Calgary

Spring 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?

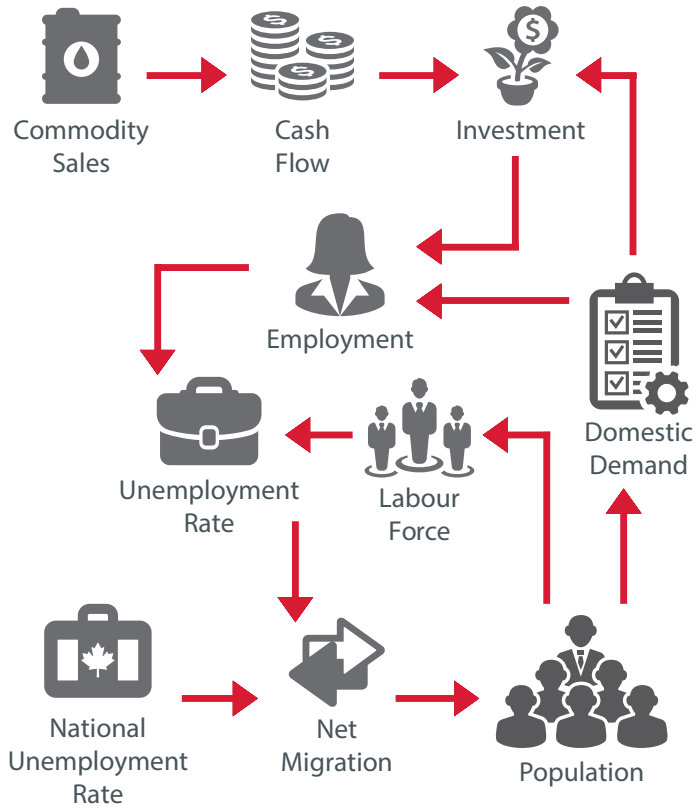
Calgary as a small open economy

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 affects 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 economic expansion or contraction throughout the forecast period, and
2. Change of economic growth and job creation in the rest of Canada over the forecast period.

Economic Cycle



Executive Summary

The economic outlook for Calgary has changed dramatically since the outbreak of the coronavirus (COVID-19) pandemic early this year. In efforts to save lives, governments around the world reacted to the pandemic with containment measures including self-isolation, lockdowns, school and non-essential business closures, and physical distancing. These actions to flatten epidemic curves have caused sudden and deep economic recessions and massive job losses globally. It is predicted that for the first time since the Great Depression, both advanced economies and emerging and developing economies will be in recession at the same time in 2020. This crisis is like no other, as it is a combination of a public health crisis and economic recession.

As a small open economy, Calgary entered this crisis facing a triple whammy. The global lockdown to contain the COVID-19 pandemic devastated the world's demand for fuel and crude oil. At the same time, a breakdown in negotiations between OPEC and Russia in March over proposed oil production cuts triggered a crude oil price war. OPEC+ flooded markets in a bid to gain market share by bankrupting less profitable producers. The collapse of crude oil prices hit oil exporters like Alberta particularly hard. Calgary, the headquarter city of Canada's energy industry has also been hit hard by it.

The COVID-19 pandemic has caused unprecedented disruptions in global financial markets. The Bank of Canada (BoC) responded with unprecedented monetary policies, lowering the overnight rate three times in a month from 1.75 per cent to 0.25 per cent.

COVID-19 lockdowns have brought financial challenges to the households and businesses affected. In response, all three levels of government in Canada provided financial and economic relief packages. For example, the Canadian government provides Canada's COVID-19 Economic Response Plan, the Alberta government has its Supports for Albertans programs, and The City of Calgary has a COVID-19 municipal property tax relief package, among other recent Council approved relief measures including utility payment deferral. However, a government's relief efforts depend on its fiscal capacity and debt-financing ability. In Canada, only the federal and provincial governments have both the fiscal capacity and debt-financing ability, something that local governments do not have.

There is extreme uncertainty around Calgary's economic outlook for the next five years. The region's economic landscape after COVID-19 depends on a combination of factors in development:

- the path of the pandemic,
- the duration of the pandemic outbreak,
- the length and efficacy of containment efforts,
- whether there is a second wave this year or in 2021 after lifting containment measures, and
- if there is a vaccine available in 2021.

On top of the above changing variables, the length of a demand shock on the crude oil market will have a long-term impact on Calgary's energy sector. The longer the demand shock, the greater the damage to Calgary's energy-related firms and jobs.

Due to the uncertainties we are facing, we have added alternative risk scenarios along with our base-case forecast in this spring outlook.

In our base-case scenario, economic activities in Calgary's major trading partners – the rest of Alberta, the rest of Canada, and the U.S. – are all expected to contract this year due to the COVID-19 pandemic. Real GDP contractions predicted this year are not expected to be significantly deeper in the CER and Alberta relative to Canada. Alberta entered 2020 from a lower than potential level of growth in 2019 due to the mandatory oil production curtailments, while Canada's growth last year was close to its long-term potential. The recovery path for the CER and Alberta, however, will be more challenging than their trade partners as they face additional headwinds from weak crude oil prices (see Forecast Table: Selected Key Indicators on page 5).

In a worst-case scenario, we assume the COVID-19 pandemic to not recede in the second half of this year. A second wave occurs, and there may be outbreaks in 2021. All economic indicators are expected to be much worse than the base-case scenario. In a best-case scenario, we assume the global lockdown due to COVID-19 to be lifted in the second quarter of 2020 and new vaccines or treatments are developed quicker than expected. Economic indicators for Calgary are expected to be slightly better than the base-case.

In both risk scenarios, the differences of impacts on Calgary's growth rates compared to the base-case are expected to be limited in the short-term (two to three years). However, the impact on Calgary's economy in the short-term will lead to lasting differences in longer-term GDP output, total employment, and population levels (see charts on page 5).

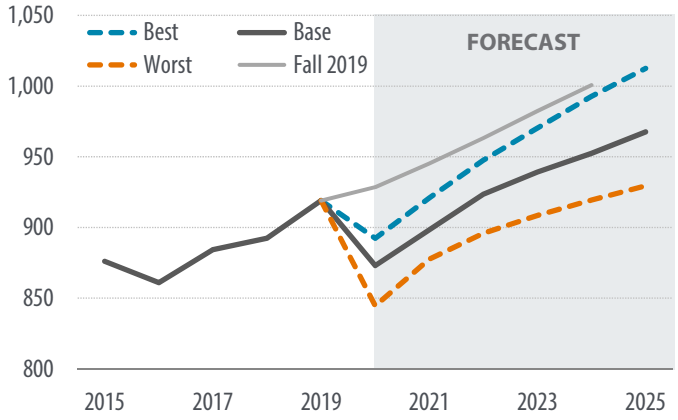
Executive Summary

Forecast Table: Selected Key Indicators

	2019	2020	2021	2022	2023	2024	2025
World: GDP (%)	2.9	-3.0	5.8	2.9	3.3	3.6	3.6
The U.S.: GDP(%)	2.3	-5.5	5.2	3.3	2.3	1.9	2.0
Canada: GDP (%)	1.6	-6.3	5.1	2.2	2.3	2.2	2.0
Alberta: GDP (%)	0.3	-5.8	4.2	2.4	2.2	2.2	2.3
Calgary Economic Region: GDP (%)	1.3	-5.7	4.5	2.1	2.1	2.3	1.6
Calgary Economic Region: Unemployment Rate (%)	7.1	11.0	9.5	9.0	7.7	7.3	7.0
Calgary Census Metropolitan Area: CPI (%)	1.4	1.4	1.8	1.9	1.8	1.9	2.0
City of Calgary: Total Building Permits ($billion)	5.2	3.6	5.3	4.9	4.6	4.9	5.0
City of Calgary: Total Population ('000 persons)	1,285.7	1,303.7	1,322.2	1,340.9	1,360.4	1,380.7	1,400.8
City of Calgary: Housing Starts ('000 units)	10.6	7.4	9.7	9.6	9.6	9.9	10.1

Calgary Economic Region: Total Employment

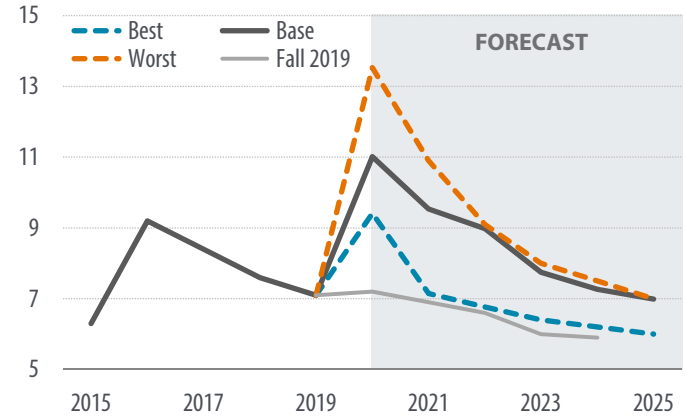
(thousands of persons)



Source: Statistics Canada, Corporate Economics

Calgary Economic Region: Unemployment Rate

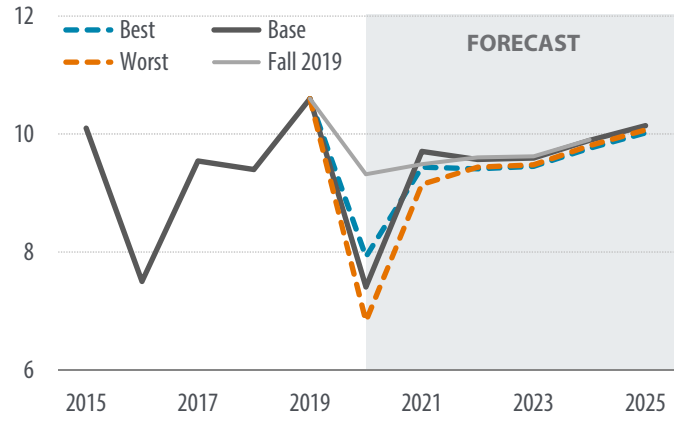
(per cent)



Source: Statistics Canada, Corporate Economics

City of Calgary: Housing Starts

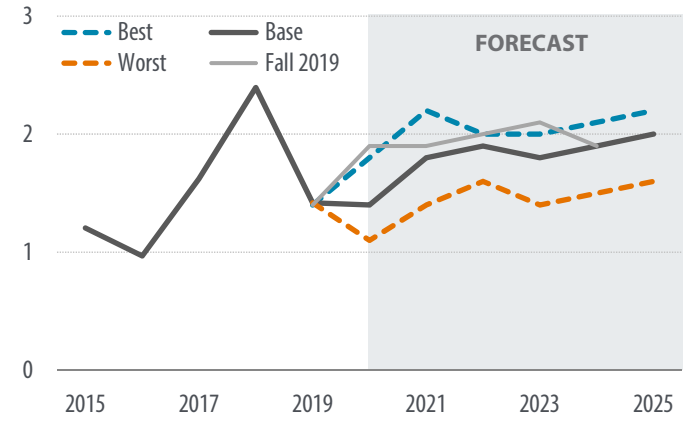
(thousands of units)



Source: CMHC, 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	Forecast	Forecast Implications
	Previous City of Calgary Budget Cycle [2015 to 2018] Average	Current City of Calgary Budget Cycle [2019 to 2022] Average	
Assumptions			
World			
Real Gross Domestic Product Growth (%)	3.5	2.2	A larger economic and population base would increase the demand for commodities and place upward pressure on commodity prices. It will have a positive impact on Canadian terms of trade as Canada produces several commodities.
The United States			
Real Gross Domestic Product Growth (%)	2.5	1.3	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	0.6	The average rate of economic growth in Canada would be slower in this budget cycle than the previous one.
Prime Business Loan Rate (%)	3.0	3.0	Similar 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$)	0.77	0.74	Exchange rate stability would keep the price of imported goods stable limiting the need to hedge.
Alberta			
Real Gross Domestic Product Growth (%)	-0.3	0.3	The Alberta economy would leave the recession behind and move into a phase of economic expansion growing steadily.
Total Employment Growth (%)	0.7	0.1	The pace of job growth would be slower in this cycle as it takes time to recover from the COVID-19 shock.
Unemployment Rate (%)	7.1	8.8	The unemployment rate would be higher with a slower pace of job creation than the growth of labour force.
Housing Starts ('000 Units)	29.4	24.6	Inventory build-up would ease the pace of housing starts to the pace of household formation.
Inflation Rate (%)	1.6	1.7	Inflation rate would increase slightly as the economy expands.
West Texas Intermediate - WTI (US$/bbl)	52.0	45.3	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$/bbl)	35.4	28.1	The WCS oil price has plunged along with global oil prices such as WTI. The WCS discount to WTI is expected to ease towards the end of the forecast period as additional pipeline capacity is brought online.
Alberta Natural Gas Price - AECO/NIT ($/GJ)	2.1	2.2	The impact on The City of Calgary would be mixed. Slightly higher prices will put upward pressure on operating costs and on franchise fee revenue.
Industrial Product Price Index (%)	1.5	0.9	Price growth for finished products would be lower than the previous budget cycle.
Raw Materials Price Index (%)	-1.1	-0.3	Raw material prices would remain weak in this new phase of increased protectionism.
Alberta Average Wage Rate Increase for All Industries (%)	0.0	1.6	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	Forecast	Forecast Implications
	Previous City of Calgary Budget Cycle [2015 to 2018] Average	Current City of Calgary Budget Cycle [2019 to 2022] Average	
Forecast			
Calgary Economic Region			
Real Gross Domestic Product Growth (%)	0.1	0.5	The pace of growth in the regional economy would converge to the rate of growth for Caglary's major trading partners.
Total Employment ('000 persons)	878.5	903.5	Larger employment base brings increased consumer base and demand for housing in the region.
Total Employment Growth (%)	1.0	0.7	Job growth would be slower in the current budget cycle than the previous one.
Unemployment Rate (%)	7.9	9.2	Relatively high unemployment rate would reduce the pressure of competing for skilled workers.
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	0.9	The rate of escalation for construction costs would be higher for the current cycle.
City of Calgary			
Demography			
Total Population ('000 Persons) *at the end of the cycle*	1,244.9	1,313.1	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.
Net Migration ('000 Persons)	7.8	10.3	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	6.6	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	-0.4	Housing market is tilted towards a buyer's market and affordability is expected to improve.
Building Permits ($billion) (city)	5.0	4.7	The City's residential taxable assessment base would grow more slowly.
Non-Residential Market			
Downtown Office Vacancy Rate (%)	18.9	24.8	The downtown office vacancy rate would remain elevated compared to the average for the previous cycle.

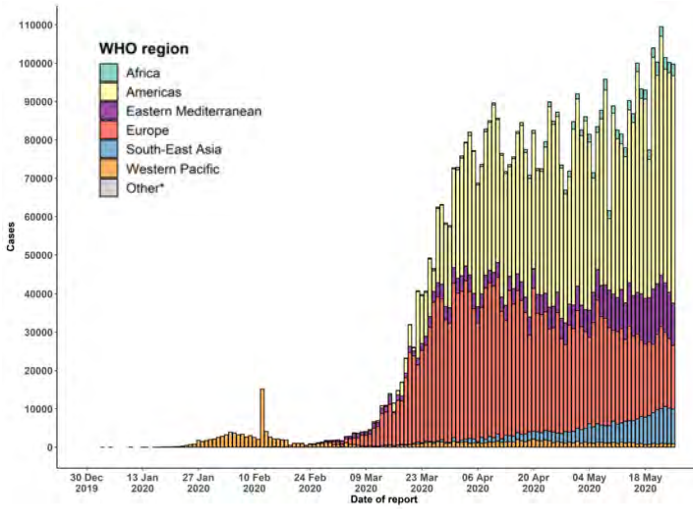
Numbers may not add up due to rounding.

Forecast (Context)

Context: Economic Impact of COVID-19 and the Collapse of Crude Oil Prices

Economic Impact of COVID-19 Pandemic

Epidemic curve of confirmed COVID-19 cases, by date of report and WHO region through May 26, 2020



Source: WHO Coronavirus disease 2019 (COVID-19) Situation Report-127

The world around us has changed dramatically since the COVID-19 outbreak early this year. The coronavirus spread quickly through travelling, social gathering, and close personal contact. If not effectively contained, a widespread of the coronavirus could cause millions of deaths worldwide. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 as a pandemic, the first pandemic caused by a coronavirus in history. By May 26, WHO reported 5,404,512 confirmed COVID-19 cases and 343,514 deaths (or 6 per cent of the confirmed cases) from COVID-19 globally.

China was hardest hit in the first quarter of 2020 when it was the epicentre of the coronavirus. The measures China took to limit the spread of the virus, including locking down the entire province of Hubei, provided a case-study for the rest of the world. As COVID-19 hit different countries at different times, governments around the world responded with unprecedented actions to prevent community transmission and breakdown of their health care systems.

On top of the efforts to detect, test, isolate, and trace the virus, governments around the world implemented various degrees of containment measures to flatten the epidemic curve. These measures have resulted in a large share of economic activity being shut down or scaled back. Job losses and business closures have brought widespread hardship to households and industries around the world.

In Canada, an official Global Travel Advisory and a Pandemic COVID-19 Travel Health Notice are currently in effect. The Canadian government is asking Canadians to avoid non-essential travel outside Canada until further notice. Both the Alberta Government and The City of Calgary have declared a state of emergency. Government orders include closures of non-essential businesses, schools, universities, and government facilities, restrictions on public gatherings, and the practice of physical distancing and self-isolating.

The economic impact of COVID-19 is severe in Calgary. The closure of businesses and public facilities caused CER's unemployment rate to spike from 7.2 per cent in February to 10.8 per cent in April. In two months, the region's total employment fell sharply by 61,000 persons, with accommodation and foods services industry losing 16,000 jobs (or 26 per cent of its February employment level) and the retail trade industry losing 12,600 jobs (or 13 per cent of its total employment in February).

Low-wage earners were hit the hardest. The total weekly wage bill for employees shrank by $5.8 million in the accommodation and food services (or 20 per cent of its February level), and by $9.9 million (or 16 per cent of the level two months ago) in the retail trade in the Calgary CMA.

On April 14, the International Monetary Fund (IMF) predicted global real GDP will contract by 3 per cent in 2020. For the first time since the Great Depression in the 1930s, both advanced economies and emerging and developing economies are in a recession at the same time. The real GDP growth for 2020 is expected to be -6 per cent for the advanced economies and -1 per cent for the emerging and developing economies. The COVID-19 recession is expected to be worse than the Great Recession in 2008-2009.

Unprecedented Government Policy Responses to the Economic Disruption from COVID-19

Monetary policy response from the Bank of Canada

The COVID-19 pandemic has caused unprecedented disruptions in global financial markets. The sudden and deep contraction in economic activity and employment have driven a flight to safety and a sharp depreciation of a wide range of assets. Canadian stocks plunged in March, down almost 22 per cent during the first quarter in 2020. The contraction also pushed down prices for commodities, especially oil which resulted in a depreciation of Canadian dollar.

The BoC responded to the COVID-19 shock with unprecedented monetary policies. With three cuts in March, the BoC has lowered its target for the overnight rate by 150 basis points to the effective lower bound of 0.25 per cent. In support of the functioning of key financial markets, the BoC launched its first quantitative easing (QE) program, including the purchase of Government of Canada bonds in the secondary market at a minimum of $5 billion per week. To provide liquidity for individual financial institutions, the BoC coordinated with other central banks for a U.S. dollar term repo[1] facility on a contingency basis.

Fiscal Policy Responses from the Three Levels of Government

On March 18, Prime Minister Trudeau announced the $82 billion COVID-19 Economic Response Plan. The federal package includes $27 billion in direct cash transfers to households and small business owners and $55 billion in tax payment deferrals for individual and corporate taxpayers. Days later, the federal government announced additional multi-billion-dollar programs as part of its COVID-19 Response Plan. On April 17, the federal government announced a new package to provide financial help for the hard-hit sectors such as energy, cultural, heritage and sports, and non-profit and charitable sectors.

All the provincial governments in Canada created their provincial relief packages. In Alberta, Premier Kenney announced the government's multi-billion-dollar Economic Relief Package. The provincial package provides emergency isolation support, a freeze on a previously approved increase in education property tax, student loan repayment deferral, and support for the Keystone XL pipeline project. By mid-April, the Alberta government has committed over $11 billion in direct financial support and tax deferrals.

The local governments across Canada, with their limited resources, also provided financial supports to their communities. The City of Calgary, in a Council meeting on April 6, approved a COVID-19 municipal property tax relief package. The City's package has two significant relief measures: 1) the tax payment deadline for 2020 property tax has been extended from June 30 to September 30 without a 7 per cent late payment penalty, and 2) the Tax Instalment Payment Plan (TIPP) filing fee has been suspended for 2020. Further measures include the three-month deferral of City utility payments starting in March, waiving the business license renewal fee for one year, and waivers or deferrals for building permit fees. On May 11, City Council approved $22 million for local non-profits, a waiver or reduction in taxi and limousine fees, and support for temporary business patios.

Fiscal Capacity Affects Government's Relief Efforts

The COVID-19 induced businesses closures and temporary layoffs are not the results of normal market forces, but because of government state of emergency orders. The current contraction is therefore incomparable with previous economic recessions. Affected households and businesses now rely on all levels of government to step in and help them bridge the gap between market conditions today and conditions before COVID-19.

A government's relief efforts, however, depend on its fiscal capacity and debt-financing ability. In Canada, the federal and provincial governments have the fiscal capacity and debt-financing ability, while in Alberta local governments are for the most part not allowed to budget for annual operating deficits. The difference in fiscal capacity is shown in the government's own-source net lending positions[2].

For example, in Alberta, from 2007 to 2018 the federal government held positive own-source net lending positions as it collected more[3] from businesses and households from Alberta than it spent in it. In the meantime, the Alberta government realized positive own-source net lending positions in the boom years but suffered net borrowing positions following the two recent recessions. In Alberta, local governments (municipalities and school boards) have consistently had net borrowing positions from their own-source revenues and expenditures, before transfers from other orders of government. The local governments collected less own-source revenues than their spending (Table 1).

1 Term repo or term repurchase agreements are used by banks (the lender) to buy securities and then resell them later at an agreed-upon price. The borrower repays the money and the interest at the repo rate at the end of the specified term. These repo agreements, which can be overnight or for another short-term, are used to raise short-term capital.

2 *Own Source Net lending (or net borrowing)* = Own-source revenue - Own-source expenditure + Consumption of fixed capital – Non-financial capital acquisition. If the calculation is positive, the government has a net lending fiscal position. If the calculation is negative, the government has a net borrowing fiscal position.

3 *Own-source revenue* = total revenue – current transfers from general governments – capital transfers from general governments; For municipalities, their own-source revenues mainly include property tax and user fees. *Own-source expenditure* = total expenditure – current transfers from general governments – capital transfers from general governments.

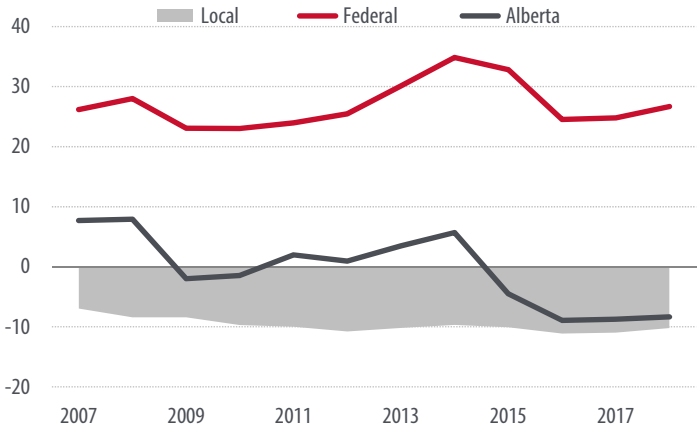
Forecast (Context)

Table 1. Government net lending (or borrowing) positions in Alberta (2007-2018) $million

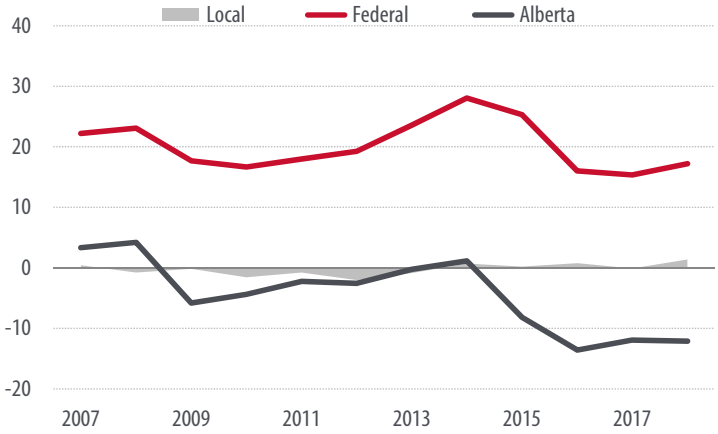
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Own-source surplus or deficit (Surplus or deficit before government transfers)												
Federal	26,185	27,433	23,079	22,994	23,893	25,440	30,055	33,851	32,300	24,464	24,697	26,638
Alberta	9,033	9,757	(386)	343	3,318	1,538	3,714	5,617	(4,257)	(8,959)	(8,394)	(7,884)
Local	(4,678)	(5,918)	(5,900)	(6,380)	(6,913)	(7,129)	(7,222)	(7,395)	(7,215)	(7,967)	(8,406)	(8,273)
Own-source net lending/borrowing position (net lending/borrowing position before government transfers)												
Federal	26,193	28,000	23,067	23,032	23,963	25,456	30,123	34,846	32,848	24,528	24,787	26,674
Alberta	7,701	7,914	(2,008)	(1,450)	1,976	957	3,476	5,706	(4,482)	(8,925)	(8,736)	(8,338)
Local	(6,966)	(8,434)	(8,435)	(9,725)	(10,001)	(10,778)	(10,168)	(9,676)	(10,062)	(11,133)	(10,980)	(10,198)
Net lending/borrowing position after government transfers												
Federal	22,209	23,071	17,674	16,648	17,958	19,251	23,586	28,051	25,304	16,023	15,349	17,211
Alberta	3,340	4,212	(5,822)	(4,395)	(2,240)	(2,556)	(227)	1,152	(8,191)	(13,572)	(11,913)	(12,125)
Local	417	(769)	(171)	(1,532)	(792)	(2,022)	(842)	714	202	801	(86)	1,392

Source: Statistics Canada Table: 36-10-0450-01 (formerly CANSIM 384-0047)
Figures in red and parentheses indicate negative

Government Own-source Net Lending Positions in Alberta



Government Net Lending Positions in Alberta After Government Transfers



For many years, the distribution of revenues and expenditures has not been balanced among the three levels of government. There has been a significant fiscal imbalance[4] at the local level. The local governments in Canada rely on real property taxes as a primary source of revenue. The property tax is not growth-sensitive as it is not related directly to inflation and current income. All changes in property tax rates must be debated every year in Council, including those needed to keep pace with inflation.

As property taxes are not directly linked to inflation or income, they do not increase directly with economic activity to the same degree as federal or provincial taxes. Therefore, the Current Transfers from the federal and provincial governments are essential to fill funding gaps for the local governments in Canada. Government transfers are the second-largest revenue sources for local governments. Only through transfers from other levels of government could local governments have avoided worse net-borrowing positions, while continuing to invest in local infrastructure (Table 1).

In comparison, the federal and provincial governments share a mix of different taxes and revenue sources, especially growth-sensitive taxes. They have access to taxes on

4 A **vertical fiscal imbalance** exists when the fiscal capacity of one order of government is insufficient to sustain its spending responsibilities while the fiscal capacity of another order of government is greater than is needed to sustain its spending obligations, while both orders of government provide public services to the same taxpayer.

personal and business income and taxes on general sales (such as GST, HST, QST or PST). The federal and provincial governments do not need to adjust tax rates regularly, as the growth-related tax revenues increase or decrease automatically with inflation as well as the overall size of the economy. Put differently, income and sales tax revenues are tied to the nominal values of income or sales.

In an economic downturn like this COVID-19 recession, both the federal and provincial governments in Canada can increase their transfers to households, businesses, and lower levels of government. The federal and provincial governments can run deficits with debt-financing for many years. A recent Parliamentary Budget Officer (PBO) report[5] estimated the federal budget deficit would increase to $252.1 billion (or 12.7 per cent of GDP) in 2020-21 due to COVID-19 relief packages.

The federal and most provincial governments in Canada are in sound fiscal conditions. They should not be overly concerned about the probability of their accumulating debts to reach an unsustainable level. Since the economic relief measures are temporary, in the next economic expansion low interest rates combined with economic growth are expected to lower government debt to GDP ratios. Shrinking debt to GDP ratios and increasing tax revenues will improve the balance sheets of the federal and provincial governments.

Due to the COVID-19 impacts, the Alberta government is currently considering allowing municipalities to budget for a deficit temporarily. Alberta's local governments, in general, are not allowed to budget for operating deficits. The City Charter gives The City of Calgary the ability to budget for an operating deficit in one year, provided the budget for the next three years includes the full repayment of the deficit. The problem is that without an adequate fiscal capacity, the local government can only pay off those debts through higher property taxes, higher user fees or lower expenditures. When the pandemic ends the federal and provincial governments will have lower debt to GDP ratios while local governments will be squeezed by rising demand for locally provided government services and less ability to provide them.

Economic Impact of the Collapse of Crude Oil Prices

The global lockdown to contain the COVID-19 pandemic devastated the world's demand for fuel and crude oil. At the same time, a breakdown in negotiations between OPEC and Russia in March over proposed oil-production cuts triggered a crude oil price war. OPEC+ flooded markets in a bid to gain market share by bankrupting less profitable producers. Indeed, during the writing of this report Saudi Arabia started buying Alberta oilsands projects at fire-sale prices.

On April 20, WTI futures contracts for May delivery traded at below zero prices, reaching -US$37.63 a barrel at the lowest point. The negative prompt month WTI prices indicated the fact that storing additional oil in North America is becoming prohibitively expensive as storage capacity approaches zero.

The collapse of crude oil prices hit Canadian oil companies particularly hard, as some are among the higher-cost producers in the market. Production shut-ins are becoming unavoidable.

Alberta, a resource-based small open economy relies heavily on investment in the oil and gas industry for economic growth. Continued crude oil price weakness is expected to generate significant headwinds to the economic growth of the province as well as the CER.

Extreme Uncertainty Around the Outlook

There is extreme uncertainty around Calgary's economic outlook for the next five years. The region's economic landscape after COVID-19 depends on a combination of factors in development. The path of the pandemic, the duration of the pandemic outbreak, and the length and efficacy of containment efforts are unclear. Whether there is a second wave this year after lifting containment measures or if there is an outbreak in 2021 are unknown.

On top of the above changing variables, the length of a demand shock on the crude oil market will have a long-term impact on Calgary's energy sector. The longer the demand shock, the greater the damage to Calgary's energy-related firms and jobs.

5 Scenario Analysis Update: COVID-19 Pandemic and Oil Price Shocks

Forecast (Assumptions)

Assumptions (for three scenarios)

Due to the uncertainties we are facing, we examined three alternative scenarios in this spring outlook. These outlook scenarios are based on the following assumptions of different durations of the COVID-19 containment measures in place and the resulted impacts on Calgary and Alberta's trading partners[6] and the demand for crude oil. The longer the containment measures in place, the larger the negative impacts on the economic outlook of Calgary and its major trading partners, especially during the short-term.

Base-case scenario

Our base-case scenario is what we consider most likely to happen at the time of writing this spring outlook. The assumption in the base-case scenario is that COVID-19 fades in the second half of 2020 and the containment measures can be gradually lifted in Canada and worldwide by the end of 2020. There is no second wave that threatens the health systems worldwide and results in a new global lockdown.

Policy actions taken around the world are effective in preventing widespread bankruptcies, permanent job losses, and system-wide financial strains. In Canada, credit is relatively freely available through the federal government's Business Credit Availability Program (BCAP) and the Canadian Emergency Business Account (CEBA).

Consumers and businesses regain confidence quickly, there is no structural damage to Calgary's economy from COVID-19 pandemic.

Worst-case scenario

In a worst-case scenario, we assume the COVID-19 pandemic not to recede in the second half of this year. A second wave occurs, and there may be outbreaks in 2021. Countries with weak health care systems will not be able to cope. The global economy will be hit harder with prolonged weak consumer and business confidence and structural damages to global supply chains. There are significant job losses and business closures.

Best-case scenario

In a best-case scenario, we assume the global lockdown due to COVID-19 to be lifted in the second quarter of 2020. Concerted international policy measures successfully limit significant structural damages to global supply chains. New vaccines or new treatments are developed quicker than expected. There is no second wave of the coronavirus and no significant permanent job losses and business closures because of COVID-19.

6 Calgary and Alberta's major trading partners are: the rest of Canada, the U.S., European Union, China, and Japan Trade with these entities accounts for 95 per cent of Alberta's trade.

Textbox 1. The Impact of COVID-19 Pandemic

The novel coronavirus 2019 (also known as COVID-19) pandemic currently confronting the world began in the province of Hubei, China. The epicentre was the city of Wuhan, the ninth most populous city in China, with over 11 million people in 2018. On December 31, the World Health Organization (WHO) was alerted to several cases of pneumonia in Wuhan, China. The virus did not match any other known virus. On January 7, China confirmed COVID-19.

On January 23, the Chinese government quarantined the city of Wuhan and neighbouring regions. The lockdown was an effort to containing the spread of the virus after 444 cases of the virus and 17 deaths were reported. All social gatherings were banned, strict mobility restrictions were enforced, and all businesses were closed except for essential services such as grocery stores and pharmacies. The government had also announced a new hospital to be built in ten days to alleviate hospital capacity challenges confronting the region. Between January 23 and March 1, 2020, the virus had claimed 2,761 lives and infected over 66,907 persons in China.

On March 11, the WHO declared a global pandemic as a result of the international spread of COVID-19. The rate of reported cases in China started to decrease between March 1st and March 29. By April 8, outgoing travel restrictions had been lifted in Wuhan.

In Canada, the Public Health Agency of Canada activated the Emergency Operation Centre to support Canada's response to COVID-19 on January 15. As of May 26, the number of total confirmed cases in Canada reached 87,482. Out of the total, there were 49,139 in Quebec, 26,483 in Ontario and 6,901 in Alberta. By May 26, Cana-

Textbox 1. The Impact of COVID-19 Pandemic *(continued)*

da had reported 6,760 total deaths from COVID-19, with 4,228 in Quebec, 2,155 in Ontario, and 161 in British Columbia.

The public health policy responses in Canada have included physical distancing, the shutdown of non-essential businesses, closures of parks and schools, and 14-day mandatory quarantining of suspected COVID-19 cases. The necessary efforts to contain the COVID-19 pandemic have caused a sudden contraction in economic activity and a sharp decline in employment worldwide.

In financial markets, the impact of COVID-19 pandemic has driven a flight to safety and a sharp repricing of a wide range of assets. The Toronto Stock Exchange tumbled by over 12 per cent on March 12 (its largest daily percentage loss since 1940), and the Dow Jones Industrial Average in New York plunged by 13 per cent on March 16 (their largest daily percentage loss since 1987). Seldom utilized market-wide circuit breakers[7] halted trading as panic selling caused major stock indices to tumble more than 7 per cent on four separate trading days in March 2020.

The Federal Reserve System of the United States responded to the increased anxiety in the financial markets by reducing the federal funds rate by 150 basis points. By March 27, the Bank of Canada also had reduced the overnight lending rate by 150 basis points from 1.75 to 0.25 per cent. The interest rate cuts were part of a series of swift responses from central banks to the increasing uncertainty posed by COVID-19 to the financial markets.

The Canadian economy was in a solid position ahead of the COVID-19 pandemic. The COVID-19 lockdowns have reduced the global demand for commodities, especially for crude oil. The Canadian dollar has dropped compared to the U.S. dollar since January, although by less than many other currencies.

In March, more than one million Canadians became unemployed due to COVID-19 lockdowns. Many more workers reported shorter work hours. By early April, nearly six million Canadians had applied for the Canada Emergency Response Benefit.

In response to the financial difficulties brought by COVID-19 lockdowns, the federal and the provincial governments in Canada provided financial and economic supports to Canadian households and businesses affected. Canadian households, businesses and industries can find some help from Canada's COVID-19 Economic Response Plan. At the provincial level, all provincial governments announced relief packages. For example, the Alberta government has its Supports for Albertans and Supports for Businesses programs for Albertans and local businesses affected by COVID-19.

As physical distancing, mobility restrictions and business closures were initiated to contain and reduce the spread of COVID-19, the financial and economic tolls continue to mount. Countries and regions that have seen massive economic impacts are eager to lift the containment measures and reopen their economies, in some cases despite having not flattened their epidemic curves.

On April 24, 2020, WHO's Regional Office for Europe published key considerations for the gradual easing of the lockdown restrictions introduced by many countries in response to the spread of COVID-19 across the European Region. The WHO states that "The transition out of lockdown is set to be a complex and uncertain phase. Challenges and circumstances vary from country to country, and there is no one-size-fits-all approach. It is vital that countries clearly communicate this to the public to build trust and ensure that people observe restrictions specific to their situation."

It is expected that the sudden halt in global activity will be followed by regional recoveries at different times, depending on the duration and severity of the outbreak in each region. We expect that the global economic recovery, when it comes, could be protracted and uneven.

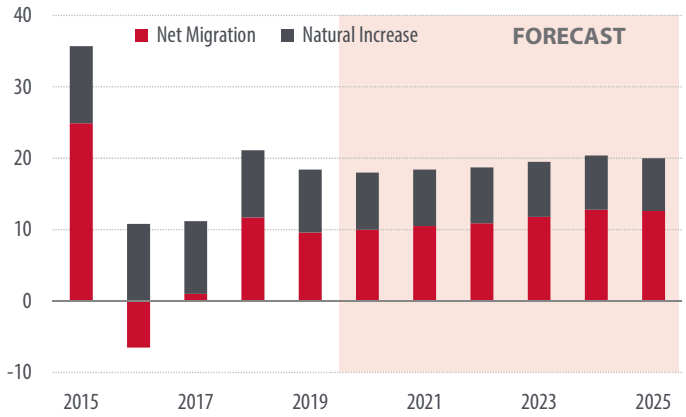
7 Circuit Breakers (or trading curbs) are regulatory measures put in place to manage instances of panic-selling by either halting trading temporarily when cumulative declines of 7 per cent ("level 1"), and then 13 per cent ("level 2") are recorded in a single trading session or, under extreme circumstances ("level 3", a cumulative decline of 20 per cent), shutting down markets before the normal close of trading. These measures were put in place following the "Black Monday" stock market crash on October 19, 1987, when stock markets around the world dropped significantly. On this day, the Dow Jones Industrial Average fell by 22.6 per cent, the largest daily percentage decline in its 124-year history. With these existing circuit breakers in place, it is theoretically impossible for the record set on "Black Monday" to be broken, as the level 3 circuit breaker will kick in and end trading for the day should a 20 per cent decline be realized in a single trading session.

Forecast (Base-case)

Forecast: City of Calgary

Population Growth

Population Growth
(*thousands of persons*)



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

Population growth in the city of Calgary is driven by natural increase and net migration. Calgary enjoys stable fertility and mortality rates but uneven age profiles, so natural increase tends to come in waves. Natural increase in the city of Calgary averaged 10,800 persons in 2015-2018 but is now entering a slower phase, having reached 8,800 in 2019.

Net migration includes net intra-regional migration and net international migration. Intra-regional migration has been a volatile component of population growth in the city of Calgary over the years. Since the last oil price collapse in 2014-2015, net intra-regional migration in Calgary has been negative or near-zero due to the region's relatively high unemployment rate. However, the level of net international migration has been relatively stable, with immigrants coming to Calgary for a new life in Canada.

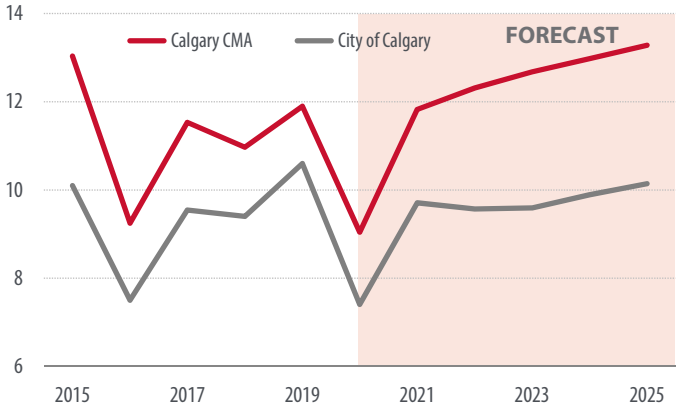
The population projections included in this Spring Outlook were prepared in the summer of 2019 and published in our Fall 2019 Outlook. In a normal year, The City of Calgary's Civic Census in April would provide us with new demographic information for a population forecast for the fall. This year due to the COVID-19 pandemic there will not be a Calgary Civic Census completed. As a result, we will use an alternative method to produce a new population forecast in the fall outlook, which will take into account the current global pandemic conditions.

We are currently in the process of revising our population projections, which should be available later this year. Recent trends in population growth in Calgary lead us to expect the natural growth rate in Calgary will decline slightly over the forecast period as the population ages. International migration will still be a large source of net-migration to Calgary, albeit with borders closed this will represent a lower proportion of net migration to Calgary this year. Unlike prior recessions like the one caused by the National Energy Program in 1982, we do not expect the population of Calgary to decline significantly as a result of the COVID-19 pandemic.

Residential Real Estate Market

Housing Starts

Calgary CMA vs. City of Calgary: Housing Starts
(*thousands of units*)



Source: CMHC, Corporate Economics.

In 2019, the city of Calgary's population accounted for 85 per cent of the people living in the Calgary Metropolitan Area (CMA), while Calgary's share of housing starts was 89 per cent. Total housing starts in the City of Calgary reached 10,600 units in 2019, higher than the ten-year average of 9,700 units.

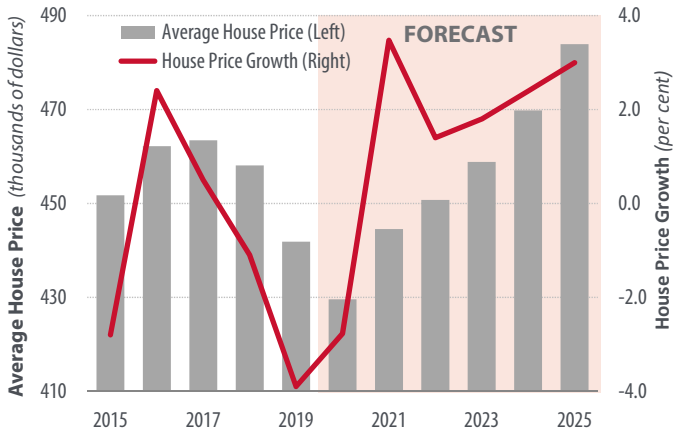
There had been a shift of investment intentions from single-family houses to multi-family houses. The share of single-family to total housing starts declined to 29 per cent in 2019 from 47 per cent in 2014. A change in national mortgage rules in 2018, stress testing, drove a shift to multi-family housing starts. The change was designed to cool hot housing markets by ensuring people could afford what they were buying, especially in Vancouver and Toronto.

With relatively stable population growth, we expect housing starts in the city of Calgary to keep pace with household formation in the forecast period. In 2020, housing starts in Calgary would drop to 7,400 units due to COVID-19 lockdowns. We expect it to increase to 9,700 units next year and averaging at 9,800 units a year in 2022-2025.

Forecast (Base-case)

Residential Resale Market

Calgary CMA: Resale Average House Price and House Price Growth



Source: CREB, Corporate Economics.

The residential real estate market in Calgary has been under downward pressure for several years. The aftermath of the oil price crash in 2014 and 2015 is still lingering in the region. Inventories have been elevated while absorptions have been slow. Declines in resale house prices and lower than 50 per cent sales-to-listing ratios signaled a buyer's market.

Over the past four years, lower prices have attracted residential investment speculators. The labour market improved with wage inflation picking up in 2019. This supported some increased demand. The resale housing market in Calgary started moving away from a buyer's market towards a more balanced market. The average resale house price in Calgary CMA was $441,834 in 2019.

Negatively affected by COVID-19 containments, the resale price is expected to drop slightly to $429,539 in 2020. Assuming the end of COVID-19 containment measures this summer brings gradual normalization of the local economy, we predict resale house prices to increase in the Calgary CMA for the rest of the forecast period. The annual resale house price inflation is forecast to average at 2.4 per cent in 2021-2025.

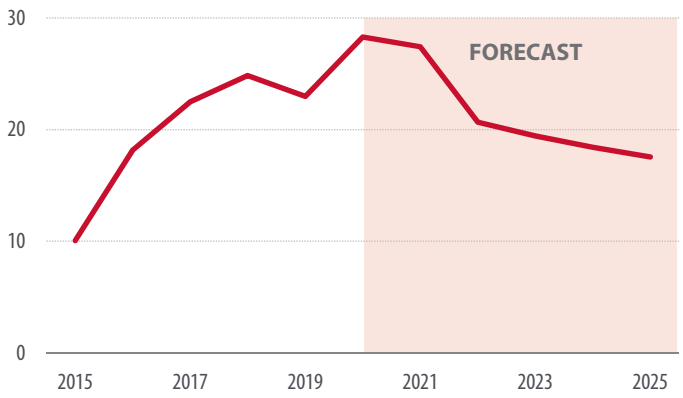
Non-residential real estate market

Downtown Office Market

Just before COVID-19 hit Calgary vacancy in Calgary's downtown office market was dropping, hitting 22.5 per cent, down from a peak of 25.4 per cent two years prior. Only about 15 per cent of Calgary's downtown offices are being used during the current lockdown as many Calgarians telecommute from home. With the Saudi Arabia-Russia oil price war and COVID-19 pandemic, Calgary's downtown office vacancy has jumped. Previously we anticipated the downtown office vacancies to decline over the next 10 to 12 years. Now we expect increasing vacancies this year as some businesses close and as unemployment rises.

Office vacancies will rise but not by as much as the high temporary unemployment hints. In our base case scenario, most of the laid off employees will be recalled by the end of this year, and because commercial leases tend to span four years, the impact of 2020's sudden economic changes on Calgary downtown office vacancies is somewhat muted. We now anticipate it will be 12 to 15 years before Calgary downtown office vacancy rates approach normal levels.

City of Calgary: Downtown Office Vacancy Rate
(*per cent*)



Source: Altus Insite, Corporate Economics.

Over 2001 to 2015, Calgary's downtown office space averaged 5.8 per cent vacancy with two business cycles when the vacancy rate ranged from 0.25 percent to 11.7 per cent. Due to the recent challenges, vacancy rates in downtown Calgary could average 28 per cent in 2020. The outlook calls for minimal improvement next year as businesses rebuild from the COVID-19 shutdowns while the impact of low oil prices dragging into 2021. After 2021 we anticipate office vacancies to slowly decrease, reaching normal levels near 2034.

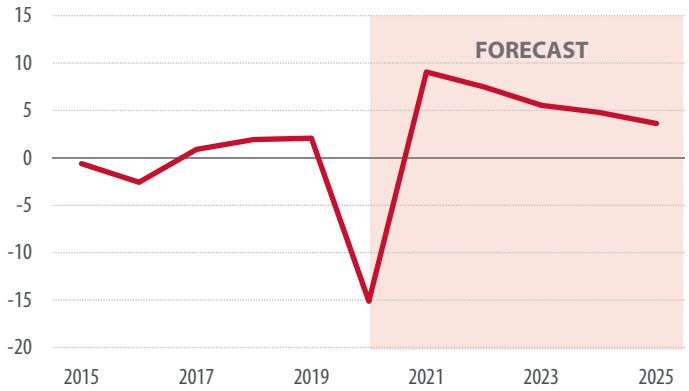
Rents will face downward pressure on two fronts from the latest events. Higher vacancies will reduce landlords' ability to charge higher rents. Also, businesses that had to close due to COVID-19 lockdowns represent the value-added amenities in A and AA class buildings, such as food courts, hairdressers, specialty shops, and personal services. The loss of some of these amenities will lessen landlords ability to demand top dollar.

Forecast (Base-case)

Non-residential Building Price Inflation

The COVID-19 pandemic lockdowns and the collapse of crude oil prices have combined to drop non-residential building construction costs. Major construction projects continue to push ahead with the ring road and new hospital continuing; however, with the lockdown, the logistics of starting new projects is difficult. As a result, it is likely many private market projects are delayed.

Calgary CMA: Non-residential Building Price Inflation (*per cent*)



Source: Statistics Canada, Corporate Economics.

With growing uncertainty in the construction industry, non-residential building construction costs this year are down by 15 per cent. Construction costs are not likely to return to pre-COVID-19 levels for three or four years. Falling interest rates and lower oil prices - and the resulting reduced private sector capital investment budgets - are the primary reason for decreased construction costs.

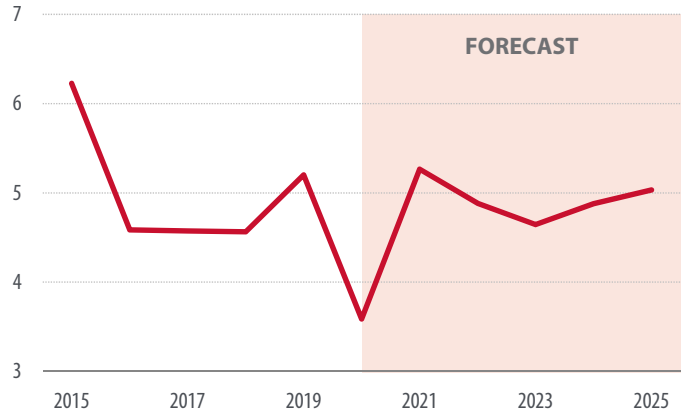
Significant value for the public dollar can be achieved from construction projects in Calgary over the next three to four years, should there be public funds available to advance such projects.

Building Permits

The total value of building permits in the city of Calgary reached $5.2 billion in 2019, higher than the estimated $4.6 billion in our fall 2019 outlook. This was partially a result of the change in construction building codes in Alberta. Builders and investors rushed to get their construction permits before the new laws took effect by the end of 2019.

The share of residential to total building permit values averaged 58 per cent over the past ten years, rising to 63 per cent within the last two years. High office vacancies coupled with high unemployment rates weighed on non-residential construction intentions. Investments in multi-family homes kept the total building permit value stable.

City of Calgary: Total Building Permits
(*billions of dollars*)



Source: The City of Calgary, Corporate Economics.

Our outlook for the total value of building permits in the city of Calgary is $3.6 billion in 2020 and $5.3 billion in 2021, assuming a gradual normalization after COVID-19 in the second half of 2020. We expect a lower total value of building permits in 2020 than in 2019, given the front-loading of permit applications occurred last year.

The execution of these permits is also in limbo due to the current COVID-19 pandemic. Physical distancing measures and non-essential business service shutdowns add to increasing uncertainty in the timing of the resumption of construction activities in Calgary.

Forecast (Base-case)

Forecast: Calgary Economic Region (CER)

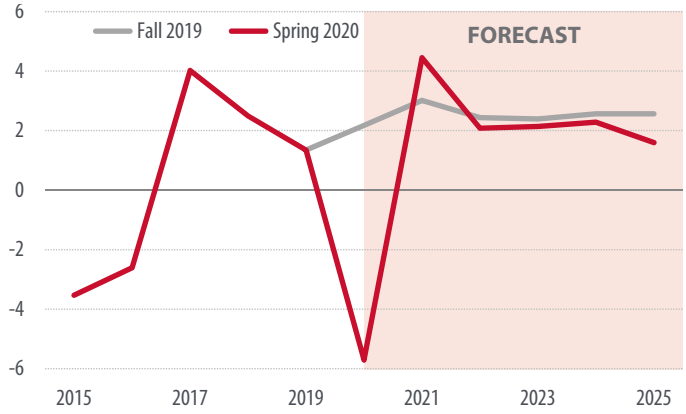
Real GDP Growth in the CER

Real GDP growth in the CER declined to 1.3 per cent in 2019 from the 2.5 per cent in 2018.

Early in 2020, increased pipeline capacity from the progress on Enbridge's Line 3 expansion and an easing production curtailment set the stage for more robust growth in Alberta and the CER. By March 2020, COVID-19 pandemic and crude oil price collapse abruptly changed the outlook for Calgary's economy.

In the CER, 55 per cent of the added value is created in the services-producing sector. The COVID-19 induced business closures and bans on public gathering and travels hit low-income industries in this sector disproportionally hard. We expect the real GDP growth to be -2.3 per cent in the services-producing sector and -9.9 per cent in the goods-producing sector this year.

CER: Real GDP Growth Rate
(*per cent*)



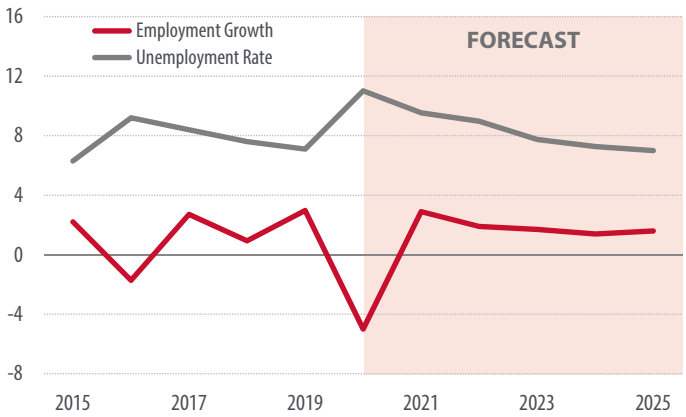
Source: Statistics Canada, Corporate Economics.

Last fall, we predicted the CER's economy to grow by 2.2 per cent in 2020. In light of recent events we have adjusted our base-case forecast for CER's real GDP growth to be -5.7 per cent this year. We expect the real GDP growth in the CER to rebound next year at 4.5 per cent, before trending down to an annual average of 2.0 per cent in 2022-2025.

CER's Labour Market

Labour market conditions in the CER turned out to be much better in 2019 than in 2018. Total employment grew by 26,500 persons. The job gains were mainly in the professional, scientific, and technical services, as well as in the public sector, including public administration and health and social services. Many unemployed people found jobs. The number of unemployed persons declined by 2,600 to 70,300 in 2019. The unemployment rate dropped to 7.1 per cent in 2019.

CER: Labour Market
(*per cent*)



Source: Statistics Canada, Corporate Economics.

The economic impact of COVID-19 is severe in Calgary. With the closure of businesses and public facilities, CER's unemployment rate spiked to 10.8 per cent in April from 7.2 per cent in February. In two months, the region's total employment fell sharply by 61,000 persons, with most of the job losses in the services-producing sector (-59,000 persons). The accommodation and foods services industry lost 16,000 jobs (or 26 per cent of its February employment level), and the retail trade industry lost 12,600 jobs (or 13 per cent of its total employment in February).

From February to April, the total weekly wage bill for all employees in the Calgary Census Metropolitan Area (CMA) shrank by $42.5 million (or 5 per cent of its February level). Industries with most low-wage earners were hit the hardest. The total weekly wage bill for employees shrank by $5.8 million in the accommodation and food services (or 20 per cent of its February level), and by $9.9 million (or 16 per cent of the level two months ago) in the retail trade.

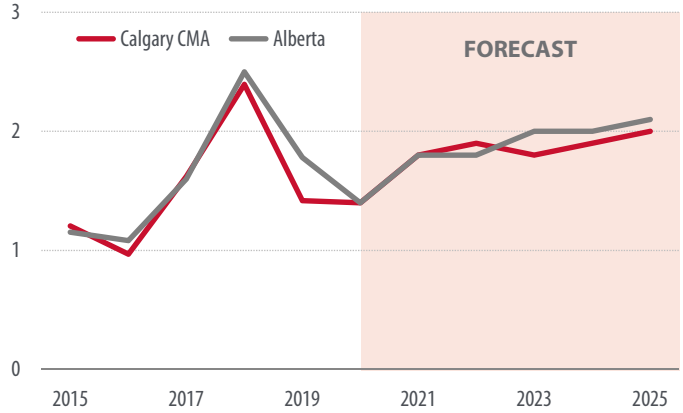
Assuming the COVID-19 crisis fades in the second half of this year, we expect companies will gradually call back their temporarily laid-off workers. Our forecast for the CER labour market is a decline of total employment by 46,000 jobs in 2020, before gaining back the losses in 2022. We expect the unemployment rate in the region to be 11.0 per cent in 2020 and 9.5 per cent in 2021.

Forecast (Base-case)

Consumer Price Index (CPI) Inflation

Consumer price inflation in 2019 was 1.4 per cent in the Calgary CMA, compared to 1.8 per cent in Alberta and 1.9 per cent in Canada. Higher food and shelter prices added 1.04 percentage points to Calgarians' costs of living in 2019. Increased transportation prices added another 0.17 percentage points to Calgary's CPI inflation.

Consumer Price Inflation Rates
(*per cent*)



Source: Statistics Canada, Corporate Economics.

In 2020, the impact of COVID-19 physical distancing on consumer spending is unprecedented. Bans on entertainment and travel have temporarily changed the spending patterns of consumers. However, Statistics Canada only updates the content of the fixed basket of consumer goods and services that measures CPI once every few years. The last update in January 2019 was based on consumer spending patterns in 2017. As a result, CPI inflation in the next few months may distort the picture of the real cost of living changes. Still, CPI provides a measurement for consumption price movements from the COVID-19 driven supply and demand shocks.

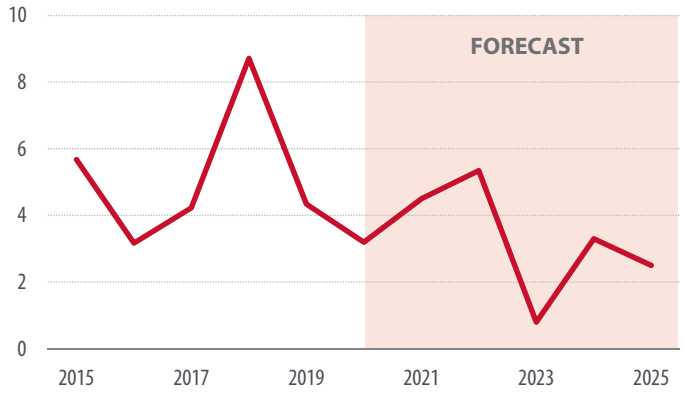
We anticipate the CPI inflation in the Calgary CMA to be 1.4 per cent in 2020 and 1.8 per cent in 2021. Low oil prices and high unemployment put downward pressures on consumer prices. A weaker Canadian dollar will drive up costs for the goods and services, especially food imported from the U.S. On balance, CPI inflation in Calgary should be within the Bank of Canada's inflation target band of 1 to 3 per cent.

Forecast: Commodity Price Inflation

Construction Commodities

Iron and Steel

Iron and Steel Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

The U.S. and Canada agreed to remove tariffs last year. Canadian prices shot up briefly but returned to their previous levels within 9 months of the tariff being eliminated. Increased global productivity and decreased global demand, even before the pandemic, conspired to reduce the effectiveness of these tariffs at increasing U.S. employment.

With the North American reaction to COVID-19 resulting in significant business closures the demand for steel is down, particularly with the demand for new automobiles shrinking significantly in the first half of 2020.

Efficiency improvements continue internationally but when the pandemic recedes we anticipate increased demand for steel as auto manufacturing increases and as manufacturing centres attempt to "on-shore" manufacturing, if nothing else, to enhance their ability to remain in business in the event of another production shock event. We anticipate only modest shifts in steel prices in Canada over the forecast horizon after prices rise in response to the COVID-19 market changes.

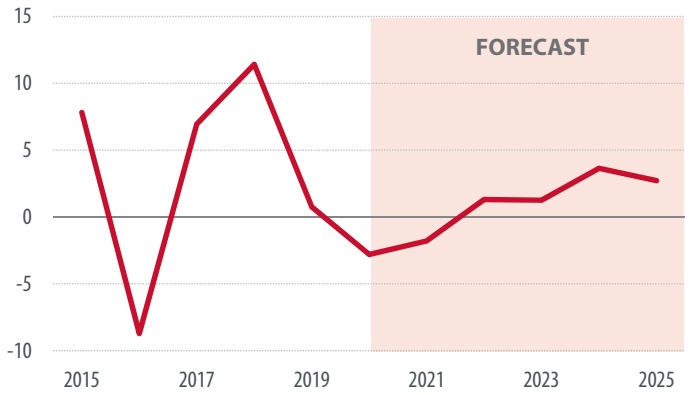
Aluminum products

Global aluminum prices fell off when President Trump announced tariffs on this commodity in 2018 and they haven't recovered since, though the tariff was removed a year ago. The impact of the global COVID-19 pandemic saw increased downward pressure on aluminum prices, but it's not really noticeable compared to the downward trend caused by the U.S. tariffs. Current international markets have sur-

Forecast (Base-case)

plus production capacity. Additionally, though inventories dropped recently, demand has also recently dropped due to the Chinese lockdowns.

Aluminum Price Inflation
(*per cent*)



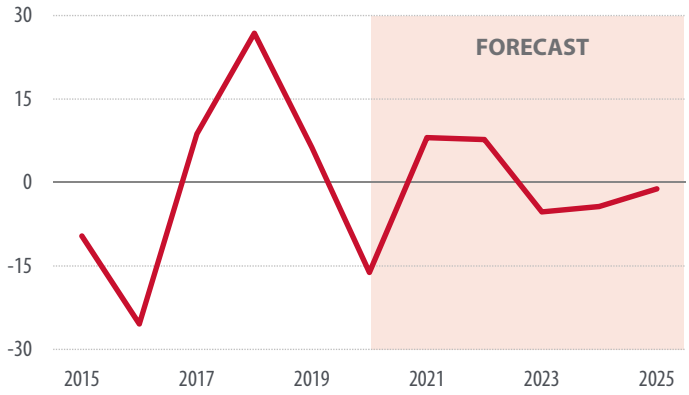
Source: Statistics Canada, Corporate Economics.

Canadian aluminum remains cheap, quick to deliver to U.S. plants and the U.S. currently does not produce enough to meet its own domestic needs. This combines to make Canadian aluminum a preferred import to the U.S., though greater penetration to the Chinese construction market would bode well for Canadian smelters.

The outlook for Canadian aluminum is for tepid prices while the excess supply conditions resolve. Thereafter we anticipate modest price escalation as aluminum demand is expected to increase modestly in response to the COVID-19 pandemic.

Asphalt

Asphalt Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

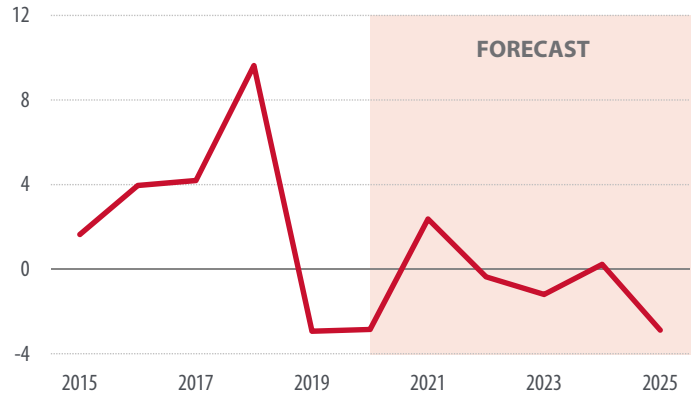
The combination of reduced oil price and reduced production is resulting in slowly falling prices of asphalt, but not as much as expected. Oil prices dropped by half since the start of the year, yet asphalt prices are expected to fall by about 17 per cent. Despite the global lockdowns due to the COVID-19 crisis, the global demand for asphalt remains stable with road construction and roof repairs still needed. As such, we expect asphalt prices to recover quickly when the pandemic passes.

Wood

A new softwood lumber agreement with the U.S. appears to be further away from reality than ever before. There is no schedule to begin negotiating a new softwood lumber agreement after the last one expired in 2016.

Canadian softwood producers cut their prices in 2019, as they adjusted to the new reality of reduced access to U.S. markets. Strikes in B.C. finally ended with people having renewed hope for the B.C. forest industry just in time for the COVID-19 pandemic to undercut demand for lumber. Lower interest rates will soften the blow to wood manufacturers from lower U.S. demand for softwood products. The outlook for Canadian lumber prices is for stagnation into the future.

Wood Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

Operational Commodities

Rubber

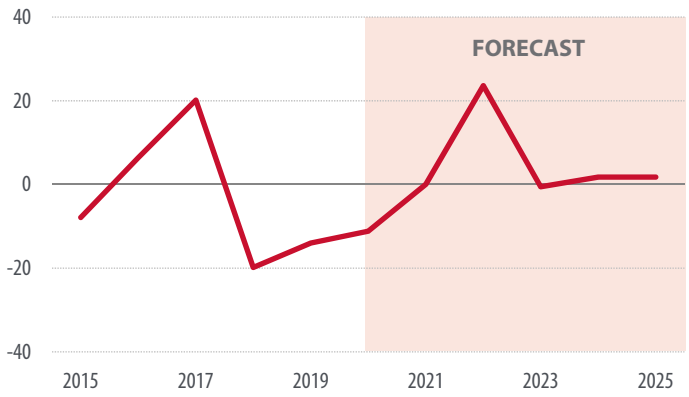
Rubber is made two ways: it is made from crude oil and naturally from the sap of the rubber tree. Oil prices have significantly declined, virtually eliminating the profitability of making natural rubber. Meanwhile, global lockdowns

Forecast (Base-case)

have resulted in a significantly reduced demand for rubber. Prices for rubber in Canada should be dropping dramatically. Business closures due to the COVID-19 pandemic is reducing traffic on the roads, lowering gasoline demand, and the demand for replacement tires. While facing reduced demand for rubber companies are not passing on savings on their raw materials to their customers in order to preserve their bottom lines.

Still, some price reductions are expected this year with subdued price increases continuing. A significant rise in rubber prices is expected in 2022 when oil prices return to slightly more normal levels.

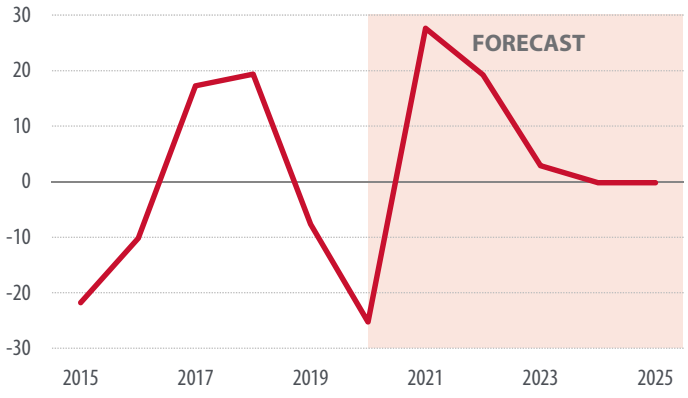
Rubber Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

Diesel Oil

Diesel Oil Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

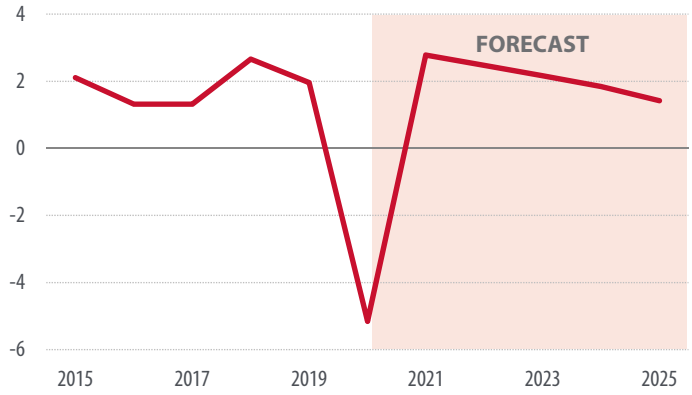
Despite what is happening in energy markets in Canada, the implementation of the new federal carbon tax continues completely unabated. The carbon tax is set to hit 5.34 cents per litre on diesel fuel this year. The schedules continue to show a tax increase of 5.34 cents per litre every year until 2022 when the total burden will be 26.7 cents per litre.

Diesel prices have been slow to drop as a result of decreases in oil prices. Demand for diesel remains strong as trucking is virtually unchanged while demand for warehousing and delivery to some retail establishments remains strong. Retail prices for diesel, including the carbon tax, should average in the high 80 cents per litre range this year, a drop of 25 per cent from last year.

We expect diesel prices to swing back to the dollar plus range next year and stay elevated for two years when the COVID-19 lockdowns end and demand for consumer goods suddenly spikes. Beyond that, we expect moderate inflation in diesel oil.

Automotive Parts

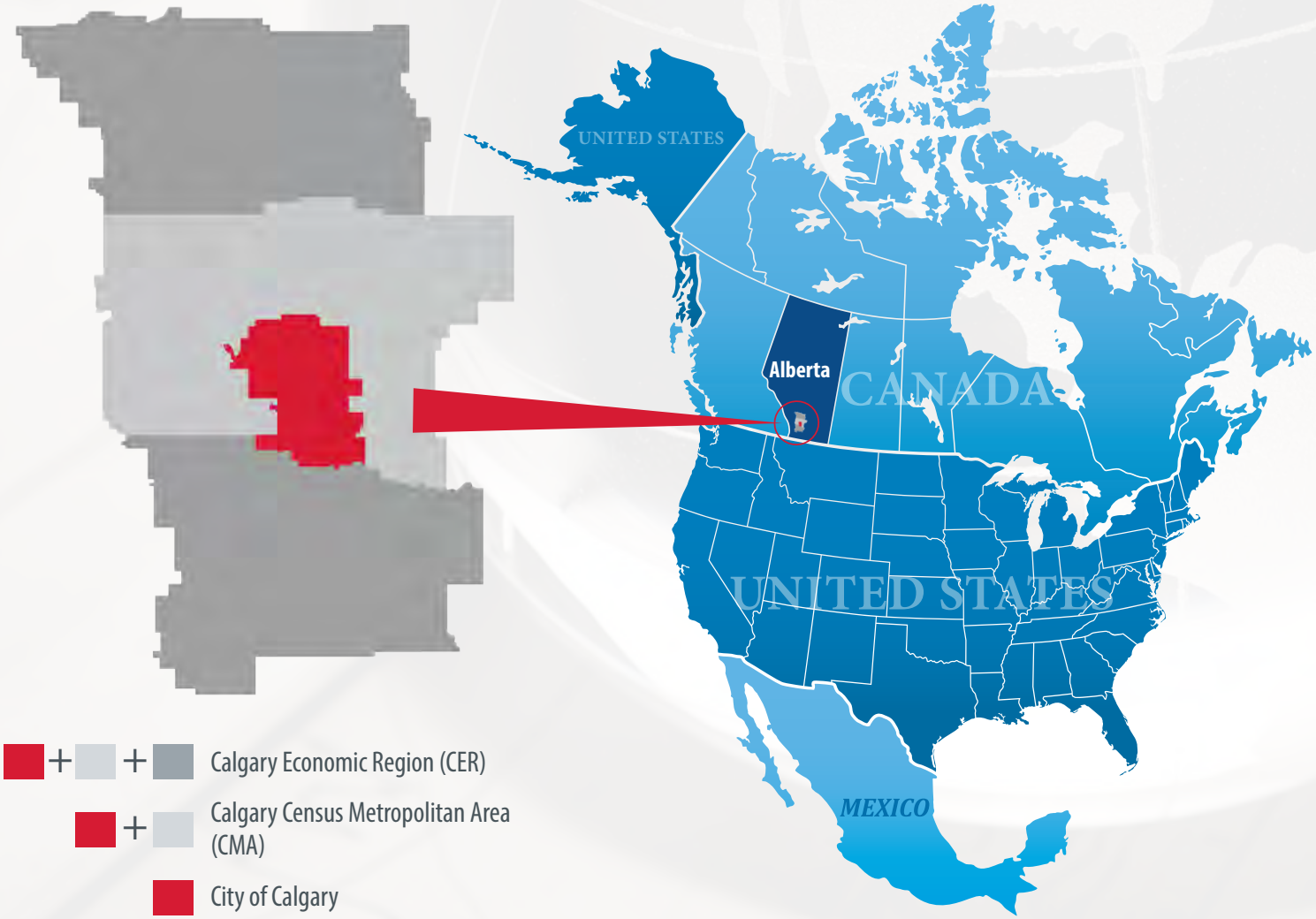
Vehicle Parts Price Inflation
(*per cent*)



Source: Statistics Canada, Corporate Economics.

Most automotive parts used in Canada are either manufactured in Ontario or imported from Mexico. Electricity prices continue to be elevated in Ontario, a comparatively high input cost which continues to hurt the competitiveness of Ontario manufacturers. Meanwhile Canadian parts markets are suffering from a demand shock due to the global pandemic and the oil price crash of 2020. Yet there is surprising resiliency in exchange rates and only modest changes to inflation projections. As a result of this we anticipate vehicle parts prices to change only moderately in the forecast years though Mexico may take a larger share of the Canadian parts market.

Calgary Economic Region Map



Calgary Economic Region (CER)

Calgary Census Metropolitan Area (CMA)

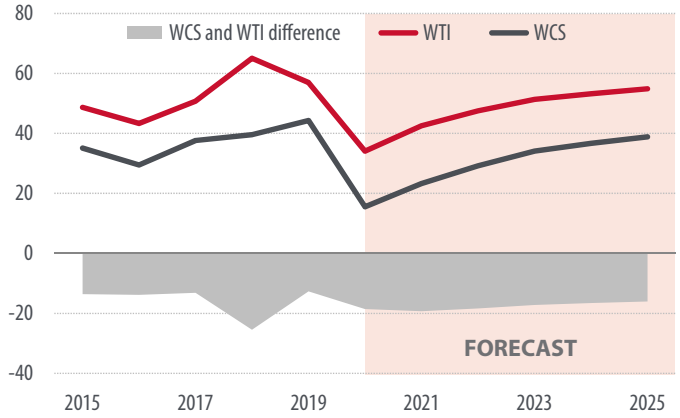
City of Calgary

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 were above US$60/bbl in early 2020, driven by geopolitical tensions and the expectation of production cuts from OPEC. Prices have since plunged dramatically, following dual shocks. Year-to-date (April 14) 2020 WTI crude oil prices have averaged US$42.8/bbl, down from an average of US$57.0/bbl last year.

The global lockdowns to contain the COVID-19 pandemic caused enormous demand destruction in energy markets. Large-scale industrial shutdowns and reductions in transportation significantly reduced the demand for crude oil.

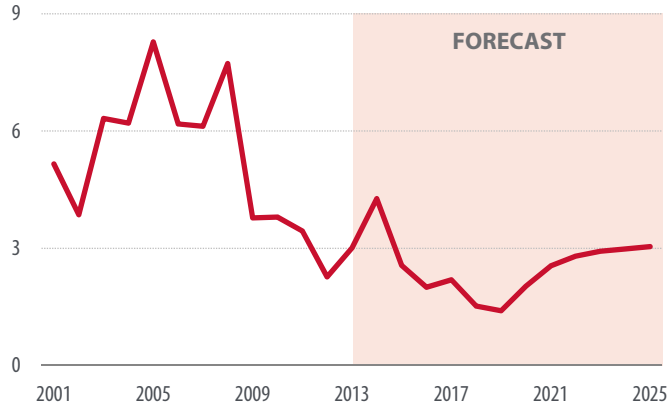
With the economic costs and difficulties of curtailing/shutting in production, and the corresponding plunge in demand, excess oil has piled up in recent months. We are currently at a point where storing additional crude in North America is becoming prohibitively expensive as spare storage capacity approaches zero. On April 20, the day before expiry for the May 2020 WTI NYNEX contract, WTI prices traded at negative prices, reaching -US$37.63/bbl at one point. The negative WTI prices indicated the fact that storing additional oil in North America is becoming prohibitively expensive as spare storage capacity approaches zero.

The collapse of crude oil prices hit Canadian oil companies particularly hard, as some are higher cost producers. Western Canadian Select (WCS) prices simultaneously plunged in Q1 2020, from about US$40/bbl to record lows under US$5/bbl. The drop in WCS prices will drastically reduce operating revenues for Alberta's oil companies. Worsening balance sheets have led to oil firms slashing capital investment and employment expenditures. Production shut-ins are becoming unavoidable. A recent analysis shows that Canada is the oil producer most affected thus far, with the damage estimated to reach above 1.1 million barrels per day (bpd) in shut-in production in the second quarter of 2020.

By mid-April, OPEC and Russia made an agreement to cut production by around 10 million barrels per day, effective in May. While this OPEC+ deal is not enough to offset the demand reduction from COVID-19 lockdowns in the immediate term, it should serve as a stabling force in the medium to long-term. Post COVID-19, oil demand and prices are expected to rebound by the end of 2021.

North American Natural Gas Market

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



Source: Intercontinental Exchange Inc, Corporate Economics.

North American natural gas prices have been trending downwards this winter because of mild weather in the east, and elevated storage levels. Alberta natural gas prices (AECO-C) have been trading at a discount to the Henry Hub benchmark in Louisiana. Domestic bottlenecks in Alberta and northern British Columbia added pressure on transportation costs. Recent rapid growth in U.S. natural gas production provided alternatives to Alberta's natural gas supply. The price differentials between AECO-C and Henry Hub are expected to remain wide in the near term, constrained by gas transmission capacity.

The recent collapse in crude oil prices had two offsetting effects on the expected outlook of natural gas prices. On the supply side, less competition is expected. High-cost Permian basin shale oil and gas producers in the United States

are expected to cut crude oil production, which should also reduce the output of natural gas as a by-product. On the demand side, oil sands producers in Alberta are the biggest users of natural gas. Their cuts in production would reduce the industrial demand for natural gas in the province.

Textbox 2. Negative Oil Prices – What's Going On?

West Texas Intermediate (WTI) is a specified grade of crude oil that has low density (i.e. is "light") and has a low sulphur content, relative to other crude oils. As such, WTI is often referred to as a "light, sweet oil" that is more easily refined into desirable products such as gasoline. WTI is primarily sourced from the Permian basin region, which covers much of western Texas.

On Monday, April 20, 2020, WTI plunged to price levels not seen since the mid-1940s, and then into negative territory, trading under zero dollars a barrel for the first time in history. Why did the price of oil turn negative on April 20? Does this imply that oil is worthless? On the contrary, current market issues (demand, supply, transportation, and storage) and specifics of the nature of WTI futures contracts conspired to create the extraordinary phenomenon of a negative price on this day.

Futures contracts are legal contracts that obligate the holder to buy or sell an asset at a predetermined price at a specified time in the future. The New York Mercantile Exchange (NYMEX) uses WTI as its underlying benchmark commodity for oil trading and is the most popular exchange for the trade of oil in North America. The NYMEX specifies the conditions of the futures contract (size, pricing, delivery timing/location). Each month, the prompt month contract will cease trading on the 3rd or 4th business day prior to the 25th calendar day of the month. There are several NYMEX contracts for WTI that have different delivery months into the future – as of this writing, and there are WTI futures contracts for each month all the way out to February 2031. As the prompt month WTI contract is the closest to delivery and the most traded type of crude oil in the region, WTI is widely reported as the "price of oil" in North America.

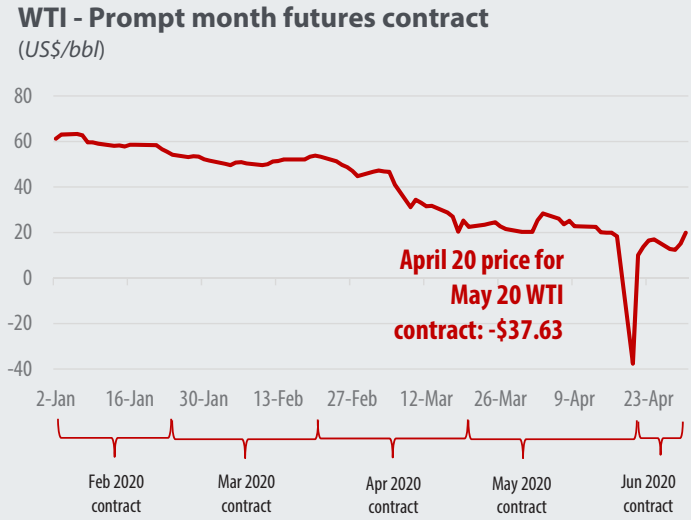
A trader who purchases a futures contract has two choices – they either take physical delivery, or they sell the contract before the contract ceases trading. The latter is the most popular option. If delivery is accepted, this usually means accepting a warehouse receipt in return for immediate payment, with the purchaser taking delivery and then being responsible for all storage and transportation costs. NYMEX contracts for WTI stipulate that physical delivery takes place in Cushing, Oklahoma, a major trading and storage hub for crude oil.

Amid a backdrop of plummeting demand and continued strength in global oil supply storage has filled, to the point that expensive offshore oil tankers are being used for storage. This situation indicates that the marginal cost to store crude oil has skyrocketed. As such, prices for the prompt month WTI contract just before delivery have come under immense downward pressure.

On April 20, the combination of weak demand, excess supply and storage capacity running out likely caused enormous concerns for holders of the prompt month WTI contract. Holders of the prompt month contract would take delivery at Cushing on May 1 if they continued to hold onto their contracts past April 21. Faced with high bills for storage, many buyers wanted to get out of these contracts on this day causing the prompt month WTI price to plunge into negative territory. At first blush, paying to have a contract taken off your hands may seem illogical, but if this negative price is less than the cost of taking physical delivery due to the high storage costs then a negative price may be rational. In this instance, a negative price for WTI on the last trading day for the prompt month contract can be interpreted as a strong signal that storage is full and that cutbacks in production and/or a resurgence in demand are necessary to remedy the situation. The thought of a person being paid to refuel their vehicle or store barrels of oil in their backyard when WTI prices are negative is fanciful if one considers all the non-zero costs, including finding a means to safely store and transport WTI from its delivery point in Cushing and refining the oil for end-use.

Textbox 2. Negative Oil Prices – What's Going On? *(continued)*

The chart below shows historical WTI prices from January to April 2020. Along the horizontal axis are labels to identify the prompt month WTI futures contract that is being quoted. Most notably, the contract for WTI delivery on May 1, 2020, is quoted from March 21 to April 20, while the WTI contract for June 2020 delivery is quoted from April 21 to May 18. The -US$37.63 a barrel price reported on April 20 was for the May contract that expired the next day. On April 21, the positive price reported (US$10.01/bbl) was the per barrel price for a WTI contract with a June 1 delivery date.



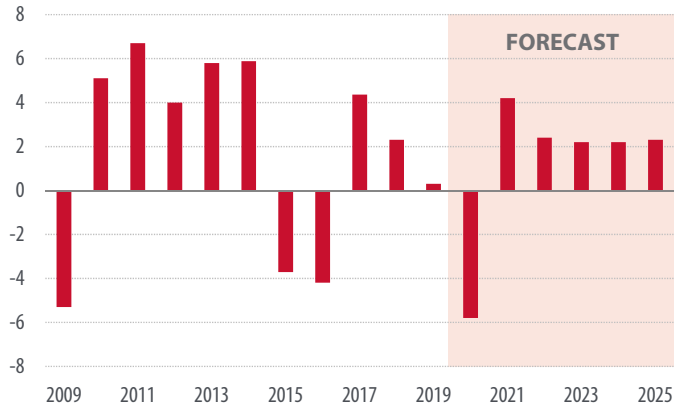
Should storage concerns remain amid low demand and high supply market for oil, oil prices can go negative again when prompt month contracts approach their delivery date. However, noteworthy on April 20 was that only the prompt month WTI contract traded at a negative price (and only for one afternoon), while all other future months for WTI remained at above zero prices. The negative WTI price on April 20 was an anomalous situation reflecting the extremely tight storage situation at that moment. In the longer term, as oil supply subsides from production curtailments in this low-price environment, and demand rebounds as the world emerges from COVID-19 related shutdowns, economical storage capacity will become more widely available. Oil has been and will remain a valuable commodity going forward.

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

Real GDP growth in Alberta was negligible in 2019 at 0.3 per cent. It was constrained by the pipeline capacity issue and the provincial government's mandatory production cuts ordered to support WCS prices. Before the COVID-19 pandemic hit, Alberta's economy was expected to grow at a healthier rate this year. Since COVID-19 hit the province in March, a large portion of the economy had to shut down to contain the virus.

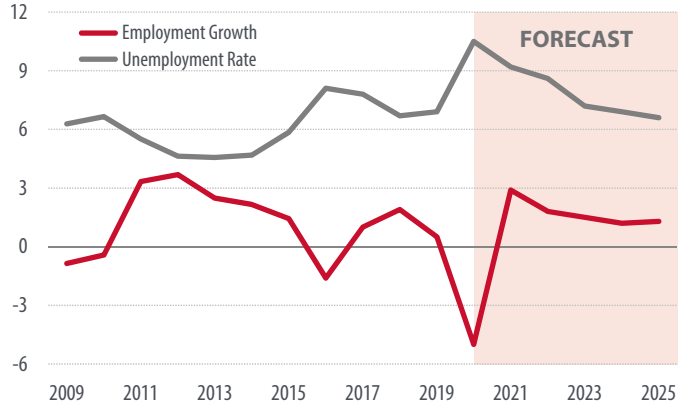
Adding to the economic pain of COVID-19, the collapse in crude oil prices hit Alberta even harder. With the energy sector accounting for approximately 27 per cent of its GDP, Alberta's economy is expected to contract by 5.8 per cent in 2020. If the coronavirus containment measures are successful, the reopening of the provincial economy should see Alberta's GDP grow 4.2 per cent in 2021.

The Alberta government entered the dual economic shocks in a weak fiscal position. It had been running budget deficits for several years since the last oil price-driven recession in 2015-2016. Due to the significantly lower than expected oil prices in 2020, the province is likely to lose at least another $5 billion in royalty revenues.

On April 17, the federal government announced an aid package targeting the energy sector. The federal package, including $1.7 billion for orphaned and abandoned well cleanup, is expected to help maintain 5,200 jobs in Alberta.

Alberta's Labour Market

Alberta: Labour Market
(per cent)



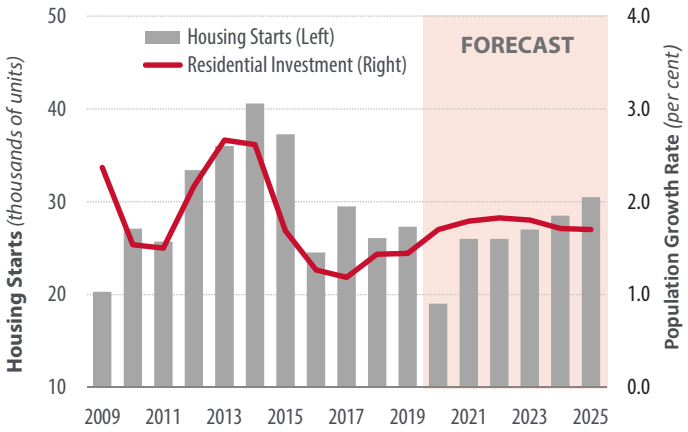
Source: Statistics Canada, Corporate Economics

Total employment in Alberta grew by only 0.5 per cent in 2019, the lowest among all provinces and well below the national average of 2.1 per cent. The province's unemployment rate rose to 6.9 per cent in 2019.

In 2020, sharply reduced economic activities in Alberta should reduce its total employment by 5.0 per cent. The province's unemployment rate is projected to reach double-digits in 2020, before trending down to below 7.0 per cent by 2024.

Residential and Non-Residential Business Investment

Alberta: Housing Starts and Population Growth



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

Economic and Market Conditions Outside Calgary

The number of housing starts in Alberta increased from 26,100 in 2018 to 27,300 in 2019. The increase was the result of steady population growth, declining interest rates, and the introduction of the First-Time Home Buyer Incentive by the federal government in the fall.

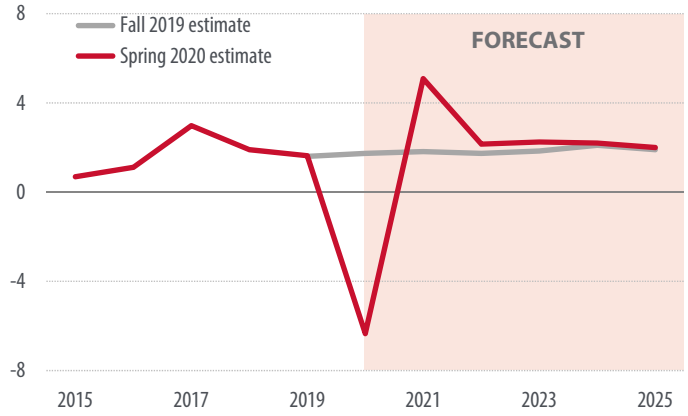
Despite low mortgage rates, the COVID-19 lockdown has caused a slowdown in residential real estate activities. Housing starts are expected to fall by 30 per cent to 19,000 units in 2020.

Non-residential business investment is expected to decline with the plunge in oil prices. Major oil and gas players, including Husky and Cenovus, have announced sizeable reductions in capital expenditures. This situation is unlikely to change without more certainty on the completion of Alberta's pipeline developments, and a rebound in oil prices.

Canada

Real GDP Growth in Canada

Canada: Real GDP Growth Rate
(*per cent*)



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

Real GDP growth in Canada was widespread in 2019, with 16 of 20 sectors increasing added values. The real GDP in services-producing industries grew by 2.5 per cent, while in the goods-producing industries declined by 0.9 per cent. The biggest reason for the decline in the goods-producing sector was a contraction of 5.1 per cent in the mining, quarrying, and oil and gas industry due to the production cuts in Alberta.

In March 2020, government interventions due to COVID-19 pandemic sharply shut down part of the national economy.

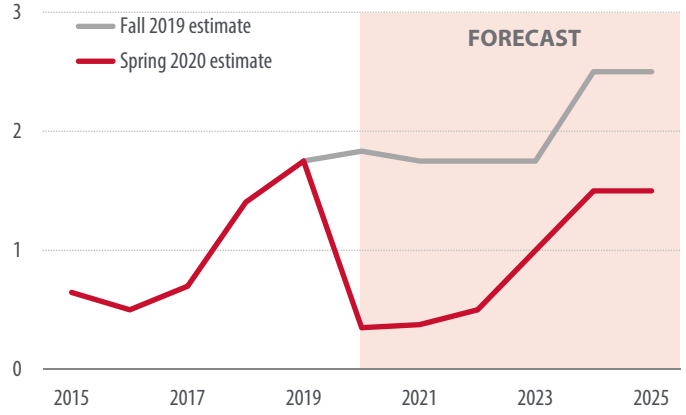
Statistics Canada's flash estimate[8] of GDP assessed that the real GDP in Canada dropped by 9 per cent in March, the largest one-month decline in GDP since the series started in 1961. The flash estimate of GDP predicted an approximate reduction of 2.6 per cent in the first quarter of 2020.

It is estimated that the output contraction in Canada in the second quarter would be much more profound at 42 per cent. Assuming the COVID-19 lockdown ends in the summer and a gradual normalization of the national economy starts from the third quarter, the annual average real GDP in Canada is estimated to contract by 6.3 per cent in 2020.

Due to the economic impact of COVID-19, household and business confidence have fallen sharply. Rebuilding businesses and livelihoods are expected to take time. The real GDP growth in Canada is expected to bounce back 5.1 per cent in 2021, before trending down to an annual average of 2.2 per cent in 2022-2025.

Monetary Policy Changes in Canada

Canada: Bank of Canada Overnight Rate
(*per cent*)



Source: Bank of Canada, Corporate Economics

Since March 2020, the BoC has deployed some bold measures to support the financial system and mitigate economic fallout during the unprecedented COVID-19 lockdowns:

- The BoC has lowered its target for the overnight rate by 150 basis points to the effective lower bound of 0.25 per cent.
- To support the functioning of key financial markets, the BoC launched a quantitative easing (QE) program. The large-scale QE programs include the pur-

8 Flash estimate of GDP is a special product from Statistics Canada in the context of the COVID-19 pandemic.

Economic and Market Conditions Outside Calgary

chase of Government of Canada bonds in the secondary market at a minimum of $5 billion per week.

- To provide liquidity for individual financial institutions, the BoC coordinated with other central banks for a U.S. dollar term repo facility on a contingency basis.

The BoC's Governing Council stands ready to adjust the scale or duration of its programs if necessary. The Bank's actions are aimed at helping households and businesses bridge the current period of containment and creating the conditions for a sustainable recovery with inflation under control.

The BoC expected that CPI inflation in Canada to be close to 0 percent in the second quarter of 2020, primarily due to the transitory effects of lower gasoline prices. This rate of inflation is outside the lower band of the Bank's inflation target range. The effects of COVID-19 will weigh more heavily on the demand side than on the production side. As a result, the Bank of Canada has signaled its intention to keep the interest rates low for the foreseeable future.

During the COVID-19 crisis, the search for safer assets, primarily in US dollars, has resulted in an appreciation of the US dollar against other major currencies, including the Canadian dollar. The collapse of global crude oil prices also contributed to the weaker Canadian dollar. The Canadian dollar depreciation is expected to provide a buffer for Canadian exporters in increasing their product price competitiveness.

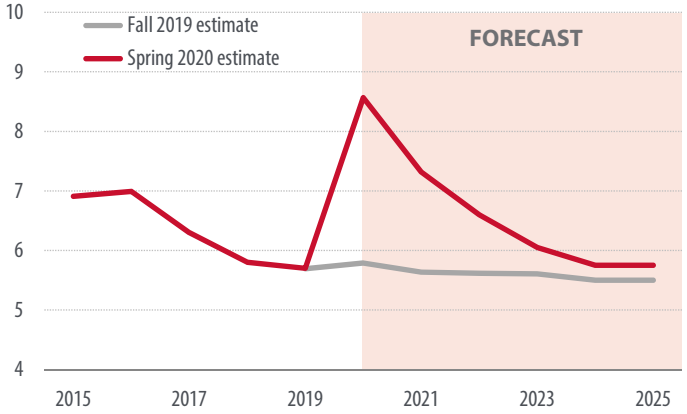
The Canadian Labour Market

Before COVID-19 struck, the labour market in Canada had experienced record low unemployment rates and rising wage inflation in the past three years. In March 2020, a sequence of unprecedented containment measures to prevent the spread of COVID-19 impacted the labour market suddenly.

On April 9, Statistics Canada released the first Labour Force Survey since government COVID-19 interventions in Canada. The survey showed that more than one million Canadians lost their jobs in March. Of those who were employed, 1.3 million more reported zero work hours during the reference week of March 15 to 21. The number of people who worked less than half of their usual hours increased by 800,000. In total, there were 3.1 million Canadian affected by COVID-19 in March, either through job losses or by reduced work hours.

Canada: Unemployment Rate

(*per cent*)



Source: Statistics Canada, Corporate Economics

In April 2020, the employment rate in Canada fell to 51.5 per cent, the lowest rate on record (the series date back to January 1976). The country's unemployment rate jumped to 13.5 per cent, the highest level since March 1983.

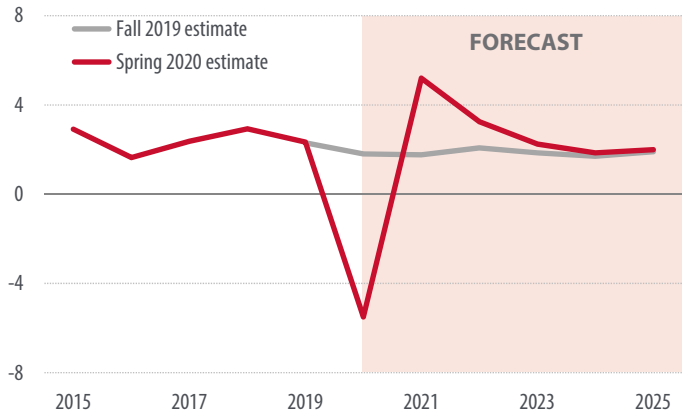
The unemployment rate is expected to increase sharply this year before trending down next year. It is expected to take two to three years for the unemployment rate to return to its pre COVID-19 level.

The U.S.

Real GDP Growth in the U.S.

U.S.: Real GDP Growth Rate

(*per cent*)



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

The latest U.S. economic expansion started in June 2009 and

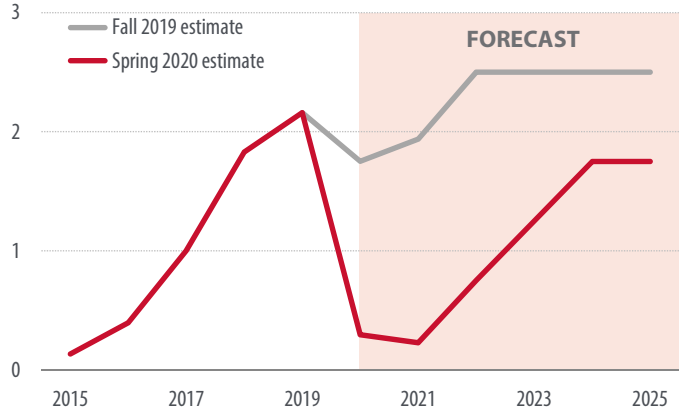
Economic and Market Conditions Outside Calgary

lasted for more than ten years. The outbreak of COVID-19 eventually ended the longest economic boom in U.S. history. Efforts to contain the spread of the coronavirus in the U.S. have shut down most non-essential economic activities since mid-March. Consumer spending, non-residential investment, imports, and exports are all expected to decline sharply in the first half of 2020. Only government spending will increase, thanks to the $2 trillion federal stimulus package that will provide direct cash transfers to households and loans for businesses, state governments, and local governments.

Assuming the COVID-19 spread is contained by the end of this summer, economic activities are expected to gradually return to "near-normal" by the end of this year. Real GDP in the U.S. is predicted to fall by 5.5 per cent in 2020, the deepest contraction since 1946. A return to normal economic activities next year would result in a sharp rebound of growth by 5.2 per cent. Real GDP in the U.S. is projected to grow at an annual average rate of 2.3 per cent from 2022 to 2025.

Monetary Policy Changes in the U.S

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



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

Financial markets in the U.S. plummeted in late February and early March, in reaction to the evolving economic and financial risks posed by the COVID-19 crisis. Volatility in U.S. financial markets reached unprecedented levels.

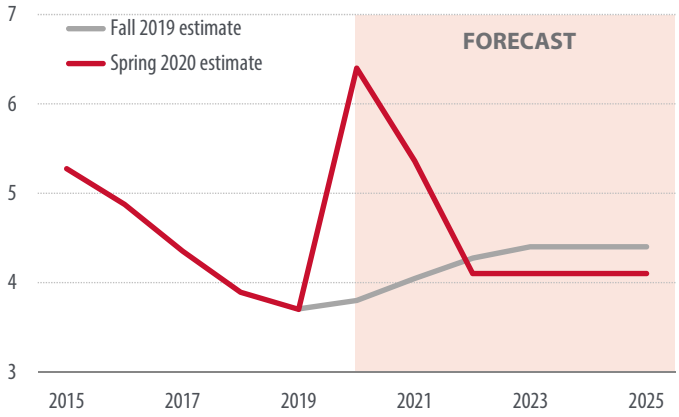
The Federal Reserve System of the U.S. (the Fed) acted quickly to cut the policy interest rate. On March 3, the Fed cut the target for the federal funds rate by 50 basis points (bps) in its first unscheduled emergency meeting. On March 15, the Fed lowered its target rate by another 100 bps in a second unscheduled meeting. With the two rate cuts, the target range for the fed funds rate dropped from the 1.5 to 1.75 per cent range to the 0 to 0.25 per cent range.

To provide liquidity to the financial market and ensure market functioning, the Fed also took other bold measures, including large-scale asset purchases.

The Fed is likely to keep its target rate low until the second half of 2021. It is expected to gradually raise the policy rate to the pre COVID-19 level of 1.75 per cent in 2024 after U.S. economic growth returns to its long-term trend.

The U.S. Labour market

U.S.: Unemployment Rate
(*per cent*)



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

In April 2020, employment fell sharply in the U.S. by 22.4 million and the employment rate dropped by 8.7 percentage points to 51.3 percent. This was the largest over-the-month decline of employment and the lowest employment rate in the history of the series (dating back to January 1948).

In April 2020, the number of unemployed people in the U.S. rose by 15.9 million and a total of 6.5 million people left the labour market. U.S. unemployment rate increased by 10.3 percentage points to 14.7 percent, the largest over-the-month increase and the highest rate in the history of the series.

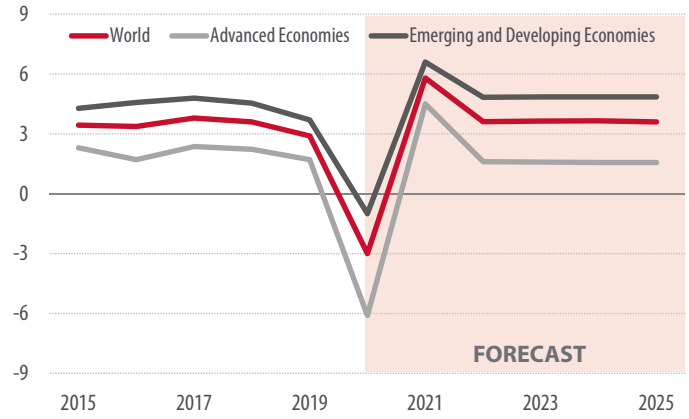
Assuming the U.S. monetary and fiscal policies are effective, and COVID-19 pandemic recedes in the second half of the year, bankruptcies are expected to be minimal. In this base-case scenario, the total employment in the U.S. is expected to increase gradually in the second half of the year. The unemployment rate is expected to be high in 2020 and 2021, trending down to its pre-COVID-19 level in 2022-2025.

Economic and Market Conditions Outside Calgary

World

Global Real GDP Growth

World: Real GDP Growth Rates
(*per cent*)



Source: International Monetary Fund, Corporate Economics

The global economy is on partial lockdown as countries implement various containment measures to flatten the epidemic curve. The magnitude and speed of paused economic activity are unlike anything before in the world economic history.

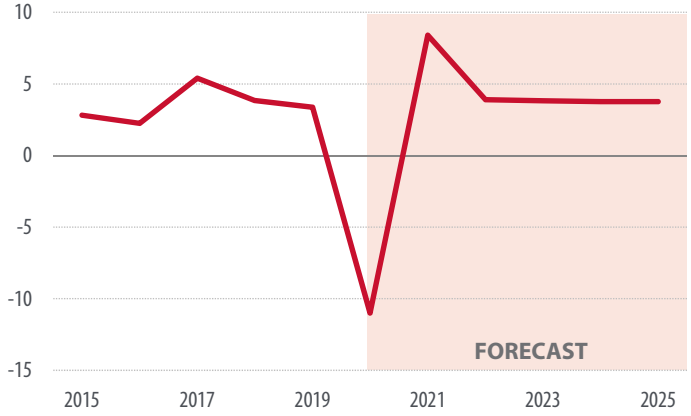
There has been a concerted effort by the IMF along with the World Bank Organization to assist emerging and developing countries as well as developed countries in need. States with fiscal capacities have likewise responded to the economic and financial disruptions with significant fiscal and monetary assistance to mitigate the COVID-19 induced negative impacts.

Assuming COVID-19 recedes in the second half of the year, and there is some degree of normalcy by year-end, global GDP is expected to contract by 3.0 per cent in 2020. This projection is revised down by 6.5 percentage points from the 3.5 per cent growth in our Fall 2019 Outlook.

As different countries are in different stages of the COVID-19 outbreak and are expected to recover at various points in time, the global recovery will be gradual. Under the assumption that there will be improved treatment options or a vaccine for COVID-19 within the forecast horizon, world economic growth is projected to jump to 5.8 per cent in 2021. Post COVID-19, annual real GDP growth is expected to be 3.3 per cent during 2022-2025.

World Trade Volume

World: Trade Growth
(*per cent*)

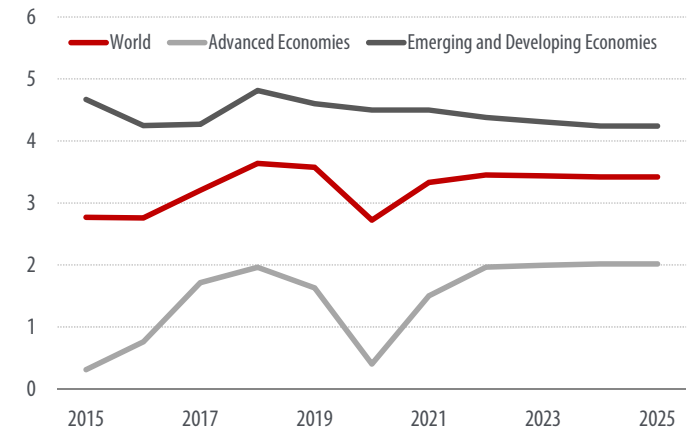


Source: International Monetary Fund, Corporate Economics

The world trade volume grew at an average of 3.6 per cent over the last five years. It is projected to contract by 4.8 per cent in 2020 due to COVID-19. If COVID-19 recedes in the second half of 2020, global trade growth is expected to be positive again in 2021, reaching an annual average of 3.6 per cent in 2021-2025.

World Inflation

World: Inflation Rates
(*per cent*)



Consumer price inflation in the world averaged 3.1 per cent over the past five years. It is projected to average at 3.5 per cent annually for the next five years. The impact of COVID-19 on global inflation in 2020 is expected to be marginal. Higher food costs should offset lower transportation costs caused by COVID-19 lockdowns.

Economic and Market Conditions Outside Calgary

Strong domestic demand in emerging and developing economies is expected to push consumer prices higher to an annual average of 4.4 per cent inflation in 2021-2025. Over the same period, consumer price inflation is expected to be 2.0 per cent in advanced economies.

Risk Scenarios

Risks (Worst-case; Best-case)

Worst-case scenario

In a worst-case scenario, we assume that the COVID-19 pandemic will not fully recede in the second half of this year. A second wave occurs, and there may be outbreaks in 2021.

Under this scenario, the demand shock on the world crude oil market will be much more severe. WTI prices are expected to be lower than the base-case scenario by 20 per cent this year and by 18 per cent next year. The economic performance of Alberta relative to the rest of Canada will be much worse than in the other scenarios, mostly due to larger oil production shut-ins in the province.

The longer lockdowns continue, the more businesses will close their doors, and the higher will be the downtown vacancy rate when the lockdown finally ends. Should lockdowns exceed eight months, it is possible downtown vacancies could top 38 per cent by the end of the 4th quarter of 2020, exceeding the recent peak of 25 per cent only a couple years ago.

In the worst-case scenario, we predict Calgary's economy to contract by 11.0 per cent, the region's total employment to decline by 8.1 per cent (or 74,400 persons), and the unemployment rate to reach 13.5 per cent in 2020. We anticipate the CPI inflation in Calgary CMA to be 1.1 per cent, housing starts in the city to be 6,800 units, and the total value of building permits to be only $2.8 billion in 2020.

Best-case scenario

In the best-case scenario, we assume COVID-19 containment measures will be lifted worldwide by the end of the second quarter this year. Most businesses will reopen, although some will need time to get back to normal.

The WTI and WCS prices are expected to be slightly higher, and oil production shut-ins in Alberta to be marginally better than the base-case scenario. Real GDP growth in the U.S., Canada and Alberta are expected to fall less this year and bounce back higher next year.

In this economic environment, we predict the real GDP growth in the CER to decline by 3.5 per cent this year and rebound to 4.1 per cent next year. The unemployment rate is expected to increase from 7.1 per cent last year to 9.4 per cent in 2020. Compared to the base-case scenario, Calgary's CPI inflation is expected to increase to 1.8 per cent, the total number of housing starts in the city to reach 7,900 units, and the total value of building permits to be $4.1 billion in 2020.

Forecast Tables

Risk Scenario Tables

Appendix

Glossary

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: April 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	-3.0	5.8	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	-5.5	5.2	3.3	2.3	1.9	2.0
Canada											
Real Gross Domestic Product Growth (%)	0.7	1.1	3.0	1.9	1.6	-6.3	5.1	2.2	2.3	2.2	2.0
Prime Business Loan Rate (%)	2.8	2.7	2.9	3.6	4.0	2.6	2.3	3.0	3.6	3.7	3.7
Exchange Rate (US$ for 1C$)	0.78	0.76	0.77	0.77	0.75	0.72	0.74	0.75	0.75	0.76	0.77
Alberta											
Real Gross Domestic Product Growth (%)	-3.7	-4.2	4.4	2.3	0.3	-5.8	4.2	2.4	2.2	2.2	2.3
Total Employment Growth (%)	1.4	-1.6	1.0	1.9	0.5	-5.0	2.9	1.8	1.5	1.2	1.3
Unemployment Rate (%)	5.9	8.1	7.8	6.7	6.9	10.5	9.2	8.6	7.2	6.9	6.6
Housing Starts ('000 Units)	37.3	24.5	29.5	26.1	27.3	19.0	26.0	26.0	27.0	28.5	30.5
Inflation Rate - CPI (%)	1.2	1.1	1.6	2.5	1.8	1.4	1.8	1.8	2.0	2.0	2.1
Crude Oil Price - WTI (US$/bbl)	48.7	43.3	50.8	65.1	57.0	34.1	42.6	47.5	51.3	53.3	54.9
Western Canadian Select - WCS (US$/bbl)	35.1	29.5	37.6	39.6	44.3	15.5	23.3	29.2	34.1	36.7	38.9
Alberta Natural Gas Price - AECO/NIT ($/GJ)	2.6	2.0	2.3	1.5	1.4	2.0	2.6	2.8	2.9	3.0	3.0
Industrial Product Price Index (%)	-0.8	-0.2	3.1	3.9	-0.1	-1.5	2.4	2.7	1.9	1.8	1.8
Raw Materials Price Index (%)	-19.9	-4.6	10.9	9.2	-2.6	-13.5	5.5	9.6	3.0	1.9	1.9
Alberta Average Wage Rate Increase for All Industries (%)	-0.3	-2.4	1.0	1.7	1.4	1.1	1.6	2.2	2.4	2.6	2.6
FORECAST											
Calgary Economic Region (CER)											
Real Gross Domestic Product Growth (%)*	-3.5	-2.6	4.0	2.5	1.3	-5.7	4.5	2.1	2.1	2.3	1.6
Total Employment ('000 persons)**	876.1	861.0	884.3	892.5	919.0	873.1	898.4	923.5	939.2	952.4	967.6
Total Employment Growth (%)**	2.2	-1.7	2.7	0.9	3.0	-5.0	2.9	1.9	1.7	1.4	1.6
Unemployment Rate (%)**	6.3	9.2	8.4	7.6	7.1	11.0	9.5	9.0	7.7	7.3	7.0
Calgary Census Metropolitan Area (CMA)											
Housing Starts ('000 units)	13.0	9.2	11.5	11.0	11.9	9.0	11.8	12.3	12.7	13.0	13.3
Inflation Rate - CPI (%)	1.2	1.0	1.6	2.4	1.4	1.4	1.8	1.9	1.8	1.9	2.0
Non-Residential Building Construction Inflation (%)	-0.6	-2.6	0.9	1.9	2.1	-15.1	9.1	7.5	5.5	4.8	3.6

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

						BASE-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DEMOGRAPHY (FORECAST COMPLETED: September 2019)											
Total Population ('000 Persons)	1,230.9	1,235.2	1,246.3	1,267.3	1,285.7	1,303.7	1,322.2	1,340.9	1,360.4	1,380.7	1,400.8
Total Population Growth (%)	3.0	0.3	0.9	1.7	1.4	1.4	1.4	1.4	1.5	1.5	1.4
Net Migration ('000 Persons)	24.9	-6.5	1.0	11.7	9.6	10.0	10.5	10.9	11.8	12.8	12.6
Household Formation ('000 Units)	11.1	1.2	7.5	11.6	6.3	5.7	6.2	8.0	7.8	7.4	7.4
REAL ESTATE (FORECAST COMPLETED: April 2020)											
Residential Market											
Housing Starts ('000 units)	10.1	7.5	9.5	9.4	10.6	7.4	9.7	9.6	9.6	9.9	10.1
Calgary Average Residential MLS Sale Price (%)*	-2.8	2.4	0.5	-1.1	-3.9	-2.8	3.5	1.4	1.8	2.4	3.0
Total Building Permits ($billions)	6.2	4.6	4.6	4.6	5.2	3.6	5.3	4.9	4.6	4.9	5.0
Non-Residential Market											
Downtown Office Vacancy Rate (%)**	10.1	18.2	22.5	24.8	23.0	28.3	27.4	20.7	19.4	18.4	17.5

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: April 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	3.2	4.5	5.4	0.8	3.3	2.5
Aluminum products	7.8	-8.7	7.0	11.4	0.8	-2.8	-1.8	1.3	1.3	3.7	2.7
Wood	1.6	4.0	4.2	9.6	-2.9	-2.9	2.4	-0.4	-1.2	0.2	-2.9
Asphalt*	-9.6	-25.4	8.7	26.8	6.3	-16.1	8.1	7.7	-5.3	-4.3	-1.2
OPERATIONAL COMMODITIES											
Rubber	-7.9	6.4	20.1	-19.8	-14.0	-11.2	0.0	23.6	-0.5	1.7	1.7
Diesel oil	-21.8	-10.2	17.3	19.4	-7.7	-25.2	27.6	19.2	2.9	-0.2	-0.2
Vehicle parts	2.1	1.3	1.3	2.7	2.0	-5.2	2.8	2.5	2.2	1.8	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 2019		BASE-CASE FORECAST						
	2019	2020	2021	2022	2023	2024	2025	2026
Total Population (as April)	1,285.7	1,303.7	1,322.2	1,340.9	1,360.4	1,380.7	1,400.8	1,420.7
Total Population Growth Rate (April - March)	1.4	1.4	1.4	1.4	1.5	1.5	1.4	1.4
Total Net Migration (April - March)	9.6	10.0	10.5	10.9	11.8	12.8	12.6	12.7
Total Births (April - March)	15.3	15.4	15.5	15.6	15.6	15.7	15.8	15.8
Total Deaths (April - March)	6.5	7.4	7.6	7.7	7.9	8.1	8.3	8.5
Total Natural Increase (April - March)	8.8	8.0	7.9	7.8	7.7	7.6	7.4	7.3
Total Households (as April)	489.1	494.7	500.9	508.9	516.7	524.1	531.5	539.1
Total Household Formation (April - March)	6.3	5.7	6.2	8.0	7.8	7.4	7.4	7.6

Population by Cohort	2019	2020	2021	2022	2023	2024	2025	2026
0-4	79.7	79.4	79.0	78.3	77.9	77.2	77.5	77.9
5-9	80.0	79.3	78.7	78.8	79.0	79.5	79.2	78.8
10-14	74.6	76.9	79.0	80.5	80.9	80.7	80.0	79.4
15-19	70.9	70.7	71.2	72.1	74.1	76.5	78.9	81.0
20-24	78.2	78.4	78.6	78.7	78.6	78.9	79.1	79.8
25-29	98.1	96.6	94.5	93.4	93.6	94.4	95.4	96.2
30-34	113.0	113.3	114.3	113.9	113.3	113.0	112.2	110.7
35-39	110.8	115.3	118.8	121.8	123.8	124.9	125.7	127.1
40-44	98.2	101.5	105.2	109.3	114.0	119.1	124.0	127.8
45-49	91.3	93.0	94.9	96.5	98.6	101.5	105.0	108.9
50-54	83.9	83.9	84.9	87.3	90.0	92.0	93.8	95.8
55-59	83.2	83.3	82.8	81.8	80.7	79.8	79.7	80.6
60-64	72.1	74.0	75.4	76.3	76.3	76.5	76.4	75.7
65-69	52.5	55.2	58.2	61.3	64.4	66.9	68.6	69.8
70-74	37.8	40.1	42.7	44.9	46.1	47.8	50.2	53.0
75-79	24.9	25.8	26.9	28.1	30.3	32.6	34.6	36.8
80-84	17.6	17.8	18.0	18.4	19.0	19.8	20.5	21.3
85-89	11.8	11.9	11.8	11.9	12.0	12.0	12.1	12.3
90-99	6.8	6.9	7.1	7.2	7.3	7.4	7.4	7.4
100+	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total	**1,285.7**	**1,303.7**	**1,322.2**	**1,340.9**	**1,360.4**	**1,380.7**	**1,400.8**	**1,420.7**

Youth (12-18)	85.1	86.6	89.4	91.9	94.3	96.2	97.3	97.9
Primary School Age 6-17	180.7	182.8	185.1	187.1	189.3	190.9	192.7	192.8
Working Age 15-65	899.7	910.1	920.5	931.2	943.1	956.7	970.2	983.6
Seniors 65+	151.6	158.0	165.0	172.1	179.4	186.7	193.9	201.0
Super Seniors 85+	18.9	19.1	19.2	19.4	19.6	19.7	19.9	20.0
Female Super Seniors 85+	12.0	12.0	12.1	12.2	12.3	12.4	12.5	12.6

Numbers may not add up due to rounding.

Forecast Tables (Base-case)

Table 5 - Calgary Economic Region (CER) Population Projection

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

FORECAST COMPLETED: September 2019		BASE-CASE FORECAST						
	2019 (estimate)	2020	2021	2022	2023	2024	2025	2026
Total Population (as April)	1,585.9	1,614.9	1,641.0	1,662.9	1,689.9	1,722.2	1,749.5	1,771.4
Total Population Growth Rate (April - March)	1.8	1.8	1.6	1.3	1.6	1.9	1.6	1.3
Total Net Migration (April - March)	16.3	17.1	13.9	14.9	20.6	21.1	16.3	17.0
Total Births (April - March)	20.8	20.9	20.8	20.7	20.6	20.7	20.7	20.6
Total Deaths (April - March)	9.9	10.3	10.7	11.1	11.5	12.0	12.5	12.9
Total Natural Increase (April - March)	10.9	10.5	10.1	9.6	9.1	8.7	8.3	7.8
Total Households (as April)	609.9	621.1	631.2	639.6	650.0	662.4	672.9	681.3
Total Household Formation (April - March)	10.5	11.2	10.0	8.4	10.4	12.4	10.5	8.5

Population by Cohort	2019 (estimate)	2020	2021	2022	2023	2024	2025	2026
0-4	98.5	100.2	101.8	102.7	104.0	105.0	105.0	104.7
5-9	100.7	99.7	98.8	98.8	99.0	99.5	101.2	102.8
10-14	95.2	98.9	101.9	103.6	104.4	104.6	103.7	102.5
15-19	89.8	90.9	92.3	94.0	97.4	101.5	105.2	108.1
20-24	95.3	96.8	97.7	98.0	98.8	100.9	102.1	103.0
25-29	116.1	114.1	111.1	108.7	108.7	110.6	112.1	112.7
30-34	133.8	133.7	133.7	131.7	130.0	129.2	127.2	124.0
35-39	133.6	137.7	140.4	142.0	143.0	143.2	143.0	142.9
40-44	120.1	123.7	127.2	130.7	135.0	139.9	144.0	146.6
45-49	112.2	114.3	116.6	118.1	120.3	123.5	127.0	130.5
50-54	103.7	103.5	104.6	107.3	110.6	113.2	115.2	117.4
55-59	104.1	105.4	105.5	104.6	103.6	102.7	102.5	103.7
60-64	91.1	94.2	96.8	98.9	100.1	101.5	102.8	102.8
65-69	67.1	70.9	75.1	79.2	83.7	87.6	90.5	93.0
70-74	48.7	52.1	55.5	58.7	60.4	63.0	66.5	70.3
75-79	31.5	33.2	35.0	37.0	40.5	43.7	46.7	49.6
80-84	21.6	22.2	22.8	23.6	24.7	26.2	27.5	29.0
85-89	14.3	14.6	14.7	14.9	15.2	15.4	15.9	16.3
90-99	8.0	8.7	9.2	9.6	10.0	10.6	10.8	10.9
100+	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6
Total	**1,585.9**	**1,614.9**	**1,641.0**	**1,662.9**	**1,689.9**	**1,722.2**	**1,749.5**	**1,771.4**

Numbers may not add up due to rounding.

Risk Scenario Tables (Worst-case)

Table 6 - Selected Economic Indicators

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

FORECAST COMPLETED: April 2020						WORST-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ASSUMPTIONS											
The United States											
Real Gross Domestic Product Growth (%)	2.9	1.6	2.4	2.9	2.3	-6.3	3.0	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	3.4	1.8	1.7	1.7	2.0
Prime Business Loan Rate (%)	2.8	2.7	2.9	3.6	4.0	2.5	2.0	2.5	2.9	3.5	3.9
Exchange Rate (US$ for 1C$)	0.78	0.76	0.77	0.77	0.75	0.70	0.72	0.73	0.74	0.75	0.76
Alberta											
Real Gross Domestic Product Growth (%)	-3.7	-4.2	4.4	2.3	0.3	-11.2	5.3	2.6	2.0	1.8	2.1
Total Employment Growth (%)	1.4	-1.6	1.0	1.9	0.5	-7.1	2.9	2.1	1.4	1.2	1.1
Unemployment Rate (%)	5.9	8.1	7.8	6.7	6.9	14.1	11.2	9.0	7.9	7.6	7.1
Housing Starts ('000 Units)	37.3	24.5	29.5	26.1	27.3	14.0	21.0	23.0	25.0	26.0	27.0
Inflation Rate - CPI (%)	1.2	1.1	1.6	2.5	1.8	1.1	1.4	1.5	1.5	1.5	1.6
Crude Oil Price - WTI (US$/bbl)	48.7	43.3	50.8	65.1	57.0	27.3	35.1	40.4	46.2	49.3	52.2
Western Canadian Select - WCS (US$/bbl)	35.1	29.5	37.6	39.6	44.3	12.4	19.2	24.8	30.7	33.9	36.9
Alberta Natural Gas Price - AECO/NIT ($/GJ)	2.6	2.0	2.3	1.5	1.4	1.9	2.5	2.8	2.9	3.0	3.0
Industrial Product Price Index (%)	-0.8	-0.2	3.1	3.9	-0.1	-1.3	1.9	2.1	1.1	1.5	1.6
Raw Materials Price Index (%)	-19.9	-4.6	10.9	9.2	-2.6	-11.7	4.4	7.3	1.8	1.6	1.7
Alberta Average Wage Rate Increase for All Industries (%)	-0.3	-2.4	1.0	1.7	1.4	-6.3	2.7	3.0	2.8	2.1	2.2
FORECAST											
Calgary Economic Region (CER)											
Real Gross Domestic Product Growth (%)*	-3.5	-2.6	4.0	2.5	1.3	-11.0	5.4	2.9	2.1	1.9	2.2
Total Employment ('000 persons)**	876.1	861.0	884.3	892.5	919.0	844.6	877.5	895.9	908.5	919.4	929.5
Total Employment Growth (%)**	2.2	-1.7	2.7	0.9	3.0	-8.1	3.9	2.1	1.4	1.2	1.1
Unemployment Rate (%)**	6.3	9.2	8.4	7.6	7.1	13.5	10.9	9.1	8.0	7.5	7.0
Calgary Census Metropolitan Area (CMA)											
Housing Starts ('000 units)	13.0	9.2	11.5	11.0	11.9	8.3	11.2	12.2	12.6	12.9	13.2
Inflation Rate - CPI (%)	1.2	1.0	1.6	2.4	1.4	1.1	1.4	1.6	1.4	1.5	1.6
Non-Residential Building Construction Inflation (%)	-0.6	-2.6	0.9	1.9	2.1	-17.2	14.0	9.8	3.6	5.8	2.9

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 (Worst-case)

Table 7 - Selected Indicators for City of Calgary

City of Calgary

FORECAST COMPLETED: April 2020						WORST-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
REAL ESTATE											
Residential Market											
Housing Starts ('000 units)	10.1	7.5	9.5	9.4	10.6	6.8	9.1	9.4	9.5	9.8	10.1
Calgary Average Residential MLS Sale Price (%)*	-2.8	2.4	0.5	-1.1	-3.9	-6.7	2.8	2.1	1.5	2.0	2.5
Total Building Permits ($billions)	6.2	4.6	4.6	4.6	5.2	2.8	4.7	4.9	4.6	4.9	5.0
Non-Residential Market											
Downtown Office Vacancy Rate (%)**	10.1	18.2	22.5	24.8	23.0	38.7	32.3	26.1	21.6	19.7	18.3

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

Table 8 - Selected Commodity Prices

City of Calgary

FORECAST COMPLETED: April 2020						WORST-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	2.8	5.7	5.8	2.5	3.8	2.8
Aluminum products	7.8	-8.7	7.0	11.4	0.8	-3.7	-1.6	1.4	1.8	4.0	2.8
Wood	1.6	4.0	4.2	9.6	-2.9	-3.1	1.2	-1.1	3.7	-0.1	-5.1
Asphalt*	-9.6	-25.4	8.7	26.8	6.3	-14.8	9.1	7.0	-6.0	-4.1	0.2
OPERATIONAL COMMODITIES											
Rubber	-7.9	6.4	20.1	-19.8	-14.0	-12.0	-0.7	23.0	-1.0	1.7	1.7
Diesel oil	-21.8	-10.2	17.3	19.4	-7.7	-25.2	27.8	20.1	1.1	1.0	-0.1
Vehicle parts	2.1	1.3	1.3	2.7	2.0	-6.9	3.4	4.2	2.0	1.7	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 (Best-case)

Table 9 - Selected Economic Indicators

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

FORECAST COMPLETED: April 2020						BEST-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ASSUMPTIONS											
The United States											
Real Gross Domestic Product Growth (%)	2.9	1.6	2.4	2.9	2.3	-3.4	7.0	4.5	2.5	1.9	2.0
Canada											
Real Gross Domestic Product Growth (%)	0.7	1.1	3.0	1.9	1.6	-4.8	7.3	2.5	2.8	2.7	2.0
Prime Business Loan Rate (%)	2.8	2.7	2.9	3.6	4.0	2.5	2.2	2.6	3.0	3.5	3.9
Exchange Rate (US$ for 1C$)	0.78	0.76	0.77	0.77	0.75	0.72	0.74	0.74	0.75	0.76	0.77
Alberta											
Real Gross Domestic Product Growth (%)	-3.7	-4.2	4.4	2.3	0.3	-3.1	3.3	2.8	2.7	2.8	2.6
Total Employment Growth (%)	1.4	-1.6	1.0	1.9	0.5	-2.9	3.1	2.4	1.9	1.7	1.4
Unemployment Rate (%)	5.9	8.1	7.8	6.7	6.9	8.1	6.9	6.7	6.5	6.4	6.0
Housing Starts ('000 Units)	37.3	24.5	29.5	26.1	27.3	25.0	31.0	32.5	33.0	34.0	35.0
Inflation Rate - CPI (%)	1.2	1.1	1.6	2.5	1.8	2.0	2.2	2.0	2.1	2.1	2.2
Crude Oil Price - WTI (US$/bbl)	48.7	43.3	50.8	65.1	57.0	37.5	45.8	49.9	52.6	54.0	55.5
Western Canadian Select - WCS (US$/bbl)	35.1	29.5	37.6	39.6	44.3	17.1	25.0	30.6	35.0	37.2	39.3
Alberta Natural Gas Price - AECO/NIT ($/GJ)	2.6	2.0	2.3	1.5	1.4	2.1	2.6	2.8	2.9	3.0	3.0
Industrial Product Price Index (%)	-0.8	-0.2	3.1	3.9	-0.1	-1.7	2.7	2.5	2.0	1.6	1.7
Raw Materials Price Index (%)	-19.9	-4.6	10.9	9.2	-2.6	-15.0	6.3	8.8	3.2	1.7	1.8
Alberta Average Wage Rate Increase for All Industries (%)	-0.3	-2.4	1.0	1.7	1.4	4.0	2.1	2.7	2.5	2.8	2.6
FORECAST											
Calgary Economic Region (CER)											
Real Gross Domestic Product Growth (%)*	-3.5	-2.6	4.0	2.5	1.3	-3.5	4.1	2.1	2.1	2.3	1.6
Total Employment ('000 persons)**	876.1	861.0	884.3	892.5	919.0	892.3	920.9	947.6	970.4	992.7	1,012.5
Total Employment Growth (%)**	2.2	-1.7	2.7	0.9	3.0	-2.9	3.2	2.9	2.4	2.3	2.0
Unemployment Rate (%)**	6.3	9.2	8.4	7.6	7.1	9.4	7.1	6.8	6.4	6.2	6.0
Calgary Census Metropolitan Area (CMA)											
Housing Starts ('000 units)	13.0	9.2	11.5	11.0	11.9	9.6	11.7	12.2	12.6	12.9	13.2
Inflation Rate - CPI (%)	1.2	1.0	1.6	2.4	1.4	1.8	2.2	2.0	2.0	2.1	2.2
Non-Residential Building Construction Inflation (%)	-0.6	-2.6	0.9	1.9	2.1	-13.1	4.4	-1.3	5.7	5.2	3.8

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 (Best-case)

Table 10 - Selected Indicators for City of Calgary

City of Calgary

FORECAST COMPLETED: April 2020						BEST-CASE FORECAST					
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
REAL ESTATE											
Residential Market											
Housing Starts ('000 units)	10.1	7.5	9.5	9.4	10.6	7.9	9.4	9.4	9.5	9.8	10.0
Calgary Average Residential MLS Sale Price (%)*	-2.8	2.4	0.5	-1.1	-3.9	-1.1	1.3	0.7	1.3	2.0	2.6
Total Building Permits ($billions)	6.2	4.6	4.6	4.6	5.2	4.1	5.1	4.9	4.6	4.9	5.0
Non-Residential Market											
Downtown Office Vacancy Rate (%)**	10.1	18.2	22.5	24.8	23.0	27.5	26.6	19.9	18.6	18.7	18.0

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

Table 11 - Selected Commodity Prices

City of Calgary

FORECAST COMPLETED: April 2020						BEST-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	5.1	2.5	4.3	0.7	2.4	0.8
Aluminum products	7.8	-8.7	7.0	11.4	0.8	-2.2	-1.7	1.1	1.4	3.7	2.6
Wood	1.6	4.0	4.2	9.6	-2.9	-1.5	3.7	-0.6	-0.9	-0.1	-5.1
Asphalt*	-9.6	-25.4	8.7	26.8	6.3	-15.9	9.0	7.5	-5.0	-4.4	-0.5
OPERATIONAL COMMODITIES											
Rubber	-7.9	6.4	20.1	-19.8	-14.0	-10.2	1.0	24.6	0.5	0.7	0.7
Diesel oil	-21.8	-10.2	17.3	19.4	-7.7	-24.7	27.3	19.1	3.0	-0.9	-0.1
Vehicle parts	2.1	1.3	1.3	2.7	2.0	-5.0	2.8	2.5	2.1	1.8	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

Appendix: Investigating Disability in Canada

Introduction

The City of Calgary provides service to disabled persons in Calgary. Prudent budget planning requires knowing how many people are likely to take advantage of those services. A few of the services provided specifically for disabled persons in Calgary include: Accessible Bus and C-Trains, Accessible taxi services, Accessible parking zones, installation of Accessible ramps, Accessible pedestrian signals, Accessible recreation facilities, Drop-in gentle fitness programs, Adapted fitness programs, Snow Angels and the Seniors Services Home Maintenance program. For information on these programs and more go to The City of Calgary accessible services and programs website.

For more than 30 years, Statistics Canada has attempted to count the number of disabled persons in Canada. Using evidence from Statistics Canada, and the results of The City of Calgary Fall 2019 population forecast, forward-looking estimates of the number of disabled people in Calgary are presented in this report.

Prevalence and Severity of Disability in Canada

In 2012 Statistics Canada surveyed disability in Canada through the lens of the social model of disabilities. The premise of this model is that disability becomes apparent when a person is in an environment that does not support their physical or mental limitation. The Canadian Survey on Disability (CSD) was repeated in 2017, with only minor changes.[1]

The social model of disability imposes certain restrictions on what can be considered a disability. A condition must last for at least six months and must limit daily life to be considered a disability. Things like broken legs, which would qualify as a disability in previous surveys, do not qualify in the CSD. As such, the CSD tends to report smaller numbers of disabled persons in Canada than previous surveys. In the Canadian Survey on Disability, ten distinct disability types are surveyed.

- Seeing
- Hearing
- Mobility
- Flexibility
- Dexterity
- Pain-related
- Learning
- Developmental
- Mental health-related
- Memory[2]

Each survey respondent is evaluated for the severity of each disability type and assigned an overall disability severity score.

The Severity Score

Statistics Canada did multiple rounds of qualitative testing to make sure its method of assign scores works. During testing, they included analysis from the World Health Organization Disability Assessment Schedule as well as several independent researchers. The scoring methodology was benchmarked against other data to ensure it was accurately reflecting Canadian reality, for example, by comparing results to the Labour Force Survey and the Canadian Community Health Survey.

Today Statistics Canada assigns scores using the following table after asking the questions, "How often are your daily activities limited?" and "How much difficulty do you have?". Each survey respondent is scored for each of the ten disability types measured in the CSD (Table 1).

Adding the 10 individual disability type scores and dividing by 10 yields a person's global severity score. This scoring system is superior to prior systems. Previously someone who has a weak back would be ranked the same as someone who is totally blind. Now a totally blind person is ranked as more disabled than someone with just a weak back. In 2012 disabled persons were assigned into categories using this system; 31.7 per cent mildly disabled, 19.8 per cent moderately disabled, 22.5 per cent severely disabled and 26 per cent very severely disabled.

Becoming Disabled

Some people start life without a disadvantage, but as they age accidents and illnesses occur, which cumulatively raise one's chances of becoming disabled.[3] At older ages, the presence of frailty is strongly linked with becoming disabled. A universal definition of frailty is elusive, but it has been referred to as "an age-associated decline in reserve and function resulting in increased vulnerability." Frailty can be clinically measured by assessing grip strength, overall energy level, walking speed, amount of physical activity and unintentional weight loss.[4] When accidents and illnesses happen, frail people are more likely to become disabled. Because age is the most reliable predictor of disability in Canada, population forecast models can be used to predict the number of disabled persons.

1 Elisabeth Cloutier, Chantal Grondin and Amélie Lévesque, Canadian Survey on Disability, 2017: Concepts and Methods Guide

2 Canadian Survey on Disability, 2017: Concepts and Methods Guide https://www150.statcan.gc.ca/n1/pub/89-654-x/2018001/sc-ce-eng.htm Accessed Oct 26, 2019

3 Learning and development disabilities follow a different pattern, becoming less common as people age.

4 Qian-Li Xue, PhD, The Frailty Syndrome: Definition and Natural History, Clinics in Geriatric Medicine, 2011 Feb; 27(1): 1–15.

Appendix: Investigating Disability in Canada

Table 1.

How much difficulty do you have?	How often are your daily activities limited by?				
	Never	Rarely	Some-times	Often	Always
No Difficulty	0	0	0.0833	0.125	0.1667
Some Difficulty	0	0	0.1667	0.25	0.5
A lot of Difficulty	0	0.125	0.25	0.75	0.833
Can not do	0	0.1667	0.5	0.833	1

Source: https://www150.statcan.gc.ca/n1/pub/89-654-x/2016003/5_sevs-eng.htm Accessed Oct 28, 2019

Table 2.

Prevalence of Disability Among Disabled Persons in Canada

Disability Type	Age			
	15+	15-24	25-64	65+
Pain Related	14.5%	4.4%	13.5%	26.2%
Flexibility	10.0%	1.7%	8.2%	22.8%
Mobility	9.6%	1.6%	7.3%	24.1%
Mental health related	7.2%	7.8%	7.6%	5.4%
Seeing	5.4%	2.4%	4.9%	9.7%
Hearing	4.8%	0.9%	3.6%	12.2%
Dexterity	4.6%	1.1%	3.5%	10.9%
Learning	3.9%	5.5%	3.8%	3.3%
Memory	3.8%	2.5%	3.6%	5.4%
Developmental	1.1%	2.4%	1.0%	0.5%
Unknown	0.6%	0.4%	0.5%	0.8%

Source: Statistics Canada, Canadian Survey on Disability, 2017.

Prevalence and Severity of Disability in Calgary – Forecast Results

Calgary Disabled Forecast

Corporate Economics prepares annual Calgary population forecasts for internal use. Five-year forecasts of the Calgary population are available annually to the public at www.calgary.ca/economy. These forecasts are prepared with a lifecycle cohort survival model based on one-year cohorts; more commonly, five-year cohort survival models are used across Canada. The fact that the Calgary population model operates on one-year cohorts enables the CSD[5] to be added on to the Calgary population model to predict the number of disabled persons in Calgary.

Please note that this methodology relies on population dynamics only. Additional factors that could impact the prevalence of certain types of disabilities are beyond the scope of this forecast methodology[6].

Based on population dynamics only, the proportion of the Calgary population experiencing disability is expected to grow from about 10.5 per cent today to about 14.5 per cent by 2078.

Approximately 30.5 per cent of people over age 65 experience a disability, with 10 per cent mild, 8 per cent moderate, 5.5 per cent severe and about 7 per cent very severe. The Calgary over 65 population is expected to increase from 144,000 today to 523,000 by 2078. As seniors are the age cohort most likely to experience disability, it is no surprise that the total number of disabled persons in Calgary is expected to grow significantly. Today there are 114,300 disabled persons in Calgary: 38,2000 mildly, 25,600 moderately, 23,800 severely and 26,700 very severely. By 2078 Calgary is expected to have 277,600 disabled persons: 93,300 mildly, 64,300 moderately, 56,100 severely and 63,900 very severely.

In addition to the number of permanently disabled persons in Calgary, we would note that Corporate Economics' previous research into disability in Calgary revealed that there seems to be a pool of temporarily disabled persons in Calgary. People seem to enter and leave the pool of temporarily disabled persons daily[7]. That previous research also indicated that there are as many temporarily disabled person as there are permanently disabled persons in Calgary.

5 The City of Calgary receives a special breakdown of the number of disabled persons in Calgary by severity. This enables a Calgary specific forecast of the number of disabled persons.

6 Certain populations are more prone to certain illnesses. Calgary receives significant in-migration annually. The forecast of the number of disabled persons could be impacted if migration patterns shift and Calgary receives a greater proportion of its in-migration from areas where debilitating illnesses are more, or less, common than they currently are in Calgary today.

7 Pawluk, C, Age, Income and Disability as basis for Public Transit fare assistance in Calgary – A Discussion Paper, May 2014. Attachment 3 to public City of Calgary Council Report TT2014-0499, Available at: https://pub-calgary.escribemeetings.com/filestream.ashx?DocumentId=11136 accessed Nov 22, 2019.

Appendix: Investigating Disability in Canada

Table 3. City of Calgary: Estimated Number of Disabled Persons

	Mild Disability			Moderate Disability			Severe Disability			Very Severe Disability		
	15 to 24	25 to 64	65+	15 to 24	25 to 64	65+	15 to 24	25 to 64	65+	15 to 24	25 to 64	65+
2018	2,100	21,300	14,900	1,600	11,500	11,100	1,100	13,900	7,800	3,300	12,100	10,000
2019	2,200	21,500	15,700	1,600	11,600	11,700	1,100	14,000	8,200	3,300	12,300	10,600
2020	2,200	21,800	16,400	1,600	11,800	12,200	1,100	14,200	8,500	3,300	12,400	11,000
2021	2,200	22,000	17,200	1,600	11,900	12,600	1,100	14,400	8,800	3,400	12,600	11,400
2022	2,200	22,300	17,900	1,600	12,100	13,200	1,100	14,500	9,200	3,400	12,700	11,900
2023	2,200	22,600	18,700	1,600	12,200	13,700	1,200	14,700	9,600	3,500	12,900	12,400
2028	2,400	24,300	22,300	1,800	13,200	16,400	1,300	15,900	11,500	3,700	13,900	14,800
2033	2,600	27,000	24,600	1,900	14,700	18,700	1,300	17,800	13,100	3,900	15,600	16,800
2038	2,600	29,600	26,800	1,900	16,200	20,700	1,300	19,700	14,500	4,100	17,300	18,600
2043	2,500	31,300	29,600	1,800	17,200	22,800	1,300	21,100	16,000	4,000	18,500	20,400
2048	2,500	32,400	33,400	1,900	17,900	25,400	1,300	22,000	17,800	4,000	19,300	22,700
2053	2,700	33,600	38,000	2,000	18,400	28,400	1,400	22,600	19,900	4,400	19,900	25,500
2058	2,800	34,500	42,300	2,100	19,000	31,800	1,500	23,300	22,400	4,400	20,500	28,500
2063	2,800	35,300	45,800	2,100	19,400	35,100	1,500	23,900	24,800	4,400	21,000	31,400
2068	2,900	35,800	49,000	2,100	19,700	38,000	1,500	24,400	26,800	4,400	21,400	34,000
2073	2,900	36,300	51,400	2,100	20,000	40,000	1,500	24,800	28,300	4,400	21,700	35,900
2078	3,000	36,500	53,800	2,200	20,100	42,000	1,600	24,900	29,600	4,500	21,800	37,600

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, Korea, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovenia, Spain, Sweden, Switzerland, Taiwan Province of China, 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.

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.

Core inflation rate

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

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.

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 and Russia are emerging economies.

Employment rate

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

Glossary

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

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.

Home market value

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

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.

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.

Glossary

In-migrants

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

Labour force

The working age population (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.

Labour force participation rate

Is the ratio of the labour force to working age population.

Migrants

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

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.

Permian basin

Found in west Texas and southeastern New Mexico, the Permian basin is the most significant oil producing region in the United States, accounting for over a quarter of US on shore oil production. Natural gas is a major byproduct of oil production in this region, and drilling for oil in the Permian basin also has a major influence on the North American natural gas market.

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.

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