, compared to 14.3 per cent in Toronto and 12.9 per cent in Vancouver.

One strength of Calgary's labour market over the years is its highest labour market participation rate (percentage of working age population who are either working or looking for work) and employment rate (percentage of working age people who are working) among all Canadian CMAs. Bouncing back from the lowest point of 58 per cent in June, the employment rate in the Calgary CMA was 62 per cent, only 3.5 percentage points lower than the pre-pandemic level in February. During the same period, CMAs like Toronto and Vancouver saw more significant drops in employment rates. As job recovery in contact-intensive service sectors remains depressed after reopening, Calgary, with small hospitality, travel, and tourism sectors, may fair better than other large Canadian CMAs like Toronto and Vancouver.

In terms of the per cent of the population that is working, called the employment rate, Calgary's number is exceptionally high compared to other Canadian cities. It is so high that even when Calgary has a high unemployment rate (lots of people looking for work) Calgary still has a higher proportion of its total population employed than anywhere else. The recent pandemic did not change this, nor did the oil price slide, which started back in 2015.

Outlook Uncertainty Continues

Six months after the declaration of COVID-19 as a global pandemic, extreme uncertainty around Calgary's economic outlook persists. The coronavirus continued to spread across the world by community transmission. A widely available COVID-19 vaccine is not expected until 2022[4], even with over 169 COVID-19 vaccine candidates currently under development in the world and 26 of them in human trial phases. The fear of a second wave that could trigger a second lockdown has deterred the recovery in contact-intensive industries.

4 Bank of Canada Monetary Policy Report -July 2020

Forecast (Assumptions)

The COVID-19 driven recession impacted Calgary's economy unevenly, hitting those contact-intensive industries[5] especially hard. The recovery in Calgary after the relaunch has been uneven for different sectors, as expected. The stalled demand recovery for fuels, especially jet fuels, has brought new uncertainty in OPEC+ future strategies which will have economic implications for oil-producing regions like Alberta. It is speculated that the COVID-19 crisis might have significantly accelerated the timeline of peak oil demand, which raises the question: will the short-term pain in production cuts lead to a long-term gain in market share for OPEC?

Forecast Assumptions (for two scenarios)

Due to the uncertainty we are facing, especially with risks tilted to the downside, we examined two scenarios in this fall outlook: a base-case scenario and a worse-case scenario. We base our outlook scenarios on the following assumptions regarding whether there will be a broad-based second wave that triggers another economic lockdown.

Base-case scenario

Our base-case scenario is what we consider most likely to happen when writing this fall outlook. The base-case assumes localized outbreaks of the coronavirus may happen, but there will not be a broad-based second wave of COVID-19 that threatens the health systems worldwide and triggers another global lockdown. Vaccine or effective treatments will be widely available, and the COVID-19 pandemic will run its course by the middle of 2022.

Fiscal policy actions taken by the three levels of the Canadian government are sufficient to prevent widespread bankruptcies, permanent job losses, and system-wide financial strains. The Bank of Canada can keep its core interest rate low without concern for the risk of high inflation in the next two years. Consumers and businesses regain confidence with the help of low mortgage rates and borrowing costs. There is no structural damage to Calgary's economy from the COVID-19 pandemic.

Worse-case scenario

In a worse-case scenario, we assume a widespread second wave of COVID-19 eventually results in a broad-based reversion in reopening stages from stages 2-3 to stage 1, or even a closure of all non-essential businesses again in Canada and its major trading partners. The global economy will be hit harder with prolonged weak demand and low consumer and business confidence. There are significant job losses, business closures, and structural damages to global supply chains.

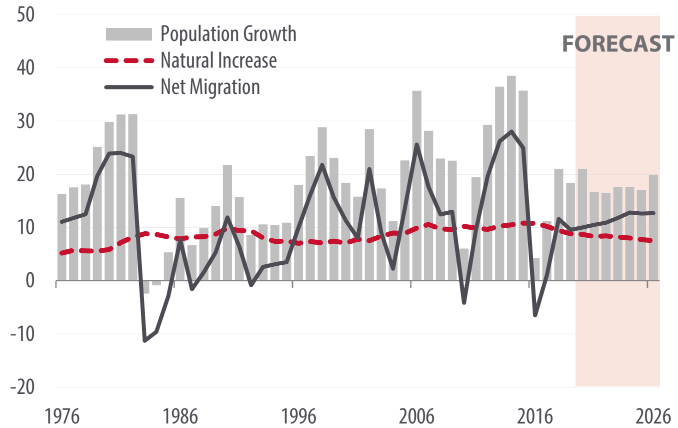
5 Federal Reserve Bank of St. Louis "Social Distancing and Contact-Intensive Occupations"

Forecast (Base-case)

Forecast: City of Calgary

Population Growth

Population Growth by Components
(thousands of persons)



Source: The City of Calgary Civic Census, Corporate Economics.

The total population in the city of Calgary is estimated to be 1,306,700 persons in 2020, an estimate we base on the Alberta government's quarterly population estimates and migration by source data[6]. The estimated total population in 2020 is about 3,000 persons higher than what we had predicted in 2019, on the strength of slightly higher net migration than anticipated last year. Compared to 2019, the city's total population increased by 21,000 persons, with 12,300 from net migration and 8,700 from natural increases (births minus deaths).

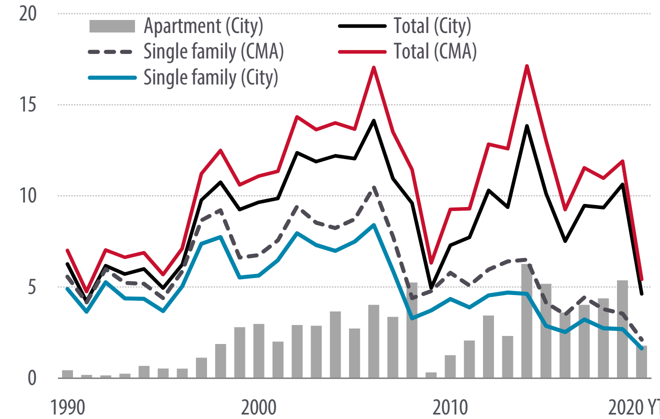
Recent observations in regional labour markets indicate Calgary's labour market deterioration was consistent with other major Canadian cities following the double economic impacts from the COVID-19 shutdown and crude oil price collapse early this year. As a result, we do not anticipate excessive out-migration in the forecast period similar to what happened in the early 1980s.

We expect the city's population growth to be lower in 2021 compared to 2020. From 2021 to 2025, we forecast population growth in the city of Calgary to average at 17,600 persons per year, averaging 9,500 from net-migration and 8,100 from natural increases.

Residential Real Estate Market

Housing Starts

City of Calgary and Calgary CMA: Housing Starts
(thousands of units)



Source: CMHC, Corporate Economics.

Housing starts in the city of Calgary have been increasingly driven by the investment in apartment building units in recent years. Over the past thirty years (1991-2019), the share of single-family to total housing starts has been steadily declining in the city, from 87 per cent to 25 per cent; the ratio of apartment units to total housing starts increased from 4 per cent to 51 per cent.

The shift in the residential market is due to the increasing costs of single-family houses in a city that has experienced the fastest population growth in the country. The same trend applies to Calgary's neighbouring cities and towns, where the share of single-family to total housing starts in the Calgary CMA declined from 87 per cent in 1991 to 30 per cent in 2019.

In 2020, the dual economic impact of COVID-19 and crude oil price collapse has negatively affected the housing starts in the city of Calgary and the Calgary CMA. From January to August 2020, the number of housing starts in the city of Calgary was 4,618 units, only 43 per cent of last year's total. In the first eight months of this year, single-family housing starts in the city accounted for 35 per cent of the total housing starts, much higher than the 29 per cent in the same period last year. The year to date data may reflect the fact that apartment builders are more cautious in a recession.

We expect the number of total housing starts in the city of Calgary to drop to 8,500 units in 2020, lower by 20 per cent

6 Corporate Economics has been using the annual City of Calgary civic census data as the premier source of information in preparing our annual population forecast for many years. This year, the COVID-19 pandemic put an abrupt end to the 62-year run of Calgary Civic Census since it started in 1958. As a result, we have to use alternative demographic data for the 2020 population estimate. We used Alberta quarterly population estimates, and migration by source information, to estimate the net migration to the City of Calgary. We also used the number of births and deaths in the Calgary area to estimate the total population in Calgary.

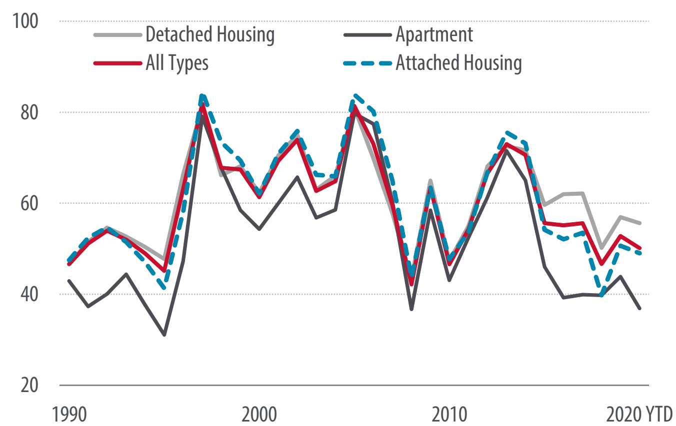
Forecast (Base-case)

from last year's 10,600 units. With the gradual normalization of the residential market, we expect housing starts in the city to reach 8,900 units in 2021 and average 9,300 units a year in 2022-2025.

Residential Resale Market

City of Calgary: Sales/New Listing Ratio by Type

(per cent)



Source: CREB, Corporate Economics.

The residential resale market in the city of Calgary has been in a balanced market for several years (defined as a sales-to-new listing ratio of 40-60 per cent). Over the past three decades, the city's residential resale market has been a seller's market for 15 years, when we consider a sales-to-new listing ratio of more than 60 per cent as indicative of a buyer's market.

All types of housing markets move together over time in Calgary, with the apartment resale market diverging more frequently from the overall market trend. In the past 30 years, only the apartment resale market in Calgary dipped into a buyer's market shortly in the early 1990s and in 2008, when the apartment sales-to-new listing ratio was lower than 40 per cent.

In 2019, the average MLS price for all types of dwellings sold in the city of Calgary was $457,000, comprising $532,600 for detached houses, $382,000 for attached houses, and $276,000 for apartments. This year due to the economic impact of COVID-19 and oil price collapse, the MLS prices between January and August averaged at slightly lower levels at $449,800 for all types of properties, $530,600 for detached houses, $372,500 for attached homes, and $255,800 for apartments.

We expect the resale housing price to drop by 3.1 per cent in 2020, recovering in the next four years before prices are back to the pre-COVID-19 levels beyond 2025.

Non-residential real estate market

Downtown Office Market

Calgary's downtown office sector continues to suffer from the double hit of low oil prices and the COVID-19 pandemic. Some firms are ready to get people back into the office this fall while others are taking a "wait and see" approach while giving employees the option to continue working remotely. The unemployment rate in Calgary continues to be elevated even after the lockdown is over and Alberta is in stage 2 of the economic relaunch. In the base-case we anticipate increased vacancies this year, peaking near 30 per cent next year. Remote working, reduced energy market activity, higher unemployment and a reluctance to hire in a world of uncertainty combined to push vacancies up. We are now in a prolonged period where vacancies are expected to linger over 25 per cent in Calgary's downtown core.

Calgary has been in a prolonged period of unusually high downtown office vacancy. Originally it was brought on by overbuilding, but recent job losses due to lower oil prices and the pandemic have worsened the situation. At this stage, it seems that encouraging alternative uses of downtown office space is unlikely to alter the rental landscape significantly.

Non-residential Building Price Inflation

Our expectation for 2020 in the Spring Outlook was for significantly reduced economic activities, including in the construction industry, as we were entering a lockdown at the time. As it turned out, the Province declared commercial construction activity an "essential service" and construction did not stop due to the pandemic. In particular, construction of the ring road and cancer centre did not pause for the lockdown. As a result, our expectation for a dramatic deflation in construction activity in the first part of 2020 did not materialize.

There are some minor changes to our forecast in 2021 through 2025 due to the following changes:

- The outlook for oil prices is up significantly compared to the Spring Outlook. Energy prices form a significant component of building costs, so when energy prices go up construction costs tend to rise.
- Interest rates have fallen dramatically lately, with prime corporate rates from almost 4 per cent at the start of the pandemic to nearly half that level today. Dropping interest rates tend to lower the non-residential building costs.
- The employment outlook has worsened compared

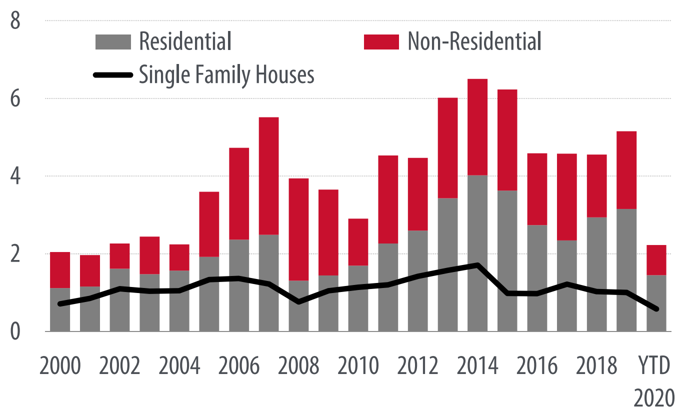
Forecast (Base-case)

to the Spring Outlook. Lower employment tends to result in reduced demand for commercial construction, particularly for smaller projects like manufacturing and retail. Reduced construction activity tends to result in lower construction wages and lower construction costs.

The net impact of these is slightly lower inflation in non-residential building construction price between 2021 and 2025, from an annual average of 4.6 per cent in our Spring Outlook to 3.8 per cent in our Fall Outlook.

Building Permits

City of Calgary: Building Permit Value by Type
(*billions of dollars,* 2000 - August 2020)



Source: The City of Calgary, Corporate Economics.

The total value of building permits in the city of Calgary has been driven mainly by investment intentions in the residential market, supported by the steady growth of the population. Since 2000, there have been only three years (2007-2009) when the value of residential building permits was lower than 50 per cent of the value of total building permits. The share of residential to total building permit value increased from 55 per cent in 2000 to 61 per cent in 2019. From January to August 2020, the residential building permits value was $1.4 billion, representing 65 per cent of the YTD total building permit value of $2.2 billion.

The non-residential building permit value in the city of Calgary ranged from $1.6 billion to $2.2 billion a year in 2016-2019, after the recent peak of $2.6 billion in 2015. Investment intentions in commercial buildings accounted for most of the non-residential building permit value. Over 50 per cent of the commercial investment was in warehouses, and in office buildings for consultants, doctors, insurance companies, and banks. The year-to-date non-residential building permits value, as of August, was $0.8 billion, representing 35 per cent of the YTD total building permit value of $2.2 billion.

We forecast the total value of building permits in the city of Calgary to reach $4 billion in 2020, 23 per cent lower than the level last year. With the gradual normalization post-COVID-19, we expect the building permit value to average at $4.4 billion a year in 2021-2025.

Forecast: Calgary Economic Region (CER)

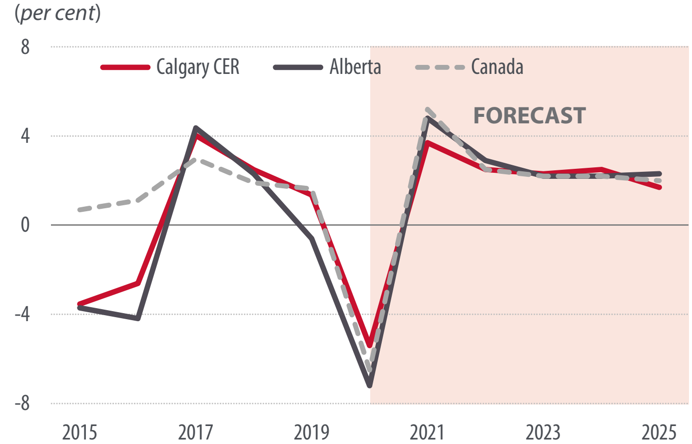
Real GDP Growth in the CER

Real GDP in the CER is forecast to contract by 5.4 per cent in 2020, triggered by the COVID-19 lockdowns and collapse of crude oil prices that began in March of this year. The annual average decline of economic activities in this short-lived recession is expected to be deeper than those in the 2015-2016 oil-price-driven recession.

Over the summer, household spending rebounded sharply in Calgary, driven by stronger than expected pent-up demand in goods consumption and housing investment with the availability of income support such as Canada Emergency Response Benefit (CERB). Retail sales increased by 4 per cent year-over-year in July in most categories except gasoline stations, clothing and clothing accessories stores, and home furnishing stores. In August, the city's residential building permits value increased by 28 per cent year-over-year.

Recent evidence shows that business confidence recovered slower than consumer confidence after the lifting of COVID-19 lockdowns. We expect the real GDP growth in the CER to bounce back at 3.7 per cent in 2021, with total economic activities not returning to the pre-COVID level until 2022. CER's annual real GDP growth rate is expected to average at 2.3 per cent in 2022-2025.

Real Gross Domestic Product Growth Rates
(*per cent*)



Source: Statistics Canada, Corporate Economics.

Textbox 1. Why GDP or Human Development Index are not the best measure of Well-being for Society?

Gross domestic product (GDP) has traditionally been the measure of progress in an economy. It captures the production activities of the final market value of goods and services generated in a given geographical location, in a given period. There are three methods one can capture the final market value of goods and services by measuring activity through

- production, which utilizes information on inputs to production and the existing technology,
- income allocation to households, non-profit organizations, businesses and government from production,
- expenditure allocation across the household and non-profit organization consumption, private business investment, government spending and exports less imports.

GDP captures economic activity but by no means measures people's wellbeing in society. Though GDP per capita is used as a measure of average living standards and economic wellbeing in a society, it does not capture other essential components that measure quality of life. GDP ignores the value of unpaid time and does not account for leisure, parenting, housekeeping, the social impact of crime, drug use, and family breakups through divorce or incarcerations or untimely loss of a loved one. However, GDP is a measure of expenditures, so expenditures from divorce and incarceration are captured on the one hand but the social impact/cost lost on the other hand. To have wealth reflect/capture relevant characteristics which contribute to societal well-being a distribution of capital stock-type is identified. To measure social wealth which is a broad measure of societies wealth, not only should we consider produced or manufactured capital and human capital, but also, natural capital, social capital and environmental capital. The aggregate sum of the capital stock-type captures the appropriate capital stock for a society.

The United Nations developed a Human Development Index (HDI) to reflect the quality and well-being to account for human attributes necessary to reflect a country's development. HDI has three principal characteristics: (1) Long and healthy life, (2) Knowledge, (3) A decent standard of living. The indicator used to capture (1) is life expectancy at birth, to capture (2) is years of schooling for persons aged 25 or more and expected years of schooling for children of school entering age, and to capture (3) is gross national income per capita at purchasing power parity.

This HDI is undoubtedly a step in the right direction, though the pillars used to construct the index do not capture debt, income inequality, environmental conditions, to mention a few. This index was improved to account for inequality across each dimension, defining the Inequality-adjusted Human Development Index (IHDI).

In 1994, a genuine progress indicator (GPI) was developed for the United States economy to highlight the disconnect between GDP growth as a measure of progress and GPI. The new measure was defined on the backdrop of the above-mentioned capital stock-type. The researchers used data from 1950 to 1997 to show the startling divergence of the two measures, GDP and GPI. While Real GDP per capita increased over this time horizon, GPI per capita decreased since mid-1970. The discrepancy in the measures had reached its maximum in the 1990s. Real GDP per capita grew at 1.4 per cent while real GPI per capita decreased at 2.7 per cent during this period.

Textbox 1. Why GDP or Human Development Index are not the best measure of Well-being for Society? (...continued)

In 2012, a publication by the United Nations University International Human Dimension Program (UNU-IHDP) and United Nations Environment Program (UNEP) introduced a sustainability index to represent wellbeing's long-term sustainability. A significant improvement from HDI and GDP in capturing a nation's wellbeing is defined as an Inclusive Wealth Index (IWI). The measure is fundamentally based on the capital asset distribution across manufactured or produced capital, natural capital, human capital and social capital of each country.

Based on the 2012 publication of the Inclusive Wealth Report, 25 per cent of the countries that showed growth in GDP and HDI exhibited negative growth in IWI. The negative growth path implied that these countries were on unsustainable growth paths. The challenge to implement IWI is how to quantify natural capital and social capital stock, and their corresponding stock values.

The GPI index, which captured a holistic picture of the United States social economy, was not aggressively pursued by many. The Kyoto Protocol in 2005 extended the United Nations 1992 framework on responsible environmental stewardship (morphed into the Paris Climate Agreement in 2016). The level of social and environmental awareness heightened by social media prevalence and visible changes in frequencies of natural disasters and alike across the globe has added to the urgency of appropriately valuing natural, environmental and social capital. By valuing capital stock-types appropriately, the investments required to replenish stock depreciation are better understood, and the cost of production of goods and services appropriately placed.

The challenges of capital stock-type measurement on a regional level are typically the same as on national level, but there are nuances. The fundamental issue of capital stock-type evaluation rests on estimating shadow prices for non-traded market assets. The shadow price reflects the marginal unit cost of the asset in question.

From a regional perspective, we need to estimate the shadow prices (maximum willingness to pay by "an agent" or "buyer" for a unit of stock) of the social and the natural capital stocks within the city. Just as we use property assessment to measure some portion of wealth of a region, we can do it for our roads, bridges, bow-river, water-sheds, reservoirs and alike. The challenge is to identify all stock types and corresponding price per unit stock (shadow price) in the region.

The difficulties in measuring some forms of capital stock (typically, non-market traded) are estimating the maximum willingness to pay for a unit of capital stock (defined here as a shadow price/ encapsulating all externalities, thus; a social marginal cost/ true cost of producing/utilizing a unit of capital stock). The nuances reference in the text relates to the natural stock endowment characteristics or lack thereof in various regions.

Sources:

1. Inclusive wealth report 2012: measuring progress toward sustainability
2. Inclusive Wealth Report 2018 Methodological Annex: Conventional Approach
3. Human Development Reports: Human Development Index (HDI)
4. The Genuine Progress Indicator - A Principled Approach to Economics

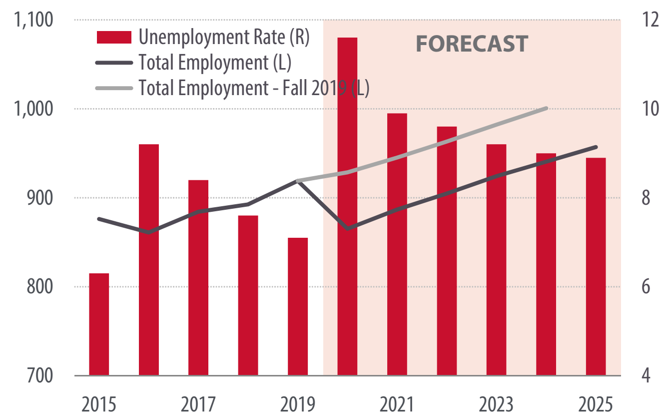
Forecast (Base-case)

CER's Labour Market

Calgary's job market started 2020 on a positive note. Year-over-year total employment in February continued to grow for the 17th month since October 2018. However, the COVID-19 pandemic declared in March drastically changed the labour market direction. Mandatory lockdowns of non-essential businesses and closures of public facilities, schools and universities caused unprecedented temporary layoffs. From February to May, 89,300 persons lost their jobs in the CER, about 10 per cent of the total employment in all industries. Not surprisingly, almost all the layoffs were in the services-producing sector, especially in the accommodation and food services (-25,400), retail trade (-22,300), and air, transit and sightseeing transportation (-10,200) industries.

CER: Total Employment vs. Unemployment Rate

(thousands of persons) *(per cent)*



Source: Statistics Canada, Corporate Economics.

Since the economic relaunch in Calgary, CER's labour market gained back 52,800 jobs between May and August. Still, from February to August, CER's total employment declined by 36,500 persons, with 9,100 gains in goods-producing sector partially offsetting 45,600 losses in the services-producing sector. Industries fared well during this crisis were low contact-intensive industries like manufacturing (+10,600) and those industries serving remote work and online shopping, including wholesale trade (+12,000), truck transportation, postal and courier services, and other transportation and storage (+7,200).

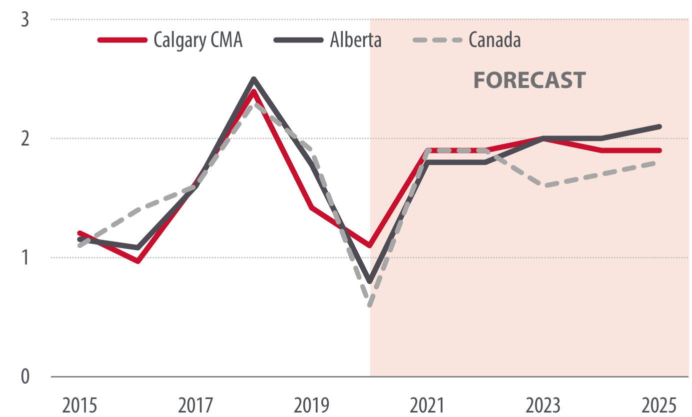
Like all other major Canadian urban centers facing similar labour market challenges, Calgary will experience an elevated unemployment rate in the next few years. We forecast a drop of total employment in the CER to 865,200 persons in 2020, 53,800 persons lower than the 2019 level. We do not foresee the region's total employment to return to its pre-COVID level until 2023.

Consumer Price Index (CPI) Inflation

Consumer price inflation in Calgary and Alberta had been lower than that in Canada for most of the time since the oil price driven recession in 2015-2016. Starting in 2020, the Calgary CMA has seen higher year-over-year CPI inflation in several months, especially in the summer months. Part of the reason for a higher than national average inflation in Calgary was the robust rebound in housing activities in the city after its relaunching from COVID-19 lockdowns. The other reason is that in Calgary and Alberta, consumer price deflations in gasoline, energy, recreation, education and reading were less severe than those in the rest of the country. We forecast the CPI inflation in the Calgary CMA to average at 1.1 per cent this year, rising to 1.9 per cent in 2021-2025 due to the price stickiness of discretionary consumer goods and services in the region.

Consumer Price Inflation Rates

(per cent)



Source: Statistics Canada, Corporate Economics.

Textbox 2. COVID-19 and the Digital Economy

A digital transformation has been occurring in the global economy for more than a decade. With broadband internet and wireless mobility more accessible than ever, opportunities for individuals and businesses to interact through digital means have multiplied. Economic activity that produces or relies upon digital technologies and platforms has correspondingly increased and can be described using the concept of the digital economy. A broader view of the digital economy is defined in an OECD report[7] in 2015.

"A digital economy is the result of a transformative process brought by information and communication technology (ICT), which has made technologies cheaper, more powerful, and widely standardized, improving business processes and bolstering innovation across all sectors of the economy… As digital technology is adopted across the economy, segmenting the digital economy is increasingly difficult. In other words, the digital economy is increasingly becoming the economy itself."

Rather than being limited to the technology sector, digital goods and services now permeate diverse industries such as healthcare, finance, education, retail, manufacturing, and entertainment.

The ongoing COVID-19 pandemic has necessitated changes in the daily activities of businesses and individuals that have brought the digital economy into the spotlight. In accordance with government measures implemented to slow the spread of the disease, many activities that were once conducted in-person have transitioned to digital platforms. In particular, the pandemic has increased reliance on digital infrastructure for remote communication and has sparked a shift towards e-commerce. Recent reports from Statistics Canada provide information that can be used to analyze this sudden digital transition and its long-term implications for other areas of the economy.

One very visible effect of the beginning of the COVID-19 crisis in Canada in March 2020 was the transition of many workers to remote work arrangements that rely on digital communication technologies. While a full 2.8 million workers were absent from work during the week of March 22 to 28 due to COVID-19, an even larger number shifted to working from home. During this week in March, 4.7 million Canadians who did not previously work remotely transitioned to working at home. Following this massive movement of workers from traditional workplaces to home offices, 6.8 million individuals worked from home, representing nearly 40 per cent of the Canadian workforce.

While the measures currently in place to contain the COVID-19 pandemic are temporary, there is evidence that some of the shift to remote work arrangements will be permanent. Prior to the pandemic, on Feb 1, 2020, 16.6 per cent of Canadian businesses reported having 10 per cent or more of their workforce working remotely. By May 29, 2020, in the midst of the crisis, this proportion increased to 32.6 per cent. Following the pandemic, while many workers will return to their regular workplaces, a full return to the numbers seen in February 2020 is not anticipated. 22.5 per cent of businesses report expecting to have at least 10 per cent of their workers working remotely from home following the pandemic, an increase of 6 percentage points from pre-pandemic levels.

Another immediate impact of the onset of COVID-19 containment measures was a surge in e-commerce sales. In mid-March, many brick-and-mortar retailers in Canada closed their doors. Those that remained open implemented policies to limit the number of customers in the store. Under these conditions, many Canadians turned to digital means of shopping. Thanks to digital technologies, numerous kinds of retail items can be purchased online and received via delivery, curbside pickup, or in-store pickup. While many traditional retailers offer online shopping options, online-only retailers have also arisen in Canada. The already rising trend of e-commerce in Canada rapidly accelerated during the first few months of the pandemic. In April 2020, e-commerce sales recorded a 63.9 per cent monthly increase, in contrast to a 25.3 per cent decrease in in-store

7 OECD (2015) "Addressing the Tax Challenges of the Digital Economy, Action 1 – 2015 Final report", OECD/G20 Base erosion and Profit Shifting Project, OECD Publishing

Forecast (Base-case)

Textbox 2. COVID-19 and the Digital Economy (...continued)

Indexed Monthly Retail E-commerce Sales vs. In-store Sales
(Index, January 2016 = 100)

Source: Chart 1 from Statistics Canada Report "Retail e-commerce and COVID-19: How online shopping opened doors while many were closing".

sales.[8] While in-store sales began to recover, e-commerce sales reached a new high of $3.9 billion in May 2020, more than double the amount seen in May 2019.

There is potential for the COVID-19 pandemic to have permanent effects on retail e-commerce. Hundreds of major retail store locations in Canada are already permanently closing in the face of the pandemic, with more closures expected as the crisis continues. In contrast, Shopify, a Canadian e-commerce platform provider, reported a 71 per cent increase in new online stores created in the second quarter of 2020 compared to their first quarter results. As Canadians become adjusted to frequenting online rather than physical stores, e-commerce will remain relevant even after the pandemic.

The transition to working and shopping from home as a result of the pandemic will have lasting implications for Calgary's economy. As brick-and-mortar retail stores are replaced by e-commerce and as businesses have more employees work from home and require less office space, demand for commercial real estate will be negatively impacted. This will create additional challenges in the market for downtown office space in Calgary, which already faces a vacancy rate of 24.9 per cent as of June 2020. In contrast to the bleak outlook for retail and office space demand, the rise of e-commerce will create more demand for warehouses and distribution centres, improving the picture for industrial real estate demand.

The shift towards e-commerce will also have long-term effects on the labour market. The retail sector has been hard hit by the pandemic, with employment in the industry dropping by 23.2 per cent in the Calgary Economic Region from February to August 2020. The increasing prevalence of e-commerce will limit the recovery of employment in retail since e-commerce is less labour-intensive than operating a physical store.

The COVID-19 pandemic has had immediate and dramatic effects on the rise of the digital economy in Canada. Even after the pandemic passes, this acceleration of the digital transformation will have long-lasting implications for Calgary. The demand for the types of infrastructure will change and the property tax base will further shift from non-residential to residential sectors.

8 Retail and e-commerce sales data are seasonally adjusted.

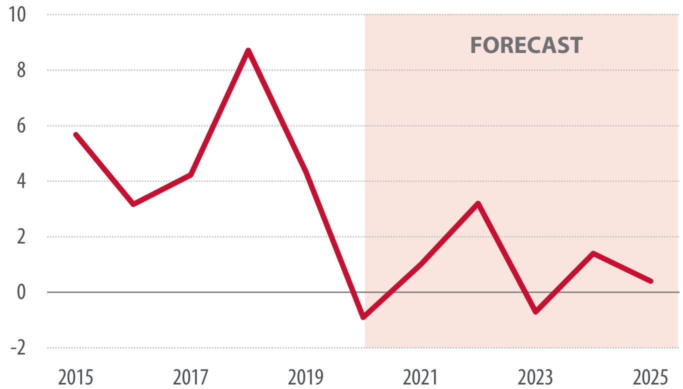
Forecast (Base-case)

Forecast: Commodity Price Inflation

Construction Commodities

Iron and Steel

Iron and Steel Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

Demand for steel continues to decline, particularly with the production for new automobiles shrinking significantly in the first half of 2020. With much of the global economy in recession now and uncertainty in the U.S. market, our outlook for steel demand and prices is muted.

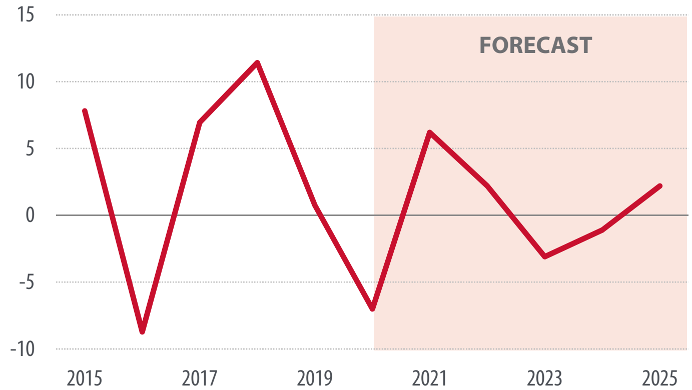
After economies reopening from COVID-19 lockdowns, one of the industries having difficulty adapting to a new normal is the steel industry. Much of the iron and steel products goes to automobiles and public transit systems, where demand recoveries are slow as people are slow to return to their old intensive ways of using transit or car.

Aluminum products

The impact of the global COVID-19 pandemic saw increased downward pressure on aluminum prices this year. To help struggling American producers, President Trump re-instated the 10 per cent tariff on Canadian aluminum on Aug 6 and Canada promptly retaliated by imposing a countervailing duty on manufactured aluminum products from the U.S. On the day before those countervailing duties were to come into force, the U.S. backed down and removed their 10 per cent tariff. The U.S. has backed off, stating that they will re-impose the tariff if there is a surge in Canadian exports, but that is likely a face-saving story as Canadian exports didn't surge the last time the U.S. removed its 10 per cent tariff on Canadian aluminum.

We forecast deflation of 7 per cent in aluminum prices this year and mild inflation in 2021-2022.

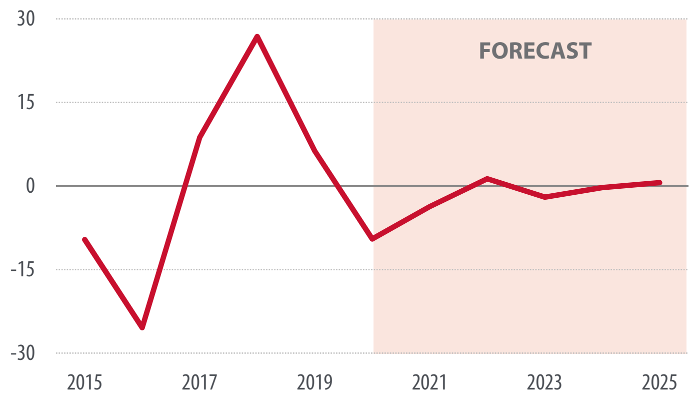
Aluminum Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

Asphalt

Asphalt Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

Crude oil prices fell significantly at the start of the pandemic, reaching negative prices at one point. The prices have rebounded quickly since the gradual reopening of major economies in recent months. As road construction projects continued unabated by the pandemic, asphalt has been one of the more resilient commodities to the COVID-19 pandemic. However, crude oil prices, and consequently asphalt prices, remain lower this year than last year.

Asphalt prices were slowly responsive to drops in crude oil prices. There are some bargains to be had from asphalt projects this year, but we expect prices will continue to slide

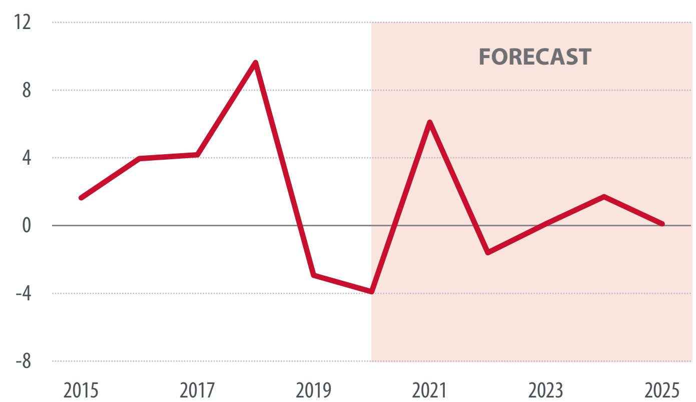
Forecast (Base-case)

slowly next year. Asphalt production continues to increase while demand for asphalt is off as people opt to repair their roofs, delaying replacing them as long as possible. The prolonged economic recovery from the pandemic, and lower oil prices, will result in subdued asphalt prices throughout the forecast period.

Wood

The WTO has ruled, again, that anti-dumping and countervailing duties levied against Canadian lumber have almost no merit. Those duties range between 20.23 and 23.56 per cent. But over the past two years, the U.S. administration has threatened to leave the WTO, claiming WTO decisions are one-sided against the U.S. There is still no word on the re-start of a softwood lumber agreement with the U.S. and as such we anticipate these tariffs, which support the U.S. forest industry at the expense of the Canadian industry are likely to continue for an extended period.

Wood Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

This summer demand for wood products has been high in the Calgary area as homeowners seek to do home renovation projects. There were many houses built in Calgary in the late 70s and early 80s that are now aging to the point they need major renovations. Completing these renovations has resulted in high demand for building materials. This “pandemic project” phenomenon is not unique to Calgary, but the relative size of the renovation market is significantly bigger in Calgary compared to other Canadian cities. We expected the renovation market would ramp up slowly but did not anticipate a pandemic would accelerate the process.

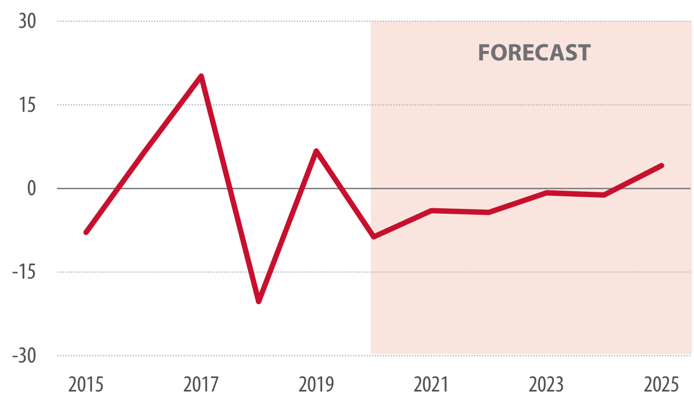
Our outlook for wood product prices follows province-wide conditions which, with lower employment due to lower oil prices and an ongoing pandemic, continues to be downward in 2020. A slight rebound in 2021 is anticipated when interest rates bottom out and homeowners are anticipated to renovate throughout Alberta, following Calgary’s lead.

Operational Commodities

Rubber

There are two methods of making rubber: one from the sap of the rubber tree (natural rubber) and another from oil and natural gas. Oil prices have gone so low that they threaten the viability of natural rubber markets. We anticipate oil prices drop, but only to the point of threatening the long-term viability of natural rubber production. As a result, rubber prices fall slowly and start to recover with oil prices starting late in the forecast period. COVID-19 responses continue locally, but at a less restrictive level, which have only a modestly negative impact on rubber demand for the next couple of years.

Rubber Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

Diesel Oil

New federal carbon taxes hit 5.34 cents per litre on diesel fuel this year. The schedules continue to show a tax increase of 5.34 cents per litre every year until 2022, when the total burden will be 26.7 cents per litre.

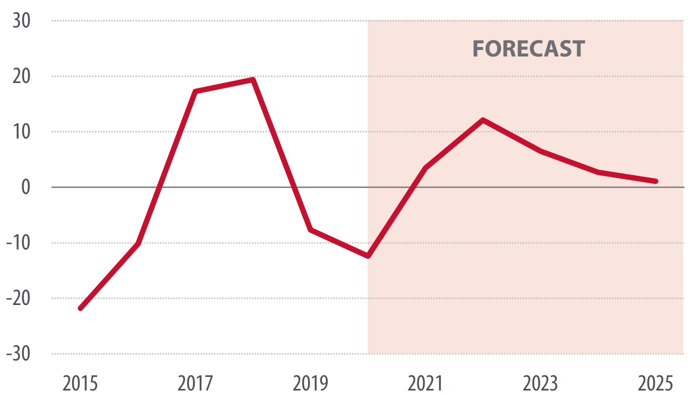
Previously we anticipated diesel prices to average in the high 80 cents per litre for the rest of the year. Pump prices shot up during the summer months as construction and vacation

Forecast (Base-case)

demand exceeded expectations. Still, prices are hovering in the low 90 cents per litre range and are expected to remain there for the remainder of the year as crude prices seem to have stabilized in the mid US$30 to US$40 range.

Our base-case outlook calls for modest increases in diesel prices next year as the economy slowly gains speed, and recovery of price losses incurred in 2019-2020 over 2022-2023 as employment in the Calgary economy returns pre-pandemic levels. Beyond 2024 only modest increases in diesel prices are expected with increasing crude oil prices.

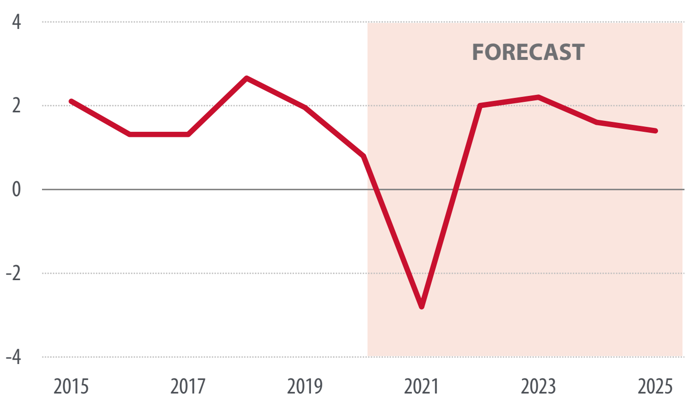
Diesel Oil Price Inflation
(per cent)



Source: Statistics Canada, Corporate Economics.

Automotive Parts

Vehicle Parts Price Inflation
(per cent)

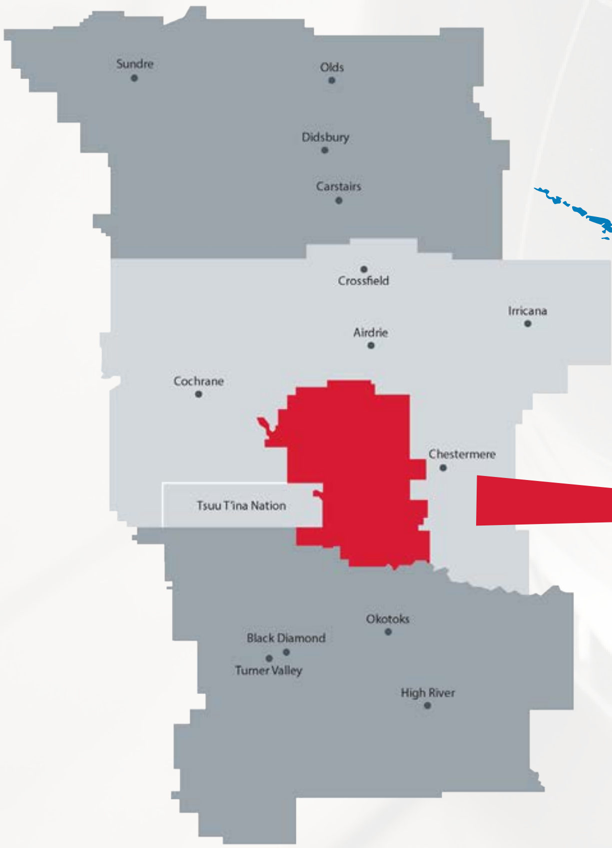


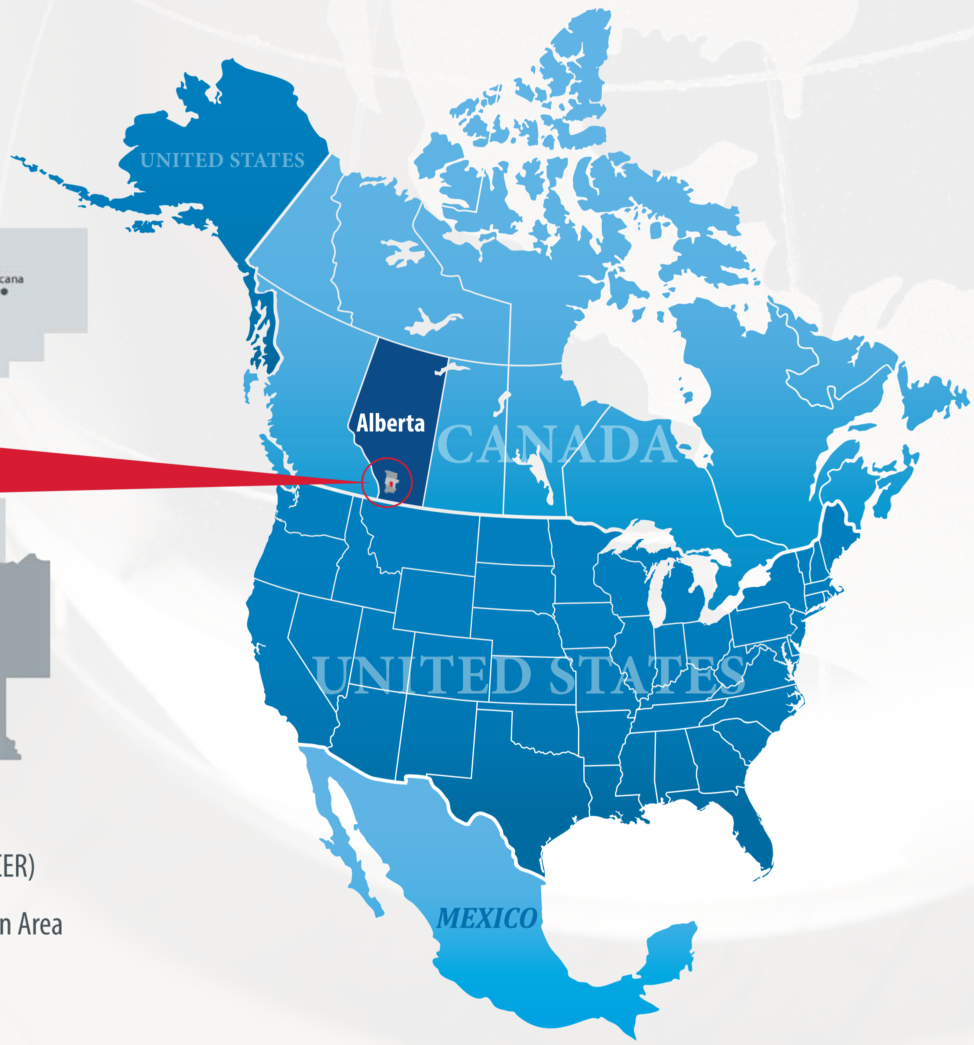
Source: Statistics Canada, Corporate Economics.

The global pandemic has resulted in a significant shift in supply chains. The shortages of medical equipment at the start of the pandemic boosted local productions. Canadian manufacturers have risen to the task, re-tooling to make medical equipment but also other things. Some Ontario parts manufacturers were able to re-tool to take advantage of the demand for new products supporting the remaining parts manufacturers.

As a result of manufacturers adapting to the changing landscape favouring local production, the parts market is seeing strong resilience to the pandemic despite reduced demand for automobiles. The base-case calls for relatively stable prices this year and a small adjustment in 2021 before returning to an average of 2 per cent annual inflation.

Calgary Economic Region Map





Calgary Economic Region (CER)

Calgary Census Metropolitan Area (CMA)

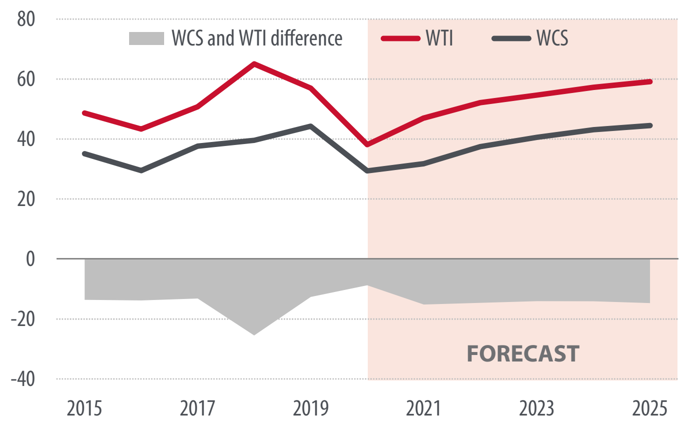
City of Calgary

Economic and Market Conditions Outside Calgary

Energy Markets

World Crude Oil Market

WTI and WCS Crude Oil Price
(US$/bbl)



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

WTI prices began the year in the US$60/bbl range, with price optimism caused by geopolitical tensions and an expectation of production cuts from the Organization of the Petroleum Exporting Countries (OPEC). Drifting downwards in February, oil prices plummeted in March due to dual supply and demand shocks. Year-to-date WTI crude oil prices averaged at US$38/bbl in August, down from US$57/bbl last year.

Western Canadian Select (WCS) prices also plunged in Q1 2020, from about US$40/bbl on Jan 6 to record lows under US$5/bbl in early April. The price has since recovered with better market balances in recent months. By August, the year-to-date WCS prices averaged US$25.9/bbl, down from US$43.4/bbl last year.

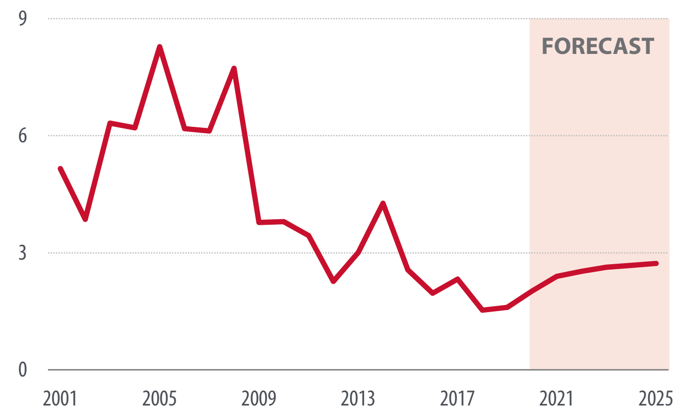
The WTI price is expected to drop to US$38/bbl in 2020 and bounce back to US$47/bbl in 2021, before averaging US$55.8/bbl in 2022-2025. WCS price is expected to decline to US$29.4/bbl in 2020 and bounce back to US$31.8/bbl in 2021, before averaging at US$41.4/bbl in 2022-2025.

North American Natural Gas Market

After many years of price weakness, North American natural gas prices have recently been showing some strength as this spring's oil demand collapse and OPEC+ conflict have resulted in shut-ins of oil wells and associated natural gas production. There has also been a healthy demand for natural gas from electricity generation across the continent this year.

Domestically, natural gas-fired net-to-grid electricity generation in Alberta has surpassed coal-fired electricity generation for the first time in 2020. AECO-C prices had remained low for years due to oversupply and weak demand. For most of 2019, pipeline infrastructure issues during maintenance periods suppressed AECO-C prices. In September 2019, the Canada Energy Regulator issued a temporary service protocol for Alberta's Nova pipeline system, which allows for additional service flexibility during maintenance periods and deliveries to storage facilities during periods when the system is constrained. Shortly after the issuance, the spread between AECO-C and Henry Hub natural gas prices narrowed considerably.

AECO-C Natural Gas Price
(C$/GJ)



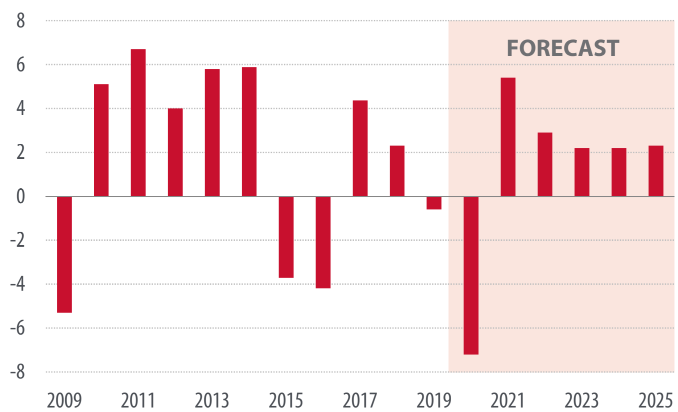
Source: Intercontinental Exchange Inc, Corporate Economics.

Economic and Market Conditions Outside Calgary

Alberta

Real GDP Growth in Alberta

Alberta: Gross Domestic Product Growth Rate
(per cent)



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

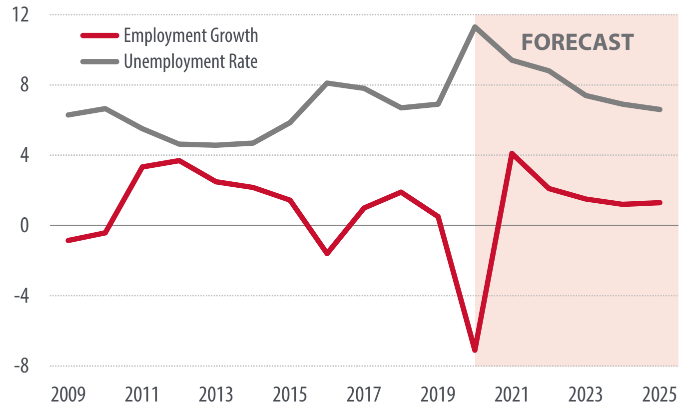
Alberta Real GDP shrank by 0.6 per cent in 2019. The COVID-19 lockdowns to contain the spread of the coronavirus plunged the province into another deep recession. Compounding the economic shock of COVID-19 for Alberta was a simultaneous global collapse in crude oil prices in March/April, as the energy sector accounts for approximately 27 per cent of the province's GDP.

Although crude oil prices staged a strong rebound as the North American economy began to reopen in May/June, Alberta's economy is still expected to contract by 7.2 per cent in 2020. If coronavirus containment measures are successful, the continued reopening of the provincial economy could see Alberta's GDP growth rebound at 4.8 per cent in 2021. GDP growth is expected to average at 2.4 per cent between 2022 and 2025.

On Aug 27, the Alberta government provided a financial update for the 2020-2021 fiscal year. With huge declines in income tax and resource revenues, coupled with billions in COVID-19 spending, the province is forecasting a budget deficit above $24 billion for this fiscal year. In its fiscal update, the province raised concerns over rising debt levels and reaffirmed its commitment to cut spending, foreshadowing possible provincial budget austerity in November and challenges for growing Alberta's economy in the near term.

Alberta's Labour Market

Alberta: Labour Market
(per cent)



Source: Statistics Canada, Corporate Economics

Alberta's total employment grew by only 0.5 per cent in 2019, the lowest among all provinces. In addition to the impact of the COVID-19 pandemic, the economic impact of the collapse of crude oil prices hit Alberta harder than other provinces. Between February and August 2020, Alberta had its largest employment declines in four sectors: Manufacturing, Educational Services, Accommodation and Food Services and Forestry, Fishing, Mining, Oil and Gas.

Assuming the provincial economy stays open after relaunching, Alberta's total employment is expected to contract by 7.1 per cent, the largest contraction on record. Total employment is expected to rebound in 2021, with modest growth of under two per cent by the end of the forecast period.

Residential and Non-Residential Business Investment

Housing starts in Alberta totaled 27,300 in 2019. Strength in the province's housing starts was the result of steady population growth, declining interest rates, and the introduction of the First-Time Home Buyer Incentive by the federal government on Sep 2, 2019.

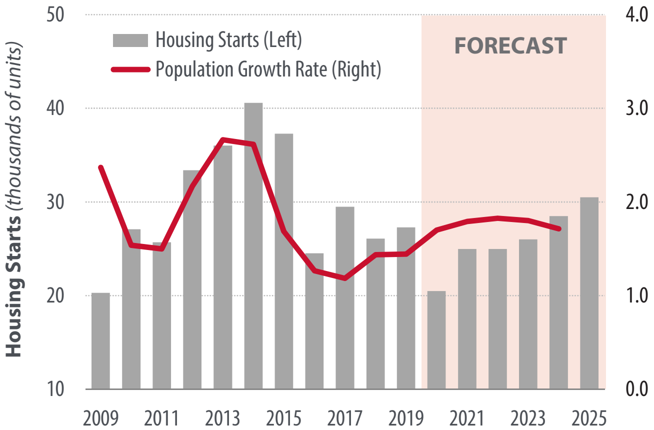
Even though interest rates and mortgage rates remain at historic lows, the dual economic hits from low oil prices and the pandemic have resulted in employment losses and uncertainty concerning household incomes. Federal wage replacement programs such as CERB and an expanded employment insurance program are helpful to affected households. However, growth in housing starts is likely impeded

Economic and Market Conditions Outside Calgary

until the labour market strengthens in the province. Housing starts in Alberta are expected to fall by 25 per cent to 20,500 units in 2020.

Non-residential business investment in Alberta is expected to decline sharply in 2020 due to the overall weakness in crude oil prices, as the province's oil and gas extraction sector has accounted for a majority of total capital spending over the past decade. Sizeable reductions in capital expenditures have been announced by major oil and gas players earlier this year. Uncertainty over commodity prices has weakened business confidence in the province.

Alberta: Housing Starts and Population Growth Rate



Source: Statistics Canada, Alberta Treasury Board and Finance, Stokes Economics, Conference Board of Canada, Corporate Economics.

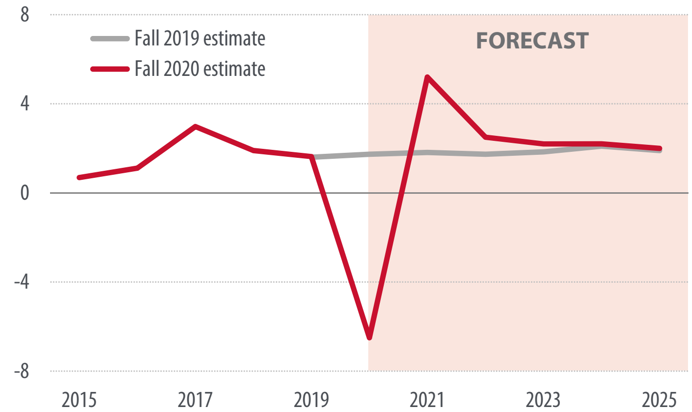
Canada

Real GDP Growth in Canada

After broad and respectable real GDP growth of 1.6 per cent in 2019, Canada entered a sharp recession in 2020 due to forced shutdowns to curb the COVID-19 pandemic. Following a decline of 2.1 per cent in Q1 2020, real GDP in Canada contracted by 11.5 per cent in Q2 2020, the largest quarterly decline in GDP since quarterly data was first recorded in 1961.

With the lifting of some government-mandated closures, travel restrictions, and limitations on gathering sizes throughout May and June, a mild recovery has started. Assuming the gradual normalization of the national economy continues, the annual average real GDP in Canada is estimated to contract by 6.5 per cent in 2020.

Canada: Real GDP Growth Rate
(per cent)

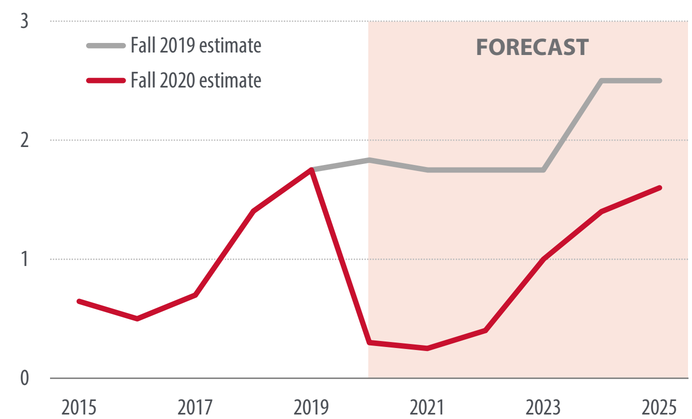


Source: Federal Reserve Bank of St. Louis, Corporate Economics

Due to the steep economic impact of COVID-19, household incomes and business confidence have fallen sharply. Combined with employment concerns, a full economic recovery is expected to take some time, with an overall return to pre-pandemic levels not expected until 2022. Canada's real GDP growth is expected to rebound by 5.2 per cent in 2021, before trending down to an annual average of 2.2 per cent from 2022 to 2025.

Monetary Policy Changes in Canada

Canada: Bank of Canada Overnight Rate
(per cent)



Source: Bank of Canada, Corporate Economics

Since March 2020, the Bank of Canada (BoC) has responded to the widespread COVID-19 lockdown rapidly with strong measures to support the financial system and mitigate economic damage. The BoC lowered its target for the overnight rate to the effective lower bound of 0.25 per cent and introduced a range of asset purchase programs, including the purchasing of Canada Mortgage Bonds, banker's acceptances, commercial paper, and government debt. In its July 15 Monetary Policy Announcement, the BoC committed to keeping the current policy rate until the inflation objective is achieved and continued the Bank's purchase of government bonds, known as quantitative easing.[9]

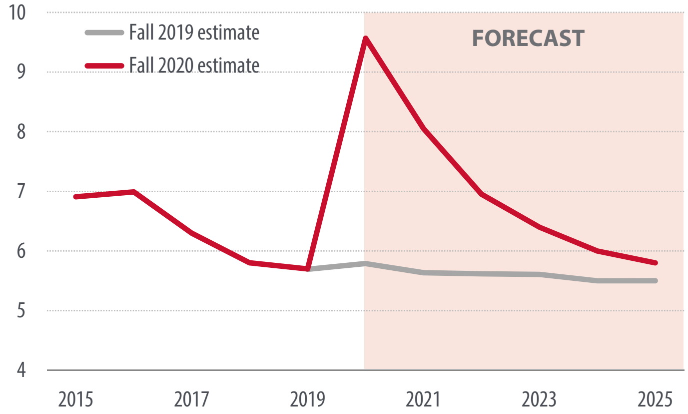
CPI inflation in Canada averaged 0.8 per cent from January to July 2020, below the lower band of the BoC's inflation target range. The BoC does not expect its inflation target to be reached until late 2022, with its inflation outlook largely dependent on the speed and strength at which demand recovers. As a result, the Bank of Canada has signalled its intention to keep the overnight rate low for the foreseeable future.

The U.S. dollar has recently depreciated against the Canadian dollar after its appreciation against all other currencies during the COVID-19 recession. The safe-haven flows to U.S. dollar-backed assets have slowed, and the recent increase in commodity prices has also boosted support for the Canadian dollar. Despite these recent developments, overall demand for safe-haven currencies such as the U.S. dollar and Japanese Yen has strengthened tremendously since March, resulting in a weaker Canadian dollar relative to what was previously expected in the fall 2019 outlook.

The Canadian Labour Market

The Canadian labour market had performed well coming into 2020, with record-low unemployment and rising wage inflation over the preceding three years. Since COVID-19 shutdowns started in March 2020, Canada's labour market has lost millions of jobs. The number of unemployed in Canada more than doubled from February to April as a result of temporary layoffs. By May 2020, 5.5 million Canadian workers were affected by the economic shutdown, with total employment down by 3 million and COVID-19-related absences from work affecting 2.5 million more employees.

Canada: Unemployment Rate
(per cent)



Source: Statistics Canada, Corporate Economics

Canada's unemployment rate ballooned to 13.7 per cent in May, the highest rate recorded since comparable data started being recorded in 1976. With the reopening of provincial economies, by mid-July, the total number of affected workers had fallen to 2.3 million. However, the national unemployment rate remained elevated at 10.9 per cent, well above the 5.6 per cent unemployment rate in February 2020.

As Canada emerges from pandemic related shutdowns, the recovery in the labour market is uneven in sectors and regions. Non-essential business closures disproportionately affected the private sector, and the unemployment rate is expected to increase sharply in 2020 before trending down next year. It is expected to take two to three years for the unemployment rate to return to pre-COVID-19 levels.

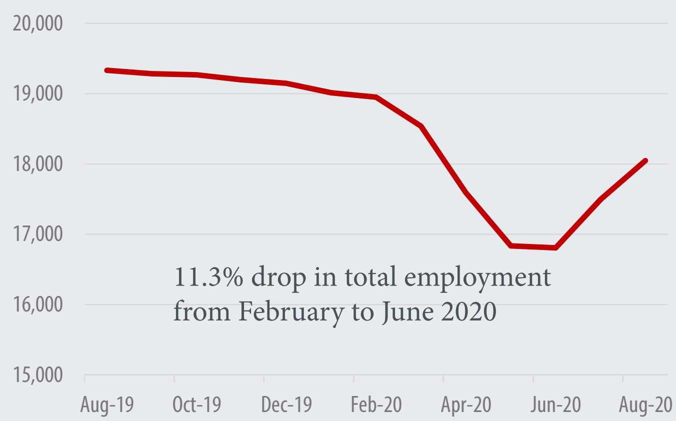
9 https://www.bankofcanada.ca/wp-content/uploads/2020/07/fad-press-release-2020-07-15.pdf

Economic and Market Conditions Outside Calgary

Textbox 3. Pandemic Labour Market Support in Canada

Following the unprecedented shutdown of the non-essential businesses in response to the COVID-19 pandemic, unemployment rates in Canada soared. In response, multiple grand scale and wide-reaching support programs were introduced in March 2020 by the federal government as a part of its COVID-19 Economic Response Plan. Two of the more prominent initiatives introduced in March to support the labour market from both the worker and employer side were the Canada Emergency Response Benefit (CERB) and the Canada Emergency Wage Subsidy (CEWS).

Canada: Total Employment (All Industries)
(*thousands of persons*)



Source: Statistics Canada, Corporate Economics

The Canada Emergency Wage Subsidy (CEWS)

The CEWS is a program targeting employers to help them keep employees on payroll, with the level of CEWS support being a function of the business' drop in revenue. Hard-hit businesses with a decline in revenue of more than 50 per cent due to COVID-19 qualify for an additional top-up subsidy. The objectives of the CEWS is to help secure the incomes of workers, enable employers to retain existing staff and rehire temporarily laid-off workers.

The Canada Emergency Response Benefit (CERB)

The CERB provides a benefit of up to $500 a week for a maximum of 28 weeks to Canadian workers who:

- are at least 15 years old, who had employment income of at least $5,000 in 2019;
- have stopped working or had their hours reduced for reasons related to COVID-19 or are eligible for employment insurance (EI) or who have exhausted their EI benefits; and
- have not quit their jobs voluntarily.

Launched on March 25, the purpose of the CERB program was to get financial aid to workers impacted by COVID-19 quickly, as the existing EI system was not designed to process the high volume of applications from millions of Canadians affected by COVID-19 shutdowns.

Defining unemployment

Statistics Canada defines the employed as persons who have a job or business. The unemployed are persons without work, are available for work, and are actively seeking work. The employed and unemployed persons form the nation's labour force. Persons who are without work and not actively looking for work are not counted in the labour force.

It is important to distinguish between individuals who are in or out of the labour force. For instance, full-time students, retirees and stay at home parents would not be considered "unemployed" or even part of the labour force if they are not employed nor actively looking for work. Similarly, a person without a job or business who is discouraged and has halted their job search would not be considered part of the labour force if they are not actively seeking work.

Are CERB recipients "unemployed"?

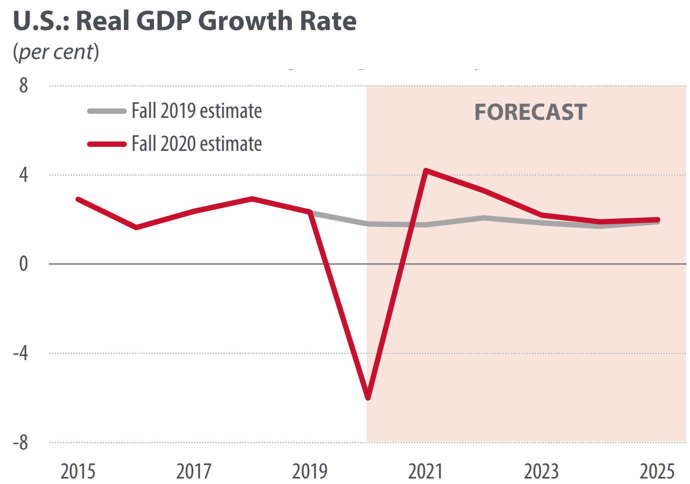
At first glance, the CERB may be considered a substitute for EI, as recipients who have exhausted their EI benefits are being put on CERB, and that from March 15 onwards, EI claims have been automatically processed through the CERB.

EI claimants are required to regularly submit reports to Service Canada, confirming that they are ready, willing, and capable of working in order to collect EI benefits. As such, EI recipients are considered unemployed as they are not working but are actively looking for work.

Economic and Market Conditions Outside Calgary

The U.S.

Real GDP Growth in the U.S.



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

The last recession in the U.S. was in 2008-2009 during the global financial crisis sparked by mortgage subprime lending in the United States. During this recession, the largest quarterly economic contraction was 8.4 per cent in Q4 2008. The COVID-19 shutdowns in the U.S. have sent the country's economy into an unprecedented recession in 2020, the fastest and deepest recession in U.S. history. GDP growth fell an annualized 5.0 per cent in Q1 2020. The full impact of the pandemic was captured in Q2 2020 when GDP decreased by an unprecedented annualized 31.7 per cent.

Economic activities in the U.S. are expected to shrink by 6.0 per cent in 2020 and grow by 4.2 per cent in 2021. It is forecasted to grow at an annual average of 2.4 per cent over 2022-2025.

Fiscal and Monetary Policy Shifts in the U.S.

In response to COVID-19 lockdowns, the U.S. federal government has announced relief packages to help households and businesses affected, reaching $3 trillion as of Aug 14, 2020. The Federal Reserve System of the U.S. (the Fed) lowered its policy interest rate by 150 basis points, from 1.5-

Textbox 3. Pandemic Labour Market Support in Canada (...continued)

As of Aug 30, there have been 8.7 million unique applicants and over $72.55 billion in CERB benefits paid. A certain degree of caution must be taken with the interpretation of CERB recipient data because, based on the eligibility criteria for CERB, a CERB recipient is not necessarily unemployed. CERB recipients may still be employed or not even in the labour force.

For example, a worker who may still be employed, but due to a reduction in hours, makes less than $1,000 in a benefit period, is eligible for CERB. Alternatively, somebody who made at least $5,000 in 2019 but was not in the labour force in 2020 would also be eligible for CERB. Finally, publicly available statistics (as of Aug 30) do not distinguish between applicants who continue to receive CERB and those who no longer receive benefits due to returning to work.

Post-CERB government support

On Aug 20, the federal government announced that the CERB would end on Sep 27. After Sep 27, workers will be transitioned to one of three programs:

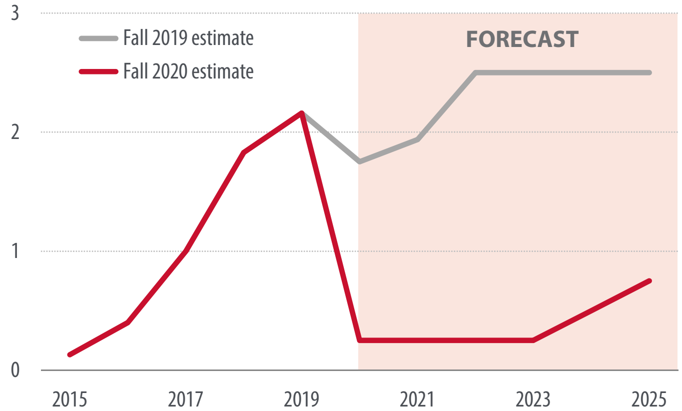
1. (a temporarily expanded) Employment Insurance program, with a top-up of insurable hours for EI benefit qualification for easier access to EI benefits.
2. The Canada Recovery Benefit, targeted towards individuals who are self-employed or otherwise do not qualify for EI, but who still require income support and are actively looking for work.
3. The Canada Recovery Sickness/Caregiving Benefit, targeting workers who are sick or must self-isolated for reasons related to COVID-19, or for workers who must care for children or family members that are impacted by COVID-19.

The federal government has announced these programs to replace CERB and to smooth household incomes for workers as the economy makes its way back to full employment. This legislation (Bill C-4) was passed unanimously in the House of Commons on Sep 30, and approved by the Senate on Oct 2.

Economic and Market Conditions Outside Calgary

1.75 per cent to 0-0.25 per cent by March 15, 2020. The Fed also embarked on a large-scale asset purchase to provide liquidity to the financial market.

U.S.: The Federal Funds Rate
(per cent)



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

On Aug 27, 2020, in its Review of Monetary Policy Strategy, the Federal Open Market Committee (FOMC) announced changes in its Longer-Run Goals and Monetary Policy. The FOMC is moving away from a set target to average inflation of 2 per cent over time, and reiterated its commitment to keep the Federal Funds Rate low for an extended period of time.

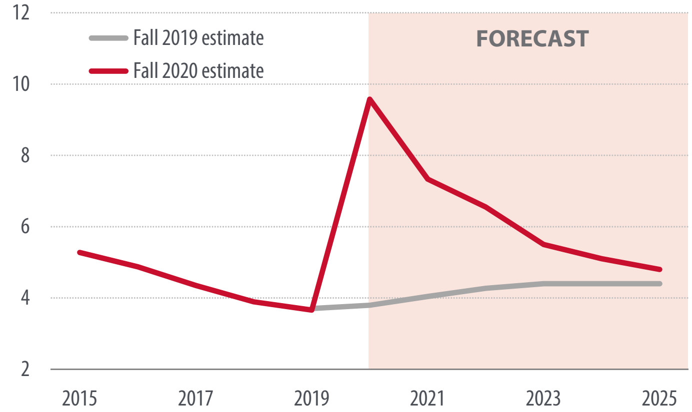
The changes are timely due to the potential nature of permanent economic damage caused by COVID-19. The Federal Funds Rate is expected to remain at 0.25 per cent in 2020 and 2021, edging up marginally to 0.38 between 2022 and 2025.

Labour Market Activity in the U.S.

The unprecedented decline in the total employment due to COVID-19 lockdowns pushed up the U.S. unemployment rate from 3.5 per cent in February 2020 to 14.7 per cent in April 2020. The unemployment rate has since declined with the reopening of all 50 states, down to 8.4 per cent in August 2020. The employment to population ratio dipped from 61 per cent in February 2020 to its historic low of 51.3 per cent in April 2020, climbing back to 56.5 per cent in August 2020.

The U.S. unemployment rate is expected to be 9.6 per cent in 2020 and decrease to 7.3 per cent in 2021. The unemployment rate is projected to average 5.5 per cent per year between 2022-2025.

U.S.: Unemployment Rate
(per cent)

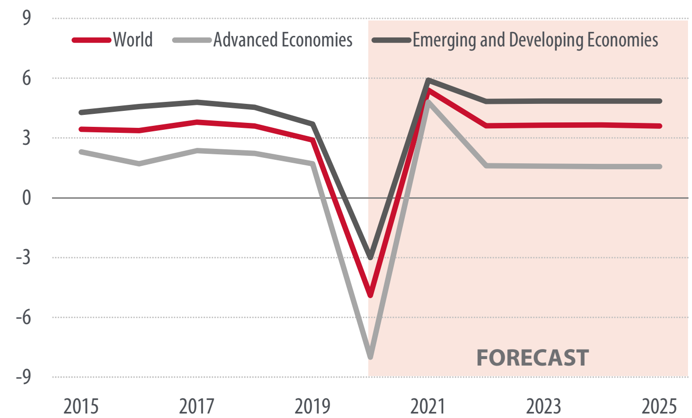


Source: Federal Reserve Bank of St. Louis, Corporate Economics

World

Global Real GDP Growth

World: Real GDP Growth Rates
(per cent)



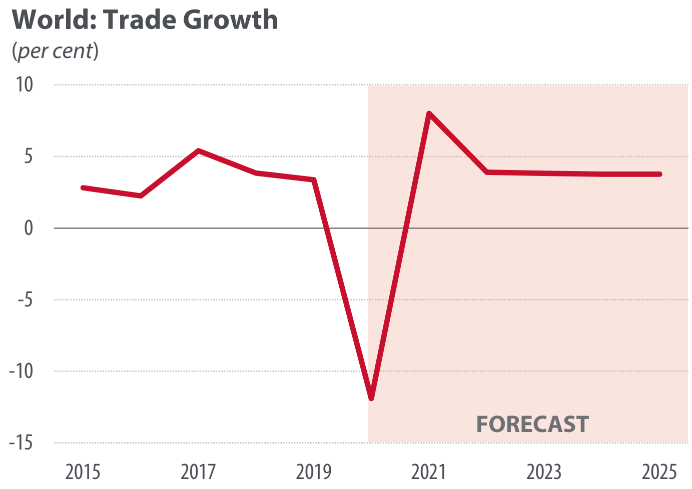
Source: International Monetary Fund, Corporate Economics

The outbreak of the COVID-19 pandemic has severely impacted the global economic growth in 2020. Public health measures taken by countries to curtail the coronavirus have pushed the world economy to a deep recession.

Assuming no reoccurrence of a second pandemic spike that forces a second shutdown in 2020, the global economy is expected to contract by 4.9 per cent in 2020 and grow by 5.4 per cent in 2021. Real GDP in advanced economies is expected to decline by 8.0 per cent in 2020 and grow by 4.8

per cent in 2021. The real GDP of emerging markets and developing economies is expected to decline by 3.0 per cent in 2020 and increase by 5.9 per cent in 2021.

World Trade Volume

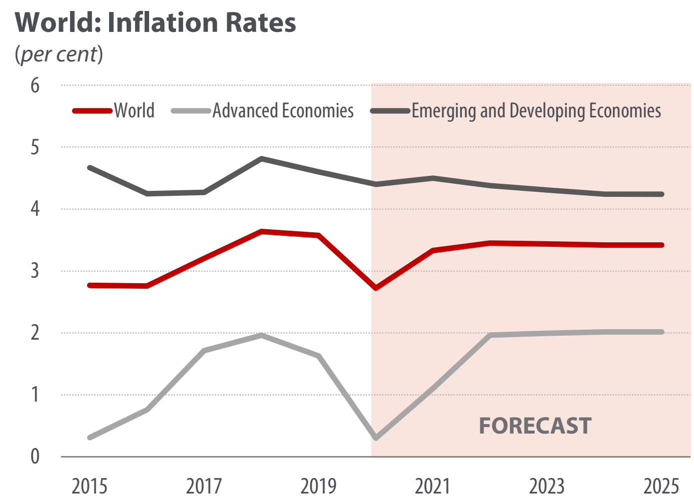


Source: International Monetary Fund, Corporate Economics

Shutdowns of businesses in different countries interrupted the global supply chain, while at the same time reduced the demand for crude oil. World trade volume has been growing at an average of 3.6 per cent over the last five years. It is now projected to contract by 11.9 per cent in 2020 due to deeper constrictions in trade induced by COVID-19. Global trade is forecasted to recover, growing by 8.0 per cent in 2021 before slowing to an annual growth rate of 3.6 per cent in 2021-2025. The trade volume in the advanced economies is expected to contract by 13.4 in 2020 and rebound in 2021 by 7.2 per cent. We expect trade growth in emerging markets and developing economies to be negative 9.4 per cent in 2020 and positive 9.4 per cent in 2021.

World Inflation

CPI inflation worldwide averaged 3.1 per cent over the last five years and is now projected to be 2.7 per cent in 2020 due to the COVID-19 pandemic. The annual average of global inflation is expected to be 3.4 per cent in 2021-2025. CPI inflation in advanced economies is expected to be only 0.3 per cent in 2020 before rising to 1.1 per cent in 2021, while CPI inflation in emerging market and developing economies is forecasted to be higher at 4.4 per cent in 2020 and 4.5 per cent in 2021.



Source: International Monetary Fund, Corporate Economics

Downward Risks (Worse-case)

Downward Risks (Worse-case)

In a worse-case scenario, we assume a widespread second wave of COVID-19 eventually results in a broad-based reversion in reopening stages from stages 2-3 to stage 1, or even a closure of all non-essential businesses again in Canada and its major trading partners.

Calgary's GDP growth is expected to be -7.5 per cent this year, 2.1 percentage points lower than the base-case scenario. Total employment in the region is projected to drop by an additional 16,500 persons this year and 14,200 persons next year. The unemployment rate is projected to stay elevated, over 9 per cent throughout the forecast period. Net-migration in 2021 and 2022 is expected to be negative. Due to higher deaths from COVID-19 and slower net-migration, the city's total population is projected to be much lower than the base-case scenario.

In a worse-case scenario, the longer pandemic raises the vacancy rate but the fact that commercial leases tend to span four years blunts the head-lease availability. The combined vacant and under-utilized space in the downtown core approaches half of the total downtown office space next year. With such levels of un-needed space, our outlook calls for vacancy rates to remain in the 30 per cent range through 2025.

In a worse-case scenario, low employment continues and government supports wane so that personal incomes do not support as many small commercial projects. The result is a significant negative hit to construction costs in 2021, and the market is not expected to fully recover by the end of the forecast period in 2025.

As the pandemic continues for an extended period, employment impacts are deeper and longer, which further limits the demand for construction and operational commodities. Price declines in steel, asphalt, and diesel oil are expected to be larger.

Forecast Tables
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Who We Are

Forecast Tables (Base-case)

Table 1 - Selected Economic Indicators

Rest of the World, United States, Canada, Alberta, Calgary Economic Region (CER) & Calgary Census Metropolitan Area (CMA)

FORECAST COMPLETED: September 2020						BASE-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ASSUMPTIONS											
World											
Real Gross Domestic Product Growth (%)	3.5	3.3	3.7	3.6	2.9	-4.9	5.4	2.9	3.3	3.6	3.6
The United States											
Real Gross Domestic Product Growth (%)	2.9	1.6	2.4	2.9	2.3	-6.0	4.2	3.3	2.2	1.9	2.0
Canada											
Real Gross Domestic Product Growth (%)	0.7	1.1	3.0	1.9	1.6	-6.5	5.2	2.5	2.2	2.2	2.0
Prime Business Loan Rate (%)	2.8	2.7	2.9	3.6	4.0	2.7	2.2	2.9	3.0	3.0	3.4
Exchange Rate (US$ for 1C$)	0.78	0.76	0.77	0.77	0.75	0.73	0.75	0.74	0.75	0.75	0.76
Alberta											
Real Gross Domestic Product Growth (%)	-3.7	-4.2	4.4	2.3	-0.6	-7.2	4.8	2.9	2.2	2.2	2.3
Total Employment Growth (%)	1.4	-1.6	1.0	1.9	0.5	-7.1	4.1	2.1	1.5	1.2	1.3
Unemployment Rate (%)	5.9	8.1	7.8	6.7	6.9	11.3	9.4	8.8	7.4	6.9	6.6
Housing Starts ('000 Units)	37.3	24.5	29.5	26.1	27.3	20.5	25.0	25.0	26.0	28.5	30.5
Inflation Rate - CPI (%)	1.2	1.1	1.6	2.5	1.8	0.8	1.8	1.8	2.0	2.0	2.1
Crude Oil Price - WTI (US$/bbl)	48.7	43.3	50.8	65.1	57.0	38.1	47.0	52.1	54.6	57.3	59.2
Western Canadian Select - WCS (US$/bbl)	35.1	29.5	37.6	39.6	44.3	29.4	31.8	37.5	40.6	43.1	44.5
Alberta Natural Gas Price - AECO/NIT ($/GJ)	2.6	2.0	2.3	1.5	1.6	2.0	2.4	2.5	2.6	2.7	2.7
Industrial Product Price Index (%)	-0.8	-0.2	3.1	3.9	-0.1	-1.9	3.2	2.4	2.2	2.0	1.8
Raw Materials Price Index (%)	-19.9	-4.6	10.9	9.2	-2.6	-14.5	9.1	4.2	3.6	2.8	2.0
Alberta Average Wage Rate Increase for All Industries (%)	-0.3	-2.4	1.0	1.7	1.4	2.0	-0.1	1.4	2.3	2.9	2.9
FORECAST											
Calgary Economic Region (CER)											
Real Gross Domestic Product Growth (%)*	-3.5	-2.6	4.0	2.5	1.3	-5.4	3.7	2.5	2.3	2.5	1.7
Total Employment ('000 persons)**	876.1	861.0	884.3	892.5	919.0	865.2	886.7	904.8	924.3	940.6	957.0
Total Employment Growth (%)**	2.2	-1.7	2.7	0.9	3.0	-5.7	2.5	2.0	2.2	1.8	1.7
Unemployment Rate (%)**	6.3	9.2	8.4	7.6	7.1	11.6	9.9	9.6	9.2	9.0	8.9
Calgary Census Metropolitan Area (CMA)											
Housing Starts ('000 units)	13.0	9.2	11.5	11.0	11.9	10.1	11.5	11.8	12.2	12.5	12.9
Inflation Rate - CPI (%)	1.2	1.0	1.6	2.4	1.4	1.1	1.9	1.9	2.0	1.9	1.9
Non-Residential Building Construction Inflation (%)	-0.6	-2.6	0.9	1.9	2.1	0.6	-7.1	4.1	3.6	4.6	2.0

Numbers may not add up due to rounding.

* Source: Stokes Economics, Corporate Economics
** Total population, census divisions and census metropolitan areas, 2001 Census boundaries

Forecast Tables (Base-case)

Table 2 - Selected Indicators for City of Calgary

City of Calgary

FORECAST COMPLETED: September 2020						BASE-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DEMOGRAPHY											
Total Population ('000 Persons)	1,230.9	1,235.2	1,246.3	1,267.3	1,285.7	1,306.7	1,323.4	1,339.9	1,357.5	1,375.1	1,392.1
Total Population Growth (%)	3.0	0.3	0.9	1.7	1.4	1.6	1.3	1.3	1.3	1.3	1.2
Net Migration ('000 Persons)	24.9	-6.5	1.0	11.7	9.6	12.3	8.6	9.0	9.9	10.2	9.8
Household Formation ('000 Units)	11.1	1.2	7.5	11.6	6.3	6.8	5.5	7.2	7.1	6.4	6.2
REAL ESTATE											
Residential Market											
Housing Starts (‘000 units)	10.1	7.5	9.5	9.4	10.6	8.5	8.9	9.0	9.1	9.3	9.6
Calgary Average Residential MLS Sale Price (%)*	-2.8	2.4	0.5	-1.1	-3.9	-3.1	-0.4	-0.1	-0.1	0.4	1.1
Total Building Permits ($billions)	6.2	4.6	4.6	4.6	5.2	4.0	4.4	4.3	4.3	4.4	4.6
Non-Residential Market											
Downtown Office Vacancy Rate (%)**	10.1	18.2	22.5	24.8	23.0	25.7	28.8	28.1	27.7	27.2	27.6

Numbers may not add up due to rounding. *Source: CREB, Corporate Economics. ** Source: Altus InSite

Table 3 - Selected Commodity Prices

City of Calgary

FORECAST COMPLETED: September 2020						BASE-CASE **FORECAST**					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
CONSTRUCTION COMMODITIES											
Iron and steel products	5.7	3.2	4.2	8.7	4.3	-0.9	1.0	3.2	-0.7	1.4	0.4
Aluminum products	7.8	-8.7	7.0	11.4	0.8	-7.0	6.2	2.2	-3.1	-1.1	2.2
Wood	1.6	4.0	4.2	9.6	-2.9	-3.9	6.1	-1.6	0.1	1.7	0.1
Asphalt*	-9.6	-25.4	8.7	26.8	6.3	-9.5	-3.7	1.3	-2.0	-0.3	0.6
OPERATIONAL COMMODITIES											
Rubber	-7.9	6.4	20.1	-20.3	6.7	-8.7	-4.0	-4.3	-0.8	-1.2	4.1
Diesel oil	-21.8	-10.2	17.3	19.4	-7.7	-12.4	3.5	12.1	6.5	2.7	1.1
Vehicle parts	2.1	1.3	1.3	2.7	2.0	0.8	-2.8	2.0	2.2	1.6	1.4

Numbers may not add up due to rounding.
NOTE: MLS prices represent significant market differences. Apartment/Condo prices expected to decrease while house prices remain resilient.
* Based on Ontario Ministry of Transportation Asphalt Price Index

Forecast Tables (Base-case)

Table 4 - City of Calgary Population Projection

City of Calgary *(thousands of persons)*

FORECAST COMPLETED: September 2020						BASE-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Population (as April)	1,230.9	1,235.2	1,246.3	1,267.3	1,285.7	1,306.7	1,323.4	1,339.9	1,357.5	1,375.1	1,392.1
Total Population Growth Rate (April - March)	3.0	0.4	0.9	1.7	1.5	1.6	1.3	1.3	1.3	1.3	1.2
Total Net Migration (April - March)	24.9	-6.5	1.1	11.7	9.6	12.3	8.6	9.0	9.9	10.2	9.8
Total Births (April - March)	16.5	16.6	16.3	15.9	15.3	15.6	15.6	15.6	15.6	15.6	15.5
Total Deaths (April - March)	5.8	5.9	6.2	6.6	6.5	6.9	7.4	7.2	7.4	7.6	7.8
Total Natural Increase (April - March)	10.7	10.7	10.1	9.3	8.8	8.7	8.3	8.4	8.2	8.0	7.7
Total Households (as April)	462.5	463.7	471.2	482.7	489.1	495.9	501.3	508.5	515.6	522.0	528.2
Total Household Formation (April - March)	11.1	1.2	7.5	11.6	6.3	6.8	5.5	7.2	7.1	6.4	6.2

Population by Cohort	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
0-4	79.3	78.6	78.7	79.2	79.7	79.6	79.3	78.6	78.2	77.3	77.4
5-9	74.9	77.0	79.1	80.2	80.0	79.5	78.9	79.0	79.2	79.7	79.4
10-14	66.4	67.4	69.2	71.9	74.6	77.1	79.1	80.6	81.0	80.8	80.0
15-19	68.5	68.2	68.7	69.6	70.9	70.9	71.3	72.1	74.1	76.3	78.6
20-24	81.9	79.1	77.5	77.0	78.2	78.6	78.4	78.1	77.7	77.7	77.6
25-29	105.0	104.3	102.5	100.1	98.1	96.8	94.0	92.3	91.9	92.0	92.3
30-34	113.7	114.0	114.3	114.0	113.0	113.6	114.1	113.3	112.2	111.1	109.5
35-39	101.6	102.8	104.6	107.8	110.8	115.6	118.6	121.3	122.9	123.3	123.5
40-44	95.4	95.3	95.3	96.6	98.2	101.8	105.2	109.0	113.5	118.2	122.5
45-49	87.7	86.6	87.7	90.1	91.3	93.3	95.1	96.5	98.5	101.2	104.5
50-54	89.7	88.2	86.4	85.2	83.9	84.1	85.0	87.3	90.1	92.0	93.7
55-59	80.4	81.0	81.6	82.6	83.2	83.5	83.2	82.3	81.2	80.4	80.4
60-64	59.7	62.1	65.0	69.1	72.1	74.2	75.7	76.7	76.9	77.3	77.4
65-69	43.7	46.0	48.2	50.2	52.5	55.3	58.4	61.5	64.7	67.3	69.2
70-74	28.7	29.7	31.4	34.7	37.8	40.2	42.8	45.1	46.3	48.0	50.5
75-79	21.6	21.7	22.2	23.5	24.9	25.8	27.0	28.2	30.5	32.8	34.9
80-84	16.8	16.7	16.9	17.4	17.6	17.9	18.1	18.4	19.0	19.8	20.6
85-89	10.4	10.8	11.1	11.6	11.8	11.9	11.9	11.9	12.0	12.0	12.2
90-99	5.3	5.5	5.9	6.3	6.8	6.9	7.1	7.2	7.3	7.5	7.5
100+	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total	**1,230.9**	**1,235.2**	**1,246.3**	**1,267.3**	**1,285.7**	**1,306.7**	**1,323.4**	**1,339.9**	**1,357.5**	**1,375.1**	**1,392.1**

Youth (12-18)	79.7	80.1	81.5	83.4	85.1	86.8	89.5	92.0	94.4	96.1	97.2
Primary School Age 6-17	165.6	168.7	173.3	177.7	180.7	183.2	185.4	187.4	189.5	191.1	192.8
Working Age 15-65	883.7	881.5	883.4	892.2	899.7	912.2	920.5	929.1	938.9	949.6	959.9
Seniors 65+	126.7	130.6	136	143.9	151.6	158.4	165.6	172.6	180.2	187.7	195.3
Super Seniors 85+	15.9	16.5	17.2	18.1	18.9	19.1	19.3	19.5	19.7	19.8	20.1
Female Super Seniors 85+	10.3	10.6	11.0	11.5	12.0	12.1	12.1	12.2	12.3	12.4	12.6

Numbers may not add up due to rounding.

Table 5 - Calgary Economic Region (CER) Population Projection

Calgary Economic Region (CER) *(thousands of persons)*

FORECAST COMPLETED: September 2020		BASE-CASE FORECAST						
	2019 (estimate)	2020	2021	2022	2023	2024	2025	2026
Total Population (as April)	1,585.9	1,616.4	1,637.3	1,654.4	1,676.2	1,701.4	1,722.0	1,738.5
Total Population Growth Rate (April - March)	1.8	1.9	1.3	1.0	1.3	1.5	1.2	1.0
Total Net Migration (April - March)	18.8	17.4	10.8	11.8	16.2	16.1	12.2	12.0
Total Births (April - March)	18.6	18.4	18.2	18.1	18.1	18.0	17.9	17.9
Total Deaths (April - March)	9.4	10.1	10.0	10.4	10.8	11.1	11.5	11.9
Total Natural Increase (April - March)	9.2	8.3	8.2	7.7	7.3	6.9	6.4	5.9
Total Households (as April)	609.9	621.7	629.7	636.3	644.7	654.4	662.3	668.7
Total Household Formation (April - March)	10.5	11.7	8.0	6.6	8.4	9.7	7.9	6.3

Population by Cohort	2019 (estimate)	2020	2021	2022	2023	2024	2025	2026
0-4	98.5	98.1	97.3	95.7	94.5	92.8	92.3	91.7
5-9	100.7	99.9	99.0	99.0	99.1	99.6	98.9	98.1
10-14	95.2	99.1	102.0	103.6	104.2	104.2	103.1	102.0
15-19	89.8	91.1	92.3	93.8	97.0	100.8	104.2	106.9
20-24	95.3	97.0	97.5	97.4	97.8	99.3	100.1	100.8
25-29	116.1	114.4	110.7	108.0	107.5	108.5	109.3	109.4
30-34	133.8	134.0	133.6	131.3	129.1	127.6	124.8	121.0
35-39	133.6	138.0	140.4	141.8	142.4	142.1	141.4	140.9
40-44	120.1	124.0	127.3	130.7	134.7	139.2	142.9	145.2
45-49	112.2	114.6	116.7	118.2	120.2	123.1	126.5	129.7
50-54	103.7	103.7	104.8	107.5	110.7	113.1	115.0	117.1
55-59	104.1	105.6	105.7	104.8	103.7	102.8	102.6	103.6
60-64	91.1	94.5	97.0	99.1	100.3	101.7	102.9	103.0
65-69	67.1	71.0	75.2	79.4	83.9	87.7	90.6	93.0
70-74	48.7	52.2	55.6	58.8	60.5	63.0	66.5	70.3
75-79	31.5	33.3	35.1	37.0	40.5	43.7	46.7	49.6
80-84	21.6	22.3	22.9	23.5	24.6	26.1	27.4	28.9
85-89	14.3	14.6	14.8	14.9	15.2	15.3	15.7	16.1
90-99	8.0	8.7	9.2	9.5	9.9	10.4	10.6	10.7
100+	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5
Total	**1,585.9**	**1,616.4**	**1,637.3**	**1,654.4**	**1,676.2**	**1,701.4**	**1,722.0**	**1,738.5**

Numbers may not add up due to rounding.

Risk Scenario Tables (Worse-case)

Table 1A - Selected Economic Indicators

Rest of the World, United States, Canada, Alberta, Calgary Economic Region (CER) & Calgary Census Metropolitan Area (CMA)

FORECAST COMPLETED: September 2020						WORSE-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ASSUMPTIONS											
World											
Real Gross Domestic Product Growth (%)	3.5	3.3	3.7	3.6	2.9	-6.2	4.4	2.9	3.3	3.6	3.6
The United States											
Real Gross Domestic Product Growth (%)	2.9	1.6	2.4	2.9	2.3	-8.5	3.1	2.0	2.0	1.8	2.0
Canada											
Real Gross Domestic Product Growth (%)	0.7	1.1	3.0	1.9	1.6	-9.0	1.9	1.8	1.7	1.7	2.0
Prime Business Loan Rate (%)	2.8	2.7	2.9	3.6	4.0	2.5	2.2	2.5	2.5	2.8	3.0
Exchange Rate (US$ for 1C$)	0.78	0.76	0.77	0.77	0.75	0.71	0.72	0.73	0.73	0.74	0.74
Alberta											
Real Gross Domestic Product Growth (%)	-3.7	-4.2	4.4	2.3	-0.6	-9.3	3.0	2.0	2.0	1.8	2.1
Total Employment Growth (%)	1.4	-1.6	1.0	1.9	0.5	-9.1	2.1	1.8	1.4	1.2	1.1
Unemployment Rate (%)	5.9	8.1	7.8	6.7	6.9	13.9	11.2	9.8	7.9	7.6	7.1
Housing Starts ('000 Units)	37.3	24.5	29.5	26.1	27.3	18.0	20.0	23.0	25.0	26.0	27.0
Inflation Rate - CPI (%)	1.2	1.1	1.6	2.5	1.8	0.6	1.0	1.1	1.3	1.5	1.6
Crude Oil Price - WTI (US$/bbl)	48.7	43.3	50.8	65.1	57.0	30.5	31.0	33.2	36.8	38.6	40.4
Western Canadian Select - WCS (US$/bbl)	35.1	29.5	37.6	39.6	44.3	24.0	21.0	23.9	27.4	29.1	30.4
Alberta Natural Gas Price - AECO/NIT ($/GJ)	2.6	2.0	2.3	1.5	1.6	1.9	2.2	2.3	2.4	2.4	2.5
Industrial Product Price Index (%)	-0.8	-0.2	3.1	3.9	-0.1	-1.7	2.6	1.8	1.3	1.7	1.6
Raw Materials Price Index (%)	-19.9	-4.6	10.9	9.2	-2.6	-12.6	7.3	3.2	2.1	2.4	1.8
Alberta Average Wage Rate Increase for All Industries (%)	-0.3	-2.4	1.0	1.7	1.4	1.9	-0.1	1.3	2.2	2.8	2.7
FORECAST											
Calgary Economic Region (CER)											
Real Gross Domestic Product Growth (%)*	-3.5	-2.6	4.0	2.5	1.3	-7.5	3.1	2.8	2.3	2.2	2.3
Total Employment ('000 persons)**	876.1	861.0	884.3	892.5	919.0	848.7	872.5	891	910.1	928.3	947.4
Total Employment Growth (%)**	2.2	-1.7	2.7	0.9	3.0	-7.5	2.8	2.1	2.1	2	2.1
Unemployment Rate (%)**	6.3	9.2	8.4	7.6	7.1	14.2	11.8	10.5	10	9.7	9.3
Calgary Census Metropolitan Area (CMA)											
Housing Starts (‘000 units)	13.0	9.2	11.5	11.0	11.9	8.6	10.2	10.4	10.6	10.8	11.1
Inflation Rate - CPI (%)	1.2	1.0	1.6	2.4	1.4	0.8	2.0	1.9	2.0	2.0	2.0
Non-Residential Building Construction Inflation (%)	-0.6	-2.6	0.9	1.9	2.1	0.6	-8.3	-3.6	-1.5	1.9	3.3

Numbers may not add up due to rounding.

* Source: Stokes Economics, Corporate Economics
** Total population, census divisions and census metropolitan areas, 2001 Census boundaries

Risk Scenario Tables (Worse-case)

Table 2A - Selected Indicators for City of Calgary

City of Calgary

FORECAST COMPLETED: September 2020						WORSE-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DEMOGRAPHY											
Total Population ('000 Persons)	1,230.9	1,235.2	1,246.3	1,267.3	1,285.7	1,306.7	1,303.1	1,303.5	1,312.4	1,326.2	1,343.9
Total Population Growth (%)	3.0	0.3	0.9	1.7	1.4	1.6	-0.3	0.0	0.7	1.1	1.3
Net Migration ('000 Persons)	24.9	-6.5	1.0	11.7	9.6	12.3	-12.3	-5.2	2.6	7.4	11.8
Household Formation ('000 Units)	11.1	1.2	7.5	11.6	6.3	6.8	-2.2	1.1	3.7	5.0	6.5
REAL ESTATE											
Residential Market											
Housing Starts (‘000 units)	10.1	7.5	9.5	9.4	10.6	7.5	7.8	7.9	8.1	8.2	8.4
Calgary Average Residential MLS Sale Price (%)*	-2.8	2.4	0.5	-1.1	-3.9	-3.6	-1.3	-0.4	0.0	0.7	1.2
Total Building Permits ($billions)	6.2	4.6	4.6	4.6	5.2	3.3	3.6	3.6	3.7	3.8	4.0
Non-Residential Market											
Downtown Office Vacancy Rate (%)**	10.1	18.2	22.5	24.8	23.0	25.9	29.3	31.2	32.5	33.3	33.7
Downtown Office New 1 yr Sublease Available Space (%)						13.5	15.1	10.8	8.9	7.4	6.1
Total Downtown Office Space Available (%)						39.4	44.3	42.0	41.5	40.8	39.8

Numbers may not add up due to rounding. *Source: CREB, Corporate Economics. ** Source: Altus InSite

Table 3A - Selected Commodity Prices

City of Calgary

FORECAST COMPLETED: September 2020						WORSE-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
CONSTRUCTION COMMODITIES											
Iron and steel products	5.7	3.2	4.2	8.7	4.3	-0.9	0.5	2.1	0.3	1.0	0.0
Aluminum products	7.8	-8.7	7.0	11.4	0.8	-7.0	12.2	3.4	2.5	1.0	1.5
Wood	1.6	4.0	4.2	9.6	-2.9	-3.9	6.1	-0.8	0.0	-0.9	-0.5
Asphalt*	-9.6	-25.4	8.7	26.8	6.3	-9.5	-17.7	-4.1	-9.0	7.6	3.7
OPERATIONAL COMMODITIES											
Rubber	-7.9	6.4	20.1	-20.3	6.7	-8.7	-12.5	-4.6	-2.4	-4.6	-4.9
Diesel oil	-21.8	-10.2	17.3	19.4	-7.7	-12.4	-8.1	0.7	10.7	1.6	2.2
Vehicle parts	2.1	1.3	1.3	2.7	2.0	0.8	-3.6	2.5	1.9	1.9	1.2

Numbers may not add up due to rounding.
NOTE: MLS prices represent significant market differences. Apartment/Condo prices expected to decrease while house prices remain resilient.
* Based on Ontario Ministry of Transportation Asphalt Price Index

Risk Scenario Tables (Worse-case)

Table 4A - City of Calgary Population Projection

City of Calgary *(thousands of persons)*

FORECAST COMPLETED: September 2020						WORSE-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Total Population (as April)	1,230.9	1,235.2	1,246.3	1,267.3	1,285.7	1,306.7	1,303.1	1,303.5	1,312.4	1,326.2	1,343.9
Total Population Growth Rate (April - March)	3.0	0.3	0.9	1.7	1.4	1.6	-0.3	0.0	0.7	1.1	1.3
Total Net Migration (April - March)	24.9	-6.5	1.1	11.7	9.6	12.3	-12.3	-5.2	2.6	7.4	11.8
Total Births (April - March)	16.5	16.6	16.3	15.9	15.3	15.6	14.8	14.2	13.9	13.8	13.9
Total Deaths (April - March)	5.8	5.9	6.2	6.6	6.5	6.9	9.2	8.0	7.6	7.8	8.1
Total Natural Increase (April - March)	10.7	10.7	10.1	9.3	8.8	8.7	5.6	6.2	6.4	6.0	5.8
Total Households (as April)	462.5	463.7	471.2	482.7	489.1	495.9	493.7	494.7	498.5	503.4	510.0
Total Household Formation (April - March)	11.1	1.2	7.5	11.6	6.3	6.8	-2.2	1.1	3.7	5.0	6.5

Population by Cohort	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
0-4	79.3	78.6	78.7	79.2	79.7	79.6	79.4	78.0	76.3	73.7	72.1
5-9	74.9	77.0	79.1	80.2	80.0	79.5	78.9	79.1	79.2	79.9	79.5
10-14	66.4	67.4	69.2	71.9	74.6	77.1	78.7	80.0	80.4	80.3	79.8
15-19	68.5	68.2	68.7	69.6	70.9	70.9	70.4	70.7	72.5	74.8	77.4
20-24	81.9	79.1	77.5	77.0	78.2	78.6	74.0	71.5	70.7	71.6	73.3
25-29	105.0	104.3	102.5	100.1	98.1	96.8	86.7	80.7	78.7	79.1	81.2
30-34	113.7	114.0	114.3	114.0	113.0	113.6	109.3	104.8	101.1	98.4	96.2
35-39	101.6	102.8	104.6	107.8	110.8	115.6	114.2	113.7	113.6	113.4	113.9
40-44	95.4	95.3	95.3	96.6	98.2	101.8	102.6	104.2	107.2	110.8	114.6
45-49	87.7	86.6	87.7	90.1	91.3	93.3	94.2	94.7	95.8	97.7	100.3
50-54	89.7	88.2	86.4	85.2	83.9	84.1	84.5	86.3	88.8	90.5	92.1
55-59	80.4	81.0	81.6	82.6	83.2	83.5	85.1	85.0	83.8	82.2	81.0
60-64	59.7	62.1	65.0	69.1	72.1	74.2	77.2	79.3	80.2	80.9	81.1
65-69	43.7	46.0	48.2	50.2	52.5	55.3	58.8	62.3	66.1	69.2	71.6
70-74	28.7	29.7	31.4	34.7	37.8	40.2	43.3	45.8	47.1	49.0	51.5
75-79	21.6	21.7	22.2	23.5	24.9	25.8	27.4	28.8	31.3	33.7	35.9
80-84	16.8	16.7	16.9	17.4	17.6	17.9	18.4	18.5	19.2	20.3	21.3
85-89	10.4	10.8	11.1	11.6	11.8	11.9	12.2	12.0	12.1	12.2	12.4
90-99	5.3	5.5	5.9	6.3	6.8	6.9	7.6	7.8	8.0	8.3	8.3
100+	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Total	**1,230.9**	**1,235.2**	**1,246.3**	**1,267.3**	**1,285.7**	**1,306.7**	**1,303.1**	**1,303.5**	**1,312.4**	**1,326.2**	**1,343.9**
Youth (12-18)	79.7	80.1	81.5	83.4	85.1	86.8	88.7	90.8	93.0	94.9	96.4
Primary School Age 6-17	165.6	168.7	173.3	177.7	180.7	183.2	184.5	186.0	188.1	189.9	192.1
Working Age 15-65	883.7	881.5	883.4	892.2	899.7	912.2	898.1	890.9	892.3	899.4	911.2
Seniors 65+	126.7	130.6	136	143.9	151.6	158.4	168.1	175.6	184.1	193.0	201.3
Super Seniors 85+	15.9	16.5	17.2	18.1	18.9	19.1	20.1	20.2	20.5	20.8	21.1
Female Super Seniors 85+	10.3	10.6	11.0	11.5	12.0	12.1	12.6	12.6	12.8	13.0	13.2

Numbers may not add up due to rounding.

Risk Scenario Tables (Worse-case)

Table 5A - Calgary Economic Region (CER) Population Projection

Calgary Economic Region (CER) *(thousands of persons)*

FORECAST COMPLETED: September 2020		WORSE-CASE FORECAST						
	2019 (estimate)	2020	2021	2022	2023	2024	2025	2026
Total Population (as April)	1,585.9	1,616.4	1,607.3	1,607.5	1,618.0	1,638.3	1,661.8	1,680.9
Total Population Growth Rate (April - March)	1.8	1.9	-0.6	0.0	0.7	1.3	1.4	1.2
Total Net Migration (April - March)	18.8	4.9	-11.3	-1.3	9.4	16.3	16.2	14.6
Total Births (April - March)	18.6	17.7	17.1	16.7	16.6	16.6	16.5	16.5
Total Deaths (April - March)	9.4	12.0	10.4	10.0	10.4	10.9	11.4	11.9
Total Natural Increase (April - March)	9.2	5.7	6.7	6.8	6.2	5.6	5.1	4.6
Total Households (as April)	609.9	621.7	618.2	618.3	622.3	630.1	639.2	646.5
Total Household Formation (April - March)	10.5	11.7	-3.5	-	4.0	7.8	9.0	7.3

Population by Cohort	2019 (estimate)	2020	2021	2022	2023	2024	2025	2026
0-4	98.5	98.1	96.4	93.7	91.3	88.5	87.1	85.5
5-9	100.7	99.9	98.8	98.7	98.6	98.8	97.7	96.5
10-14	95.2	99.1	99.8	100.7	101.3	101.5	101.5	101.2
15-19	89.8	91.1	89.9	90.3	92.7	96.2	100.0	103.0
20-24	95.3	97.0	92.4	90.4	89.8	91.5	93.8	96.0
25-29	116.1	114.4	104.8	99.3	96.9	97.3	99.1	100.0
30-34	133.8	134.0	129.4	124.6	120.5	117.6	114.6	110.6
35-39	133.6	138.0	137.2	136.8	136.0	134.8	134.0	133.4
40-44	120.1	124.0	125.1	127.3	130.2	134.0	137.6	139.6
45-49	112.2	114.6	115.5	116.1	117.4	119.9	123.0	126.0
50-54	103.7	103.7	104.2	106.4	109.3	111.3	113.1	115.0
55-59	104.1	105.6	105.4	104.4	103.1	102.1	101.7	102.7
60-64	91.1	94.5	96.9	98.8	100.0	101.4	102.6	102.7
65-69	67.1	71.0	75.0	79.0	83.4	87.3	90.4	93.0
70-74	48.7	52.2	55.4	58.2	59.9	62.6	66.2	70.2
75-79	31.5	33.3	34.9	36.6	40.0	43.3	46.4	49.4
80-84	21.6	22.3	22.7	22.7	23.7	25.5	27.1	28.9
85-89	14.3	14.6	14.7	14.3	14.5	14.7	15.3	15.8
90-99	8.0	8.7	8.6	8.6	9.0	9.7	10.4	10.8
100+	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5
Total	**1,585.9**	**1,616.4**	**1,607.3**	**1,607.5**	**1,618.0**	**1,638.3**	**1,661.8**	**1,680.9**

Numbers may not add up due to rounding.

Glossary

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, (Republic of) Korea, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovenia, Spain, Sweden, Switzerland, Taiwan, United Kingdom and the United States.

AECO-C

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

Apartment

Within the context of this report and Calgary's Civic Census, an apartment is a structure originally designed and built to contain at least three dwelling units on three or more levels. The dwelling units share outside entrances. Apartments include rental units and those that are owner-occupied.

Attached housing

A property with one floor above ground that shares at least one wall (or a part of a wall) with another home.

Calgary Economic Region (CER)

Is an Alberta economic region that covers the city of Calgary and its surrounding twenty cities, towns, villages, and Indian reserves including: Beiseker (Village), Black Diamond (Town), Carstairs (Town), Chestermere (City), Cochrane (Town), Cremona (Village), Crossfield (Town), Didsbury (Town), Eden Valley 216 (Indian reserve), Foothills No. 31 (Municipal district), High River (Town), Irricana (Town), Longview (Village), Mountain View County (Municipal district), Okotoks (Town), Olds (Town), Rocky View County (Municipal district), Sundre (Town), Tsuu T'ina Nation 145 (Sarcee 145) (Indian reserve), Turner Valley (Town).

Census metropolitan area (CMA)

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

Commodities

Commodities are tangible goods that can be bought and sold in spot or futures markets. Commodities are goods that are usually produced and/or sold by many different companies. A commodity 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, and 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.

Contact-intensive

According to the U.S. Department of Labor, a contact-intensive industry is one where the job requires the worker to perform job tasks in close physical proximity to other people. Examples of contact-intensive occupations include barbers, physical therapists, personal care aides, nurses, flight attendants, grade school teachers, and food/beverage servers.

Detached housing

Independent structures that are typically built on land that exceeds the footprint of the building on each of its sides.

Economic region

An economic region (ER) is a grouping of complete census divisions (CDs) created as a standard geographic unit for analysis of regional economic activity.

Glossary

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.

Emerging and developing economies

This group of countries include developing economies that are low- and middle-income countries, and emerging economies that are in transition from developing economies to developed countries. Some of the largest countries in the world like China, India, Brazil and Russia are emerging economies.

Employment rate

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

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.

Goods-producing sector

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

Great Depression

The Great Depression was a severe worldwide economic depression that took place mostly during the 1930s, beginning in the United States. The timing of the Great Depression varied across the world; in most countries, it started in 1929 and lasted until the late 1930s. Based on the IMF, at the period between 1929 and 1932, for advanced economies, the contraction was around 16 per cent. It was the longest, deepest, and most widespread depression of the 20th century.

Great Recession (2008-2009)

The Great Recession was a widespread period of economic decline during the late 2000s where most of the world's economies, particularly those of North America, Europe and Japan, fell into a recession. For Canada and the United States, the recession was most acute in 2008 and 2009. Both countries experienced multiple quarters of consecutive negative GDP growth. In response to the Great Recession, many governments around the world introduced multi-billion dollars economic stimulus plans and engaged in numerous interest rate cuts.

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.

Household formation

The number of new households that will be formed over the long term. Based on projections of population by age cohort and age-specific headship rates, household formation is the underlying driver of long-term demand for new housing and thus new home construction.

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.

Housing starts

A housing start is defined as the beginning of construction work on a building, usually when the concrete has been poured for the whole of the footing around the structure, or an equivalent stage where a basement will not be part of the structure.

Glossary

IMF

The International Monetary Fund (IMF) is an organization created in 1945, governed by and accountable to the 189 countries that make up its near-global membership. The IMF's primary purpose is to ensure the stability of the international monetary system—the system of exchange rates and international payments that enables countries (and their citizens) to transact with each other.

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.

Labour force

The working age population (aged 15+) who are actively involved in the labour market, which includes those employed and unemployed people. It does not include people who are at their working age but not working or looking for work.

MLS

The Multiple Listing Service, or MLS, is a local or regional service that compiles available real estate for sale submitted by member brokers and agents, along with detailed information that brokers and agents can access online.

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.

OPEC

The Organization of Petroleum Exporting Countries (OPEC) is an organization of 13 oil producing countries (Algeria, Angola, Congo, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Saudi Arabia, the United Arab Emirates, and Venezuela) that seeks to actively manage oil production in its member countries by setting production targets. OPEC member countries typically produce 40 to 50 per cent of the world's crude oil, and Saudi Arabia is OPEC's largest producer. OPEC is described by most market observers as a cartel whose actions, particularly those by Saudi Arabia, serve as a major influence on global oil production and price.

OPEC+

OPEC+ was established in 2016 amid a global economic slowdown and strong production from U.S. shale producers to stabilize oil prices by jointly cutting production among its members. OPEC+ describes the 13 members of OPEC plus 10 oil exporting non-OPEC countries (Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, Russia, South Sudan, and Sudan). Russia is the largest and most influential oil producing member of OPEC+ who is not a formal member of OPEC.

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.

Unemployment Rate

In Canada, the unemployment rate measures unemployment and is expressed as a percentage of the total labour force, which is the total number of people who are 15 years of age and over who are either employed or unemployed.

WCS

Western Canadian Select (WCS) is the benchmark for emerging heavy, high TAN (acidic) crudes, one of many petroleum products from the Western Canadian Sedimentary Basin oil sands.

Working age population

Describes persons aged 15 to 64.

WTI

West Texas Intermediate (WTI) crude oil is the underlying commodity of the New York Mercantile Exchange's oil futures contracts. Light, sweet crude oil is commonly referred to as "oil" in the Western world.

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.

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Sources:
Altus Insite, Bank of Canada, CMHC, Conference Board of Canada, CREA, CREB, Government of Alberta, Government of Canada, International Money Fund (World Economy Outlook), Statistics Canada, Stokes Economics, The City of Calgary, U.S. Energy Information Administration (EIA), U.S. Federal Reserve Bank of St. Louis (FRED), World Health Organization (WHO), and others.