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Ontario Energy Board Cost of Capital – Update and macroeconomic outlook

prepared for the Ontario Energy Board by London Economics International LLC

October 17, 2019

London Economics International LLC ("LEI") was retained by the Ontario Energy Board ("OEB") to update the cost of capital parameters for its annual report. LEI was tasked with updating the return on equity ("ROE"), the deemed long-term debt rate ("DLTDR"), and the deemed short-term debt rate ("DSTDR"). To perform this exercise, LEI evaluated the OEB's current cost of capital policy and methodology, as well as the most recent regional and global macroeconomic trends driving changes in the parameters. The data used to calculate the cost of capital parameters is as of September 30th, 2019, which resulted in an ROE of 8.52%, with deemed long-term and short-term debt rates of 3.21% and 2.75% respectively.

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1 Executive summary

This report seeks to aid the Ontario Energy Board ("OEB") in its upcoming end of year meeting to discuss whether intervening changes should be considered in updating its cost of capital parameters. To inform these discussions, this report outlines:

- the OEB's current cost of capital policy (Section 2);
- key macroeconomic drivers for recent changes in the parameters (Section 3); and
- findings of the variance analysis conducted on the cost of capital parameters – namely the return on equity ("ROE"), the deemed long-term debt rate ("DLTDR"), and the deemed short-term debt rate ("DSTDR") (Section 4).

Through this analysis, LEI has determined the updated cost of capital parameters for applications with rates effective in 2020 as outlined in Figure 1 below.

Figure 1. Updated cost of capital parameters for rate changes effective in 2020

Cost of capital parameter	Updated value based on September 2019 data	September 2018 value	Difference
Return on equity	8.52%	8.98%	-0.46%
Deemed long-term debt rate	3.21%	4.13%	-0.92%
Deemed short-term debt rate	2.75%	2.82%	-0.07%

Compared with the OEB's previously approved cost of capital parameters for rates effective in 2019, LEI's current update sees the parameters declining by 46 basis points for the ROE, 92 basis points for the DLTDR, and 7 basis points for the DSTDR.[1] The decline in all three parameters from the previous year is in line with expectations given the current macroeconomic climate, where central banks in Canada, as well as a number of major economies such as the US and the EU, have maintained relatively low interest rates in an attempt to mitigate dampened economic growth due in most part to persisting trade uncertainties.[2,3,4]

While the results of the cost of capital update are in line with expectations given prevailing macroeconomic conditions, the future of the electricity sector is uncertain. The sector is undergoing an evolution. Specifically, the assumption that the electricity distribution segement is a natural monopoly has become less binding and customers have begun to demand more options and services. In the future, we expect pressures from the evolution of the sector to become a greater consideration in these updates to cost of capital, and issues such as the appropriate equity thickness, and return on equity.

[1] LEI has recommended a potential additional approach for OEB to consider with regards to estimating spread over the Bankers' Acceptance rate associated with evaluating the DSTDR.

[2] Bank of Canada. *Bank of Canada Maintains Overnight Rate Target at 1 ¾ Percent.* September 4, 2019.

[3] US Federal Reserve. *Federal Reserve issues FOMC statement. Press Release.* July 31, 2019.

[4] McHugh, D. *Incoming European Central Bank head defends low interest rates.* PBS. September 4, 2019.

2 Context and current cost of capital in Ontario

In this section, LEI briefly summarizes the current cost of capital policy of the OEB, and provides historical context for the current approach. We compare the ROEs between Ontario and other comparator jurisdictions over the last ten years, and provide context for the guiding principles behind the current approach.

2.1 OEB cost of capital policy

Regulated electric and gas utilities filing rate applications either under the cost of service mechanism, or the multi-year rate plans (referred to as custom incentive rate-setting options, or "Custom IR") are subject to the OEB's annual parameter review process, whereby cost of capital and utility charges are determined. The OEB's current cost of capital policy stems from a 2009 review, with case reference EB-2009-0084, through which a modified capital asset pricing model ("CAPM") methodology and an equity risk premium ("ERP") approach were adopted.

The formulaic approach for determining the cost of capital parameters (the ROE, DLTDR, and DSTDR) was chosen given that there are over sixty regulated entities under the OEB's jurisdiction – where a cost of capital review for each entity would prove to be too expensive and administratively burdensome. However, while the parameters are set formulaically, the results are reviewed and approved by the OEB annually, and are compared against short-term forecasts of macroeconomic conditions to ensure the derived values are reasonable.

Under the cost of capital policy, the OEB applies the formulae to derive values for the ROE, DLTDR, and DSTDR on an annual basis, and also conducts a review every five years to ensure *"the formula-generated ROE continues to meet the Fair Return Standard, as well as objectives of maintaining regulatory efficiency and transparency."*[5] Ensuring the parameters meet the Fair Return Standard ("FRS") is a legal requirement of the OEB, where the FRS includes the concepts of comparability, financial soundness and adequacy – which are discussed in further detail in the accompanying textbox.

Fair Return Standard

The FRS sets out three requirements that must be satisfied by the cost of capital determinations:

1. **Comparable investment standard:** a fair or reasonable return on capital should be comparable to the return available from the application of invested capital to other enterprises of like risk;
2. **Financial integrity standard:** should enable the financial integrity of the regulated enterprise to be maintained; and
3. **Capital attraction standard:** should permit incremental capital to be attracted to the enterprise on reasonable terms and conditions.

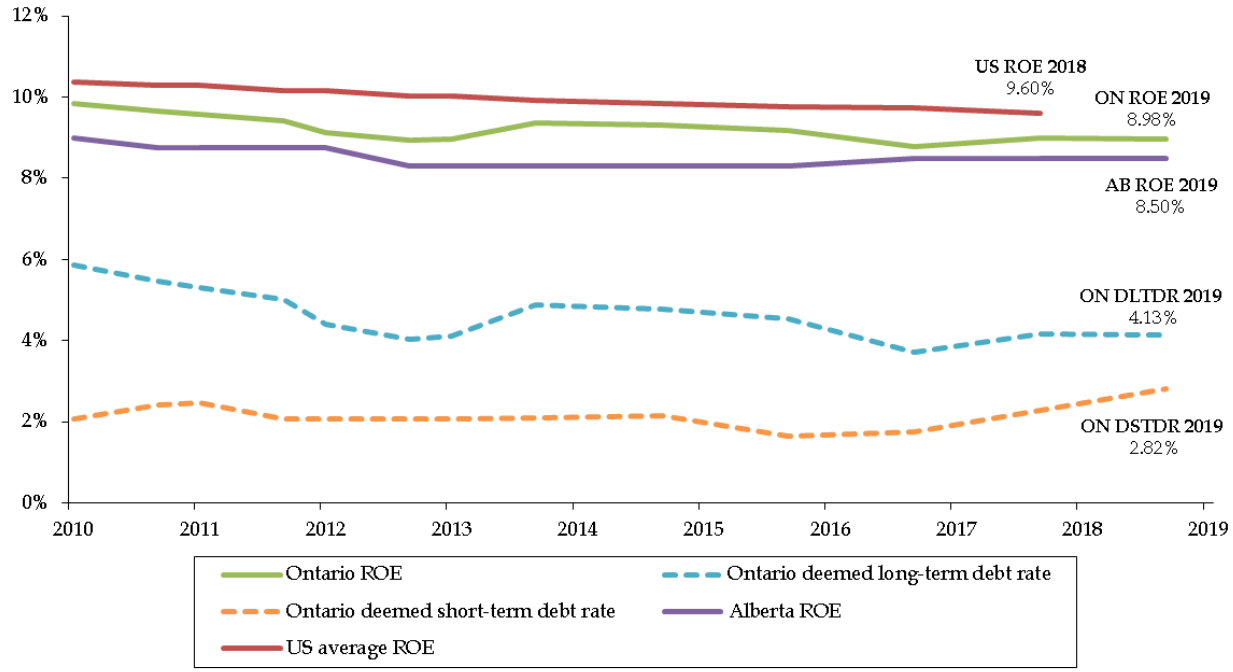
Source: OEB. *EB-2009-0084.*

[5] OEB. *EB-2009-0084: Report of the Board on the Cost of Capital for Ontario's Regulated Utilities.* December 11, 2009. p. iii.

The most recent annual parameter update was published on November 22nd, 2018, for rates effective January 1st, 2019. Therein, the OEB updated the ROE to 8.98%, DLTDR to 4.13% and DSTDR to 2.82%.[6]

These rates are tracked in Figure 2 below, beginning in 2010 when the current methodology was first adopted. For comparison purposes, the approved ROEs for Alberta and the US are presented alongside the OEB's historic issued rates. ROE in Alberta is set through the Alberta Utility Commission's ("AUC") generic cost of capital proceedings, while the US ROE presented below is taken as the average of decided rate cases across the US in a given year.[7]

Figure 2. Historic OEB issued rates against Alberta and the US, 2010-2019



Note: The 2019 ROE, DLTDR and DSTDR for Ontario, as well as the 2019 ROE for Alberta, are for rates effective January 1st, 2019. The most recent US ROE data is for rate cases decided by December 31st, 2018, as reported by S&P Global Market Intelligence.
Sources: OEB. *Cost of Capital Parameter Updates.* <https://www.oeb.ca/industry/rules-codes-and-requirements/cost-capital-parameter-updates>; AUC. *Generic Cost of Capital Proceedings*; S&P Global Market Intelligence.

The OEB's approved ROE over the 2010-2019 time period consistently lies between the two comparator jurisdictions, with average US ROEs coming in relatively higher than Ontario's, and Alberta's approved ROE coming in relatively lower. In addition, all three jurisdictions demonstrate slightly declining ROEs over the time period studied.

[6] OEB. *2019 Cost of Capital Parameters.* November 22, 2018.

[7] The US ROE in Figure 2 presents the average ROE approved in electricity rate cases for each year, among only rate cases in which the utility has requested a rate change of at least US$5 million or the respective commission has authorized a rate change of at least US$3 million.

2.2 Historical context

The current formulaic approach to the OEB's cost of capital policy has evolved from the draft ROE guidelines adopted in 1997 for natural gas utilities and in 1999 for electric utilities. The previous formula, utilized from 1997 through to 2009, was reviewed following the financial crisis. During this period, the calculated ROE declined from a high in 2000 of 9.88% to a low of 8.01% by 2009, and it was felt that the OEB "*did not have a sufficiently robust approach within which to exercise its discretion to adjust any or all the values produced by the application of the methodology*."[8] As a result of this inconsistency, and in order to conduct a reasonableness check on its methodology, the OEB initiated a consultative process to review its cost of capital policies in February 2009.

The findings of this 2009 review shape the current approach adopted by the OEB, which includes the following refinements to the 1997-2009 formulae:

(i) for the ROE formula, adding an initial equity risk premium to the long Canada bond forecast and reducing its sensitivity to changes in government bond yields;

(ii) for the DLTDR formula, including an A-rated utility bond index yield; and

(iii) for the DSTDR formula, using real market quotes to determine the spread over the bankers' acceptance rate.[9]

Since the 2009 review, OEB staff conducted one further review to ensure the continued reasonableness of its methodology. This review commenced in 2014, with the final OEB staff report released on January 14th, 2016.

The report assessed the annual cost of capital parameter updates completed from 2010 to 2015, highlighting that the OEB approved the formulaically derived values as calculated in each instance, with the ROE ranging from 8.93% to 9.85% throughout this time period. As a result, the OEB staff concluded that the 2009 cost of capital methodology *"worked as intended"* and did not recommend any changes to the approach.[10]

[8] OEB. *EB-2009-0084: Review of the Cost of Capital for Ontario's Regulated Utilities.* January 14, 2016.

[9] Ibid.

[10] OEB. *Staff Report EB-2009-0084: Review of the Cost of Capital for Ontario's Regulated Utilities.* January 14, 2016. p. 4.

3 Macroeconomic outlook in 2019/2020

In this section, we identify the most important factors impacting the global and regional economies in 2019, and consider the consensus research and expectations for 2020. The section is divided into the global and North American outlook, followed by considerations of the Canadian and Ontario outlooks. A summary of this research is presented in Figure 3 below.

Figure 3. Summary of macroeconomic outlooks for 2019/2020

Region	Growth trend	Interest rates trend	Key factors
Global	Declining	Declining	• Trade tensions between major global economies, notably the US and China • Uncertainty leading to delayed investment decisions
Canada	Stable	Stable	• Tensions between major trading partners, i.e. the US and China • Unexpected rebound in Q2 driven by multiple factors
Ontario	Declining	–	• Fiscal policy aimed at tackling deficit • Reduction in government spending and cooling housing market dragging growth

Sources: International Monetary Fund; Fitch Ratings; RBC; BMO; Ontario Ministry of Finance.

3.1 Global and North American outlook

In the past decade, global growth has remained relatively stable at around 3.5%,[11] driven by the recovering US and European economies, and a slowing in the pace of growth of the Chinese economy.[12] Figure 4 below illustrates the real GDP trends across the world economy and in selected economies over the last 10 years, as well as a 5-year forecast as published by the International Monetary Fund ("IMF") in its World Economic Outlook. In 2019, real GDP growth for the world economy is projected to decline to 3.6%, compared to 3.8% in 2018.[13]

Driving declining growth in the past year has been the persistence of the trade dispute between the two largest global economies, the US and China.[14] In addition to levying tariffs of 25% on goods worth $250 billion, the US has also restricted the sales of electronics from firms that have been identified as being in violation of US sanctions, or as possible security threats.[15] In Europe, the interlinked global supply chains have meant that as a result of slowing purchase orders and

[11] International Monetary Fund. *World Economic Outlook: Growth Slowdown, Precarious Recovery (Update).* Washington, DC. July 23, 2019.

[12] While annual Chinese real GDP growth has slowed from high rates such as 10.6% in 2010 to lower rates of 6.6% by 2018, the Chinese economy is still outpacing growth rates seen in advanced economies (including the US, EU, Japan, UK, Canada, among others), which on average achieved real GDP growth rates of 2.2% in 2018. (Source: IMF)

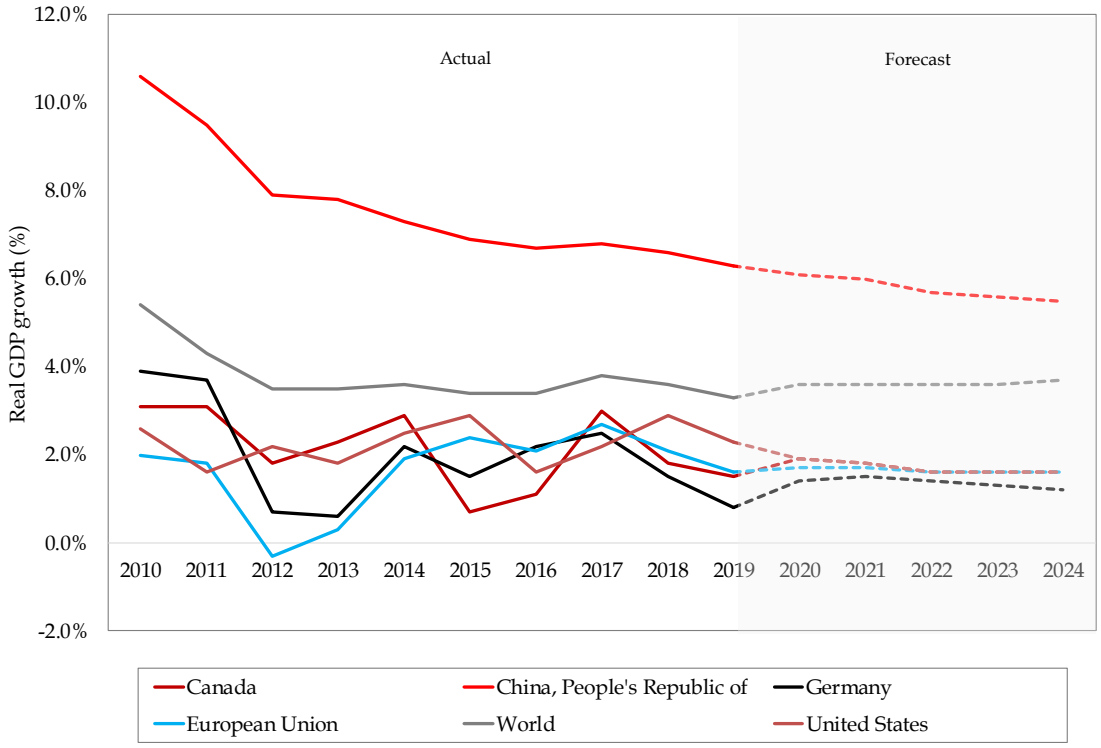
[13] Ibid.

[14] Ibid.

[15] Lohr, S. *U.S. Moves to Ban Huawei From Government Contracts.* New York Times. August 7, 2019.

declining manufacturing, Germany has seen its economy contract by 0.1% in the second quarter of 2019.[16] Uncertainty over the outcome of Brexit negotiations has further weakened sentiment in both the United Kingdom and the Eurozone states.[17] In North America, the renegotiated US-Mexico-Canada ("USMCA") agreement remains unratified in the US and Canada, meaning the uncertainties will persist in the short term.[18]

Figure 4. Global real GDP growth (2010-2024)



Source: International Monetary Fund. *World Economic Outlook. DataMapper.* April 2019.

In response to some of these factors, the central banks of several major economies have sought to lower interest rates as a cushion against negative economic headwinds. At the end of July 2019, the US Federal Reserve's Open Market Committee ("FOMC") lowered its federal funds rate target range to 2%-2.25%, lowering the rate by 25 basis points.[19] Similarly, in Europe, the European Central Bank has maintained its main policy rate at record lows of -0.4%.[20] In Mexico, the Bank

[16] Arnold & Buck. *German economy contracts as global trade slowdown takes toll.* Financial Times. August 14, 2019.

[17] International Monetary Fund. *World Economic Outlook: Growth Slowdown, Precarious Recovery (Update).* Washington, DC. July 23, 2019.

[18] Blanchfield, M. *U.S. House breaks with no new NAFTA tabled for ratification. Now what?* The Canadian Press. July 29, 2019.

[19] US Federal Reserve. *Federal Reserve issues FOMC statement. Press Release.* July 31, 2019.

[20] McHugh, D. *Incoming European Central Bank head defends low interest rates.* PBS. September 4, 2019.

of Mexico lowered interest rates in August by 25 basis points to 8%, following continuing slowdown of the economy, marking its first rate cut in five years.[21]

Going forward, global growth forecasts suggest that the actions taken to mitigate the risk factors that have dragged on growth in 2019 are unlikely to stabilize the decline.[22] The IMF's outlook notes that the current trade and technology tensions will exacerbate uncertainty. Unresolved trade agreements such as those between the UK and Europe, and the North American countries will also increase uncertainty and lower consumer and business confidence, slowing investment. Accordingly, rating agencies have lowered their 2020 expectations of global growth on the back of these risks.[23]

3.2 Canadian outlook

Following a slowdown in the latter part of 2018 and the opening quarter of 2019, the Canadian economy has shown signs of rebounding. However, uncertainty surrounding global trade tensions remains. The rebound in growth in 2019 can be attributed to numerous factors, including, but not limited to: (i) stronger energy production, (ii) robust export growth from the manufacturing sector, (iii) better-than-expected job growth,[24] (iv) strong population growth, (v) a firming housing market that has led to greater construction activity, and (vi) a pick up in capital spending by firms.[25,26] Despite the recent improvements, the Canadian economy is exposed to downside risks stemming from US-centric trade developments, which has dampened growth outlooks.

As a result, taking an average of economic outlooks published by the largest banks in Canada,[27] year-over-year real GDP growth is expected to slow from 1.9% in 2018 to 1.4% in 2019, before picking back up to 1.8% by 2020.[28] Figure 5 below tracks quarter-over-quarter Canadian real GDP growth over a 10-year period from 2009 to 2018, along with forecasts for 2019 and 2020 compiled from various economic outlooks.

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[21] Webber, J. *Mexico's central bank cuts 2019 growth forecasts again*. Financial Times. August 28, 2019.

[22] International Monetary Fund. *World Economic Outlook: Growth Slowdown, Precarious Recovery (Update).* Washington, DC. July 23, 2019.

[23] Fitch website. *Fitch Ratings: Annual GDP Growth Falling in Virtually All Large Economies.* August 30, 2019.

[24] For example, in the 12 months to April 2019, the Canadian economy generated 426,000 jobs, and the unemployment rate remained at record lows of 3.8%. (Source: RBC Economic Research. *Economic and Financial Market Outlook.* June 2019).

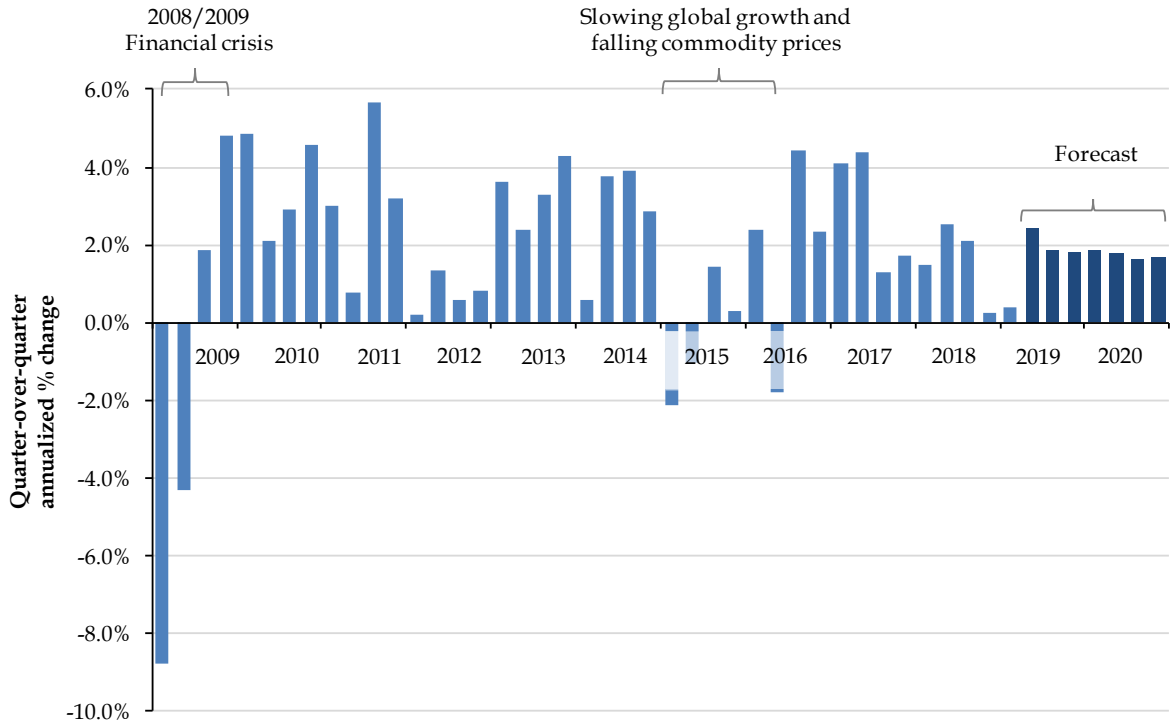
[25] Bank of Canada. *Bank of Canada maintains overnight rate target at 1 ¾ percent.* Press Release. September 4, 2019.

[26] BMO Capital Markets Economic Research. *North American Outlook: Summertime, And the World is Easing.* August 7, 2019.

[27] Bank outlooks considered for this report were Royal Bank of Canada ("RBC"), Bank of Nova Scotia ("Scotiabank"), Bank of Montreal ("BMO") and TD Bank.

[28] Scotiabank. *Global Outlook.* July 12, 2019; BMO. *North American Outlook.* August 7, 2019; RBC. *Economic and Financial Market Outlook.* June 2019; TD. *Quarterly Economic Forecast.* June 17, 2019.

Figure 5. Canadian real GDP growth, 2009-2020F



Notes: The forecast quarter-over-quarter annualized percentage change in real GDP for 2019 Q2 through to 2020 Q4 are averages of the outlooks published by TD, BMO, Scotiabank, and RBC.
Sources: Statistics Canada; TD; BMO; Scotiabank; RBC.

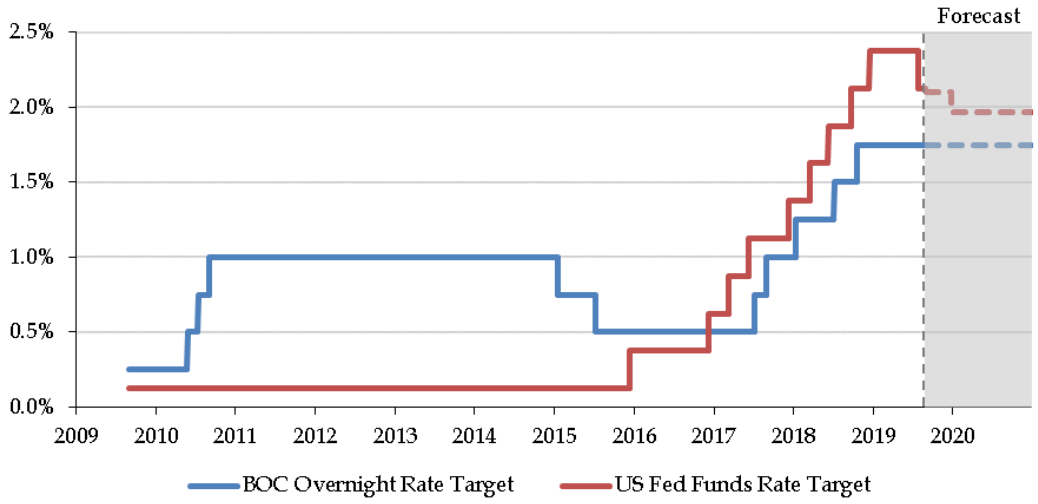
In terms of the Bank of Canada's target overnight rate, the short-term outlook is relatively stable, and inflation remains at 2%. The Bank's neutral policy stance was confirmed in its most recent announcement on September 5th, 2019, where the overnight target rate was held at 1.75%, marking nearly a year since the rate was changed (putting on hold the increase in target rate observed between July 2017 and September 2018, as seen in Figure 6).[29] In a press release announcing the target, the Bank stated that "*the current degree of monetary policy stimulus remains appropriate.*"[30] For this reason, the Bank's expectation is that for the remaining quarter of 2019 through to 2020, its overnight target rate will remain unchanged at 1.75%.

Although signs point to a recovering economy, as evidenced by a rebound in growth in 2019 and an expectation that this trend will continue in 2020, uncertainty remains. Risk factors prevalent in the global economy makes easing in Canada unlikely. Canada's overnight target rate is already low relative to the US Federal Reserve's target range for the federal funds rate, as is evident in Figure 6 below, leaving limited room to maneuver.

[29] The overnight target rate was raised from 1.5% to 1.75% on October 24, 2018.

[30] Bank of Canada. *Bank of Canada Maintains Overnight Rate Target at 1 ¾ Percent.* September 4, 2019.

Figure 6. Comparison of Canadian and US interest rates, 2009-2020F



Notes: The US Fed Funds Rate Target is taken as the midpoint of the target range. The forecast US and Canadian interest rates for 2019 Q4 and 2020 are averages of the outlooks published by TD, BMO, Scotiabank, and RBC.
Sources: Bank of Canada; US Federal Reserve Economic Data ("FRED"); TD; BMO; Scotiabank; RBC.

3.3 Ontario outlook

In 2019, fiscal policy in Ontario has been marked by its reduced overall spending and program cuts. In the province's most recent budget, published on April 11th, 2019 by the Ontario Ministry of Finance, the government focused on consolidation, with reduced spending planned as compared to the previous plan's trajectory. Although this fiscal restraint seeks to eliminate the province's deficit within 5 years, it is expected to dampen short-term growth, with private-sector outlooks forecasting a slow down of real GDP growth on average from 2.2% in 2018 to 1.5% in 2019 and 1.7% in 2020.[31]

In addition to the greater levels of fiscal restraint than the province has seen in recent years, other extraneous factors are weighing on growth in the provice, including: a cooling housing market, high household debt levels, and declining auto production.[32] On the other hand, a few factors are helping to offset this drag on the economy and are expected to contribute to provincial growth in the coming years – these factors include the elimination of US tariffs on steel and aluminum products, as well as strong labour market performance, which is helping to maintain modest consumer spending levels.[33]

[31] Scotiabank. *Provincial Outlook.* July 15, 2019; BMO. *Provincial Economic Outlook.* August 30, 2019; RBC. *Provincial Outlook.* June 7, 2019; TD. *Provincial Economic Forecast.* June 17, 2019.

[32] RBC Economic Research. *Provincial Outlook.* June 7, 2019.

[33] Ibid.

4 Cost of capital parameters – 2020 update

The OEB conducts its annual cost of capital parameter update using data as of September 30th of that year, with rates becoming effective on January 1st of the following year. The following subsections outline LEI's approach to updating the cost of capital parameters for the period beginning January 1st, 2020. We begin our analysis by presenting the formula used to calculate each parameter, followed by a discussion of the results of the update.

4.1 Return on Equity

The ROE is the allowed return on shareholders' invested capital that is comparable to the return that investors would expect to earn from other investments with similar levels of business risk. The formula used by the OEB to calculate ROE is depicted in Figure 7 below.

Figure 7. ROE formula

where:

- ROE$_t$ = Return on Equity
- LCBF$_t$ = Long Canada Bond Forecast
- Base LCBF = 4.25%
- UtilBondSpread$_t$ = the average spread of 30-year A-rated Canadian Utility bond yields over 30-year Government of Canada bond yields over all business days in the month that is three months in advance of the implementation date for rates
- BaseUtilBondSpread = 1.415%

Source: OEB. *Staff Report EB-2009-0084: Review of the Cost of Capital for Ontario's Regulated Utilities.* January 14, 2016.

Using data as of September 30th, 2019 from the Bank of Canada, Consensus Economics, and Bloomberg, LEI calculated the updated ROE as **8.52%**, which is 0.46% lower than the ROE approved in the OEB's previous cost of capital parameter review (for rates effective in 2019).[34] See Appendix A: Cost of Capital Parameter Calculations for a detailed illustration of this calculation.

The decline in ROE from last year's update is driven by lower actual and forecasted long-term bond yields. Actual average Government of Canada bond yields for the month of September declined from 2.35% in 2018 to 1.36% in 2019 for the 10-year bond; and from 2.37% in 2018 to 1.56% in 2019 for the 30-year bond.

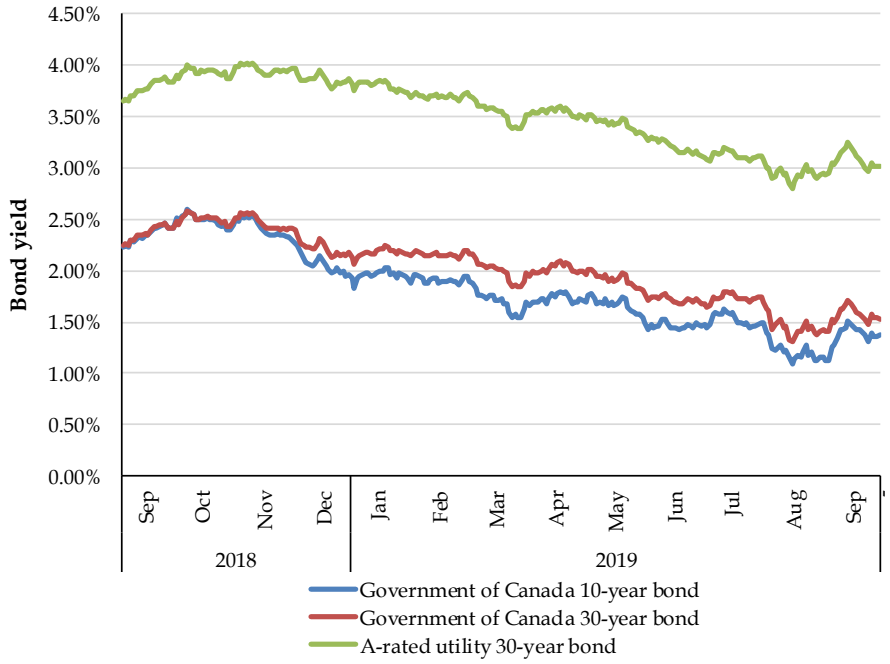
Additionally, short-term forecasts for the 10-year government bond declined from 2.70% on average to 1.50%. As for 30-year A-rated Canadian utility bonds, their yields in the month of September declined from 3.78% on average in 2018 to 3.08% in 2019.

While the choice of using September data is dictated by the OEB's cost of capital methodology, it is important to note that the lower bond yields seen in 2019 are not unique to the month of

[34] Ontario Energy Board. *2019 Cost of Capital Parameters.* November 22, 2018.

September, but are instead the result of a declining trend over the last 12 months, as presented in Figure 8 below.

Figure 8. Canadian long-term bond yields, September 2018-September 2019



Sources: Bank of Canada; Bloomberg.

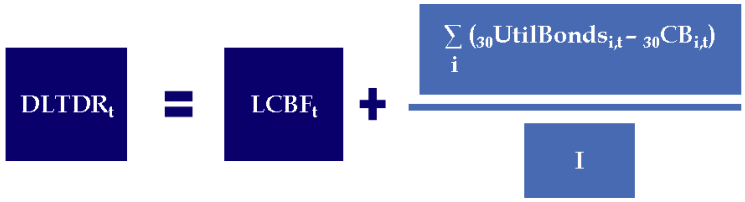
The overall decline in all long-term bond yields, as well as the calculated ROE, is consistent with LEI's discussion of macroeconomic trends in Section 3.1, where we identify slowing global growth which has led to a decrease in interest rates from central banks across the globe. The declining bond yields are symptomatic of both the short-term and long-term risks of trade disputes, unratified trade deals and declining consumer confidence. This manifests in an increase in the perceived riskiness of the long-term health of the Canadian economy, whereby growth is forecasted to decline in 2019 to 1.4%.[35]

4.2 Deemed long-term debt rate

The DLTDR reflects the interest rate that would be charged to an A-rated commercial business customer for a long-term (30-year) commercial loan, and is calculated using the formula in Figure 9 below.

[35] Scotiabank. *Global Outlook.* July 12, 2019; BMO. *North American Outlook.* August 7, 2019; RBC. *Economic and Financial Market Outlook.* June 2019; TD. *Quarterly Economic Forecast.* June 17, 2019.

Figure 9. DLTDR formula



where:

- DLTDR$_t$ = Deemed Long-Term Debt Rate
- LCBF$_t$ = Long Canada Bond Forecast
- ${}_{30}\text{UtilBonds}_{i,t}$ = the average 30-year A-Rated Canadian Utility bond yield rate, from Bloomberg L.P., for business day i of the month that is three months in advance of the implementation date for rates
- ${}_{30}\text{CB}_{i,t}$ = the benchmark bond yield rate for the 30-year Government of Canada bond at the close of day i of the month that is three months in advance of the implementation date for rates
- I = number of business days for which Government of Canada and A-rated Utility bond yield rates are published in the month that is three months in advance of the implemented date for rates

Source: OEB. *Staff Report EB-2009-0084: Review of the Cost of Capital for Ontario's Regulated Utilities.* January 14, 2016.

Following LEI's update of the OEB's cost of capital parameter calculations, the deemed long-term debt rate was determined to be **3.21%,** down 0.92% compared to last year's update.[36] See Appendix A: Cost of Capital Parameter Calculations for a detailed illustration of this calculation. This change in the DLTDR is driven by the declines in the long-term bond yields as discussed in Section 4.1 above.

Specifically, the Long-Canada Bond Forecast ("LCBF") declined from 2.71% to 1.70% in 2019. Increased risk factors in the Canadian economy, notably global trade tensions, the renegotiation of the USMCA agreement and slower projected growth are identified as leading indicators driving falling bond forecasts.

4.3 Deemed short-term debt rate

Finally, the DSTDR reflects the interest rate that would be charged to an A-rated commercial business customer for a short-term (3-month) loan by a commercial bank. The formula used by the OEB to calculate the DSTDR is summarized in Figure 10 below. Note that the DSTDR calculation incorporates the results of a confidential survey of prime Canadian banks, conducted by OEB Staff, whereby estimates for the spread of short-term debt issuances over Bankers' Acceptance ("BA") rates are provided.

[36] Ibid.

Figure 10. DSTDR formula

$$DSTDR_t = AnnSpread_t + \frac{\sum_i BA_i}{I}$$

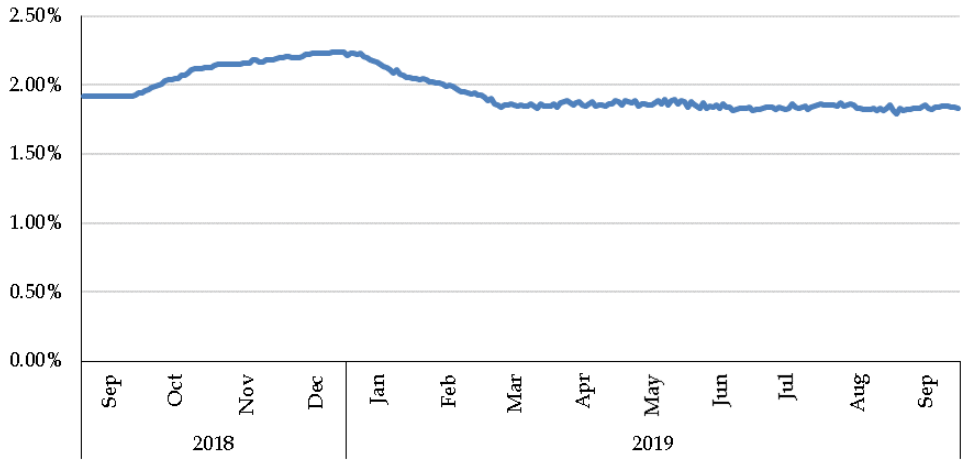
where:

- $DSTDR_t$ = Deemed Short-Term Debt Rate
- $AnnSpread_t$ = the average annual spread in short-term debt issuances for an R1-low utility over 3-month Banker's Acceptance rates for the test year t, calculated using a confidential survey
- BA_i = the 3-month Bankers' Acceptance Rate for day i in the selected month, as published by Statistics Canada and the Bank of Canada
- I = number of business days for which Government of Canada and A-rated Utility bond yield rates are published in the month that is three months in advance of the implemented date for rates

Source: OEB. *Staff Report EB-2009-0084: Review of the Cost of Capital for Ontario's Regulated Utilities.* January 14, 2016.

The calculated deemed short-term debt rate is **2.75%**, down from 2.82% in the previous update. See Appendix A: Cost of Capital Parameter Calculations for a detailed illustration of this calculation. The relative stability of the 3-month BA rate over the past 12 months is demonstrated in Figure 11 below, which plots daily 3-month BA rate data from the beginning of September 2018 to the end of September 2019.

Figure 11. 3-month Bankers' Acceptance rate, September 2018-September 2019



Sources: Bank of Canada; Investment Industry Regulatory Organization of Canada ("IIROC").

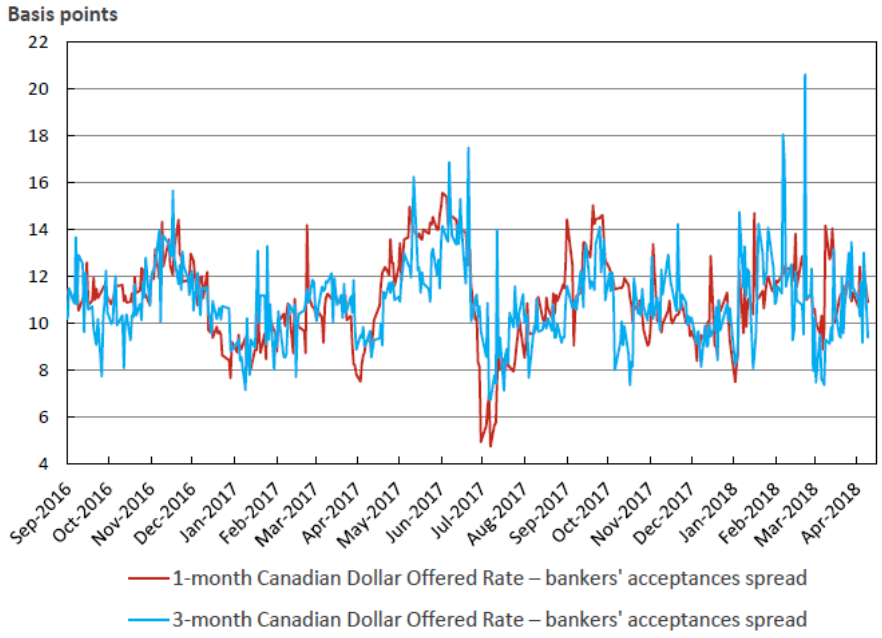
As noted by the Bank of Canada, most BA facilities will typically reference the Canadian Dollar Offer Rate ("CDOR") as their interest rate benchmark. The CDOR, in turn, is the reference rate refers to the rate at which the submitting bank is willing to lend funds against primary BA

issuances.[37] While the CDOR will typically reflect market conditions, it is expected to be stable when no changes are expected to the Bank of Canada overnight rate.[38] As described in Section 3.2, the Bank of Canada has opted to hold the overnight rate at 1.75% in 2019, and there is no expectation that it will lower the rate any further this year, bringing short-term stability to the BA rate.

With respect to the ***annual spread over the BA rate***, while we understand this is estimated using OEB's confidential survey of banks issuing short-term debt to good quality utilities, LEI would like to note the difference observed between the "spread from the confidential survey" and "the spread between CDOR and rates in secondary BA markets" (shown below in Figure 12).

The spread from the confidential survey provided by the banks has consistently been between 80 and 100 basis points (between 2016 and 2018).[39] For a similar period, as reported by the Bank of Canada, the spread between the 3-month CDOR and rates in the secondary markets for BA ranged between 6 and 22 basis points, as illustrated in Figure 12 below.

Figure 12. Spread between CDOR and rates in secondary BA markets (2016 to 2018)



Sources: Adapted from Auger & McRae. A Primer on the Canadian Bankers' Acceptance Market. Bank of Canada Staff Discussion Paper. June 2018.

[37] Auger & McRae. *A Primer on the Canadian Bankers' Acceptance Market.* Bank of Canada Staff Discussion Paper. June 2018.

[38] Ibid.

[39] Ontario Energy Board. *Cost of Capital Parameters.* (2015-2017).

As LEI has not been provided any further commentary from the confidential survey of banks, it is possible that the banks' 3-month offers to R-1 low utilities[40] are priced significantly higher than the CDORs for legitimate reasons. However, we feel the difference is significant and notable.

LEI notes that while there are diverse utility sizes in Ontario, a difference of over 50 basis points between the "CDOR spread" and "spread from the confidential bank survey" may be excessive. In terms of approach, the confidential survey is limited due to its small sample size, and it is not clear whether it relies on actual transaction data. To corroborate results from the confidential bank survey, an additional approach that the OEB may consider is to require that utilities report rates for their actual short-term (3-month) debt issuances (including 3-month future contracts, if any) in the preceding year. This data would allow OEB to have more accurate information on actual cost of short-term debt relative to the BA rate, assisting the Board to set a rate consistent with actual cost of short-term borrowing for utilities.

[40] This refers to the debt rating scale of DBRS, which categorizes short-term debt issues on a scale of R-1 (Superior or Good) to R-5 (Highly Speculative). R-1 Low corresponds to A-1 (mid) and p-1 for Standard & Poors and Moody's respectively. (Source: DBRS; TD Securities.)

5 Appendix A: Cost of Capital Parameter Calculations

Consistent with the OEB methodology detailed in the annual update to parameters, LEI has calculated the values for ROE, LTDR and STDR as illustrated in Figure 13 and Figure 14 below.

Figure 13. ROE and LTDR calculation

Cost of Capital Parameter Calculations (For rate changes effective in 2020)

Step 1: Analysis of Business Day Information in the Month

Month: September 2019

	Day	Bond Yields %			Bond Yield Spreads %	
		Govt. of Canada		A-rated Utility	30-yr. Govt. over	30-yr. Util. over
		10-yr	30-yr	30-yr	10-yr Govt.	30-yr Govt.
1	1-Sep-19					
2	2-Sep-19					
3	3-Sep-19	1.13	1.40	2.94	0.27	1.54
4	4-Sep-19	1.13	1.40	2.96	0.27	1.56
5	5-Sep-19	1.26	1.53	3.06	0.27	1.53
6	6-Sep-19	1.28	1.50	3.04	0.22	1.54
7	7-Sep-19					
8	8-Sep-19					
9	9-Sep-19	1.34	1.55	3.09	0.21	1.54
10	10-Sep-19	1.43	1.62	3.15	0.19	1.53
11	11-Sep-19	1.42	1.63	3.17	0.21	1.54
12	12-Sep-19	1.45	1.67	3.20	0.22	1.53
13	13-Sep-19	1.51	1.71	3.24	0.20	1.53
14	14-Sep-19					
15	15-Sep-19					
16	16-Sep-19	1.48	1.67	3.20	0.19	1.53
17	17-Sep-19	1.45	1.63	3.15	0.18	1.52
18	18-Sep-19	1.43	1.59	3.12	0.16	1.53
19	19-Sep-19	1.43	1.58	3.09	0.15	1.51
20	20-Sep-19	1.39	1.54	3.04	0.15	1.50
21	21-Sep-19					
22	22-Sep-19					
23	23-Sep-19	1.37	1.52	3.01	0.15	1.49
24	24-Sep-19	1.30	1.48	2.96	0.18	1.48
25	25-Sep-19	1.39	1.57	3.05	0.18	1.48
26	26-Sep-19	1.36	1.54	3.02	0.18	1.48
27	27-Sep-19	1.36	1.54	3.02	0.18	1.48
28	28-Sep-19					
29	29-Sep-19					
30	30-Sep-19	1.37	1.53	3.01	0.16	1.48
		1.36	**1.56**	**3.08**	**0.20**	**1.52**

Sources: Bank of Canada; Bloomberg

Step 2: 10-Year Government of Canada Bond Yield Forecast

Source: Consensus Forecasts Survey Date: September 9, 2019

	3-month	12-month	Average
September 2019	1.400	1.600	**1.500** %

Step 3: Long Canada Bond Forecast

10-yr Govt. of Canada Bond Forecast (from Step 2)	1.500 %
Actual Spread of 30-year over 10-year Government of Canada Bond Yield (from Step 1)	0.196 %
Long Canada Bond Forecast (LCBF)	**1.696** %

Step 4: Return on Equity (ROE) Forecast

Initial ROE			9.75 %
Change in Long Canada Bond Yield Forecast from September 2009			
LCBF (September 2019) (from Step 3)	1.696	%	
Base LCBF	4.250	%	
Difference	-2.554	%	
0.5 x Difference			-1.277 %
Change in A-rated Utility Bond Yield Spread from September 2009			
A-rated Utility Bond Yield Spread (September 2019) (from Step 1)	1.516	%	
Base A-rates Utility Bond Spread	1.415	%	
Difference	0.101	%	
0.5 x Difference			0.050 %
Return on Equity based on September 2019 data			**8.52** %

Step 5: Deemed Long Term Debt Rate Forecast

Long Canada Bond Forecast for September 2019 (from Step 3)	1.696 %
A-rated Utility Bond Yield Spread September 2019 (from Step 1)	1.516 %
Deemed Long-term Debt Rate based on September 2019 data	**3.21** %

Source: OEB. *Cost of Capital Parameter Updates*. <https://www.oeb.ca/industry/rules-codes-and-requirements/cost-capital-parameter-updates>

Figure 14. STDR calculation

Cost of Capital Parameter Calculations (For rate changes effective in 2020)

Step 1: Average annual spread over Banker's Acceptance

A.		Average Spread over 90-day Bankers Acceptance		Date of input
	Bank 1	80	bps	Sept., 2019
	Bank 2	100	bps	Sept., 2019
	Bank 3	82.5	bps	Sept., 2019
	Bank 4	100	bps	Sept., 2019
	Bank 5		bps	
	Bank 6		bps	

B. Discard high and low estimates
If less than 4 estimates, take average without discarding high and low.

Number of estimates	4	
High estimate	100	bps
Low estimate	80	bps

C.

Average annual spread	91.25	bps

Step 3: Deemed Short-Term Debt Rate Calculation

Average annual spread	0.91%
Average Banker's Acceptance Rate	1.83%
Deembed Short Term Debt Rate	**2.75%**

Step 2: Average 3-month Banker's Acceptance Rate

	Month:	September 2019
	Day	Bankers' Acceptance Rate (%) 3-month
1	1-Sep-19	
2	2-Sep-19	
3	3-Sep-19	1.79%
4	4-Sep-19	1.83%
5	5-Sep-19	1.81%
6	6-Sep-19	1.82%
7	7-Sep-19	
8	8-Sep-19	
9	9-Sep-19	1.82%
10	10-Sep-19	1.83%
11	11-Sep-19	1.83%
12	12-Sep-19	1.83%
13	13-Sep-19	1.85%
14	14-Sep-19	
15	15-Sep-19	
16	16-Sep-19	1.85%
17	17-Sep-19	1.83%
18	18-Sep-19	1.82%
19	19-Sep-19	1.84%
20	20-Sep-19	1.84%
21	21-Sep-19	
22	22-Sep-19	
23	23-Sep-19	1.85%
24	24-Sep-19	1.85%
25	25-Sep-19	1.85%
26	26-Sep-19	1.84%
27	27-Sep-19	1.84%
28	28-Sep-19	
29	29-Sep-19	
30	30-Sep-19	1.83%
		1.83%

Source: OEB. *Cost of Capital Parameter Updates*. <https://www.oeb.ca/industry/rules-codes-and-requirements/cost-capital-parameter-updates.

6 Appendix B: Works cited

Arnold & Buck. *German economy contracts as global trade slowdown takes toll.* Financial Times. August 14, 2019.

AUC. *Generic Cost of Capital Proceedings.* 2010-2018.

Auger & McRae. *A Primer on the Canadian Bankers' Acceptance Market.* Bank of Canada Staff Discussion Paper. June 2018

Bank of Canada. *Bank of Canada maintains overnight rate target at 1 ¾ percent.* Press Release. September 4, 2019.

Blanchfield, M. *U.S. House breaks with no new NAFTA tabled for ratification. Now what?* The Canadian Press. July 29, 2019.

Bloomberg LP. *Bloomberg Fair Value Canada 30-Year A-rated Utility Curve.*

BMO Capital Markets Economic Research. *North American Outlook: Summertime, And the World is Easing.* August 7, 2019.

BMO. *Provincial Economic Outlook.* August 30, 2019.

Fitch website. *Fitch Ratings: Annual GDP Growth Falling in Virtually All Large Economies.* August 30, 2019.

International Monetary Fund. *World Economic Outlook. DataMapper.* April 2019.

International Monetary Fund. *World Economic Outlook: Growth Slowdown, Precarious Recovery (Update).* Washington, DC. July 23, 2019.

Investment Industry Regulatory Organization of Canada. *Canadian Bankers' Acceptance (BA) Rates.* Accessed at < https://www.iiroc.ca/industry/marketmonitoringanalysis/Pages/BA-Rate.aspx>

Lohr, S. *U.S. Moves to Ban Huawei From Government Contracts.* New York Times. August 7, 2019.

McHugh, D. *Incoming European Central Bank head defends low interest rates.* PBS. September 4, 2019.

OEB. *2019 Cost of Capital Parameters.* November 22, 2018.

OEB. Cost of Capital Parameter Updates. <https://www.oeb.ca/industry/rules-codes-and-requirements/cost-capital-parameter-updates>

OEB. *EB-2009-0084: Report of the Board on the Cost of Capital for Ontario's Regulated Utilities.* December 11, 2009.

OEB. *Staff report. EB-2009-0084: Review of the Cost of Capital for Ontario's Regulated Utilities.* January 14, 2016.

RBC Economic Research. *Economic and Financial Market Outlook.* June 2019.

RBC Economic Research. *Provincial Outlook.* June 7, 2019.

Scotiabank. *Global Outlook.* July 12, 2019.

Scotiabank. *Provincial Outlook.* July 15, 2019.

TD. *Provincial Economic Forecast.* June 17, 2019.

TD. *Quarterly Economic Forecast.* June 17, 2019.

US Federal Reserve. *Federal Reserve issues FOMC statement.* Press Release. July 31, 2019.

Webber, J. *Mexico's central bank cuts 2019 growth forecasts again.* Financial Times. August 28, 2019.