Municipal Pension Plan

Annual Report 2019

Doing it right

mpp.pensionsbc.ca

Contents

Celebrating longevity

A message from your trustees

Reflecting on the Municipal Pension Plan's 80th anniversary last year, we are extremely proud of where the plan is today. We have more than 210,000 members who are employed by approximately 930 plan employers. More than 105,000 members are receiving a pension. Add to that the plan's fund is over $59 billion and continues to provide a secure retirement income to every member. We continue to celebrate the plan's sustainability and longevity. This is our annual report as at December 31, 2019. You'll learn about the plan's financial performance and how we're doing it right for members.

Plan sustainability

The recent actuarial valuation found the plan is 105.1 per cent funded on the basis that current contributions continue, as previously scheduled following the 2015 valuation to pay for historical unfunded liabilities. The surplus of $2.87 billion will remain in the basic account. The adjusted surplus, excluding amortization to pay for historical unfunded liabilities, is $663 million. In addition, the balance of about $2.5 billion in the rate stabilization account will help protect active members and employers from contribution rate fluctuations in the future.

We conduct valuations every three years. Valuation reports examine the plan's assets and liabilities, as well as demographic, investment and economic factors that affect the plan, so we, the Municipal Pension Board of Trustees (board), can make necessary adjustments. The valuation is an important tool for the board to fulfil its primary goal to secure the pension for all members—that is, set aside enough funds to meet the cost of pensions and expenses.

TOTAL PLAN NET ASSETS:

Over $59 billion

105.1% funded

Responsible investment

The start of all investment decisions is the board's fiduciary obligation to act in the best financial interest of plan members and beneficiaries.

The board has evolved its approach to responsible investing and stewardship generally and climate change specifically.

The board and its investment management agent, the British Columbia Investment Management Corporation (BCI), believe climate change poses a material systemic risk and opportunity for the plan's portfolio. We support BCI's approach to engagement—one of the four pillars of BCI's Climate Action Plan—believing you can make the biggest difference as an asset owner. Examples of engagement include collaborative engagement (working with peers to reduce greenhouse gas emissions) and direct engagement (focusing on climate change, human rights and governance).

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Our climate change strategy includes climate scenario analysis/modelling to understand climate change impacts on the portfolio, trustee education to better understand risks and opportunities, measuring and quantifying carbon exposure, exploring sustainable investment opportunities and working with BCI to integrate climate change assessment into its asset management processes.

As signatories to the Principles for Responsible Investment and Climate Action 100+, we consider how environmental, social and governance factors can affect investments, and how our activities can help improve governance on climate change, curb emissions and strengthen climate-related financial disclosures. As part of its commitment to climate action, the board is disclosing climate-related financial information starting with this annual report.

Focus on our members

Doing it right for members means reaching out. In fall 2019, we engaged with active and retired members on post-retirement group benefits. More than 4,000 members participated to share their preferences about group benefits. The board expects to complete its review of group benefits and make a decision about any changes this summer.

Also in the fall, more than 250 people attended the 2019 annual general meeting (AGM) in person, and 100 members and stakeholders participated by webcast, with many viewing the webcast later. Our members enjoyed the opportunity to receive financial highlights, investment news and an update on what's ahead.

MPP retired members (L to R): Carolyn Burton, Ann Ackerman, Marg Lam

WE LOOK FORWARD TO CONNECTING WITH YOU AT THE 2020 AGM ON OCTOBER 15. Watch the website for information.

Current and future steps for sustainability

Even before the COVID-19 pandemic, the board had taken steps to reduce risk in the pension fund. We updated our asset allocation mix to suit our long-term investment timeframe and refreshed our investment beliefs to better guide our investment decisions. We also appointed two individuals with institutional investment industry expertise as non-trustee voting members of the investment committee. This will strengthen our ability to deal with the complexities of today's investment environment.

The board is currently updating its risk management approach and oversight. We are also refining our strategic direction. The plan is strong, and our good governance is focused on keeping it sustainable. Our long-term view ensures the security of the basic lifetime pension for every member, from long-time retirees to newly contributing active members.

COVID-19 UPDATE

Information found in this report is current as at the plan's year-end of December 31, 2019. Since then, the COVID-19 pandemic has adversely affected financial markets around the world. BCI, our investment management agent, had anticipated a correction in the rising financial market for some time and, as a result, the pension fund's investments were adjusted to reduce risk and mitigate impact. Plan investments are broadly diversified, which cushions the overall portfolio against lower returns in any one asset category. Details on the economic implications of COVID-19 on the plan will be included in future reports.

Plan investments

Plan portfolio overview

The Municipal Pension Board of Trustees (board) is responsible for overseeing an investment portfolio of over $59 billion for the benefit of Municipal Pension Plan (plan) members. The board's primary financial objective is to ensure the long-term sustainability of the plan, which is dependent upon several factors, including the generation of sufficient returns over a long-term horizon. The board's Statement of Investment Policies and Procedures outlines the board's investment strategy and overall framework for managing plan assets. The board approves the long-term asset mix policy, recognizing diversification of investments as a key principle in managing risk. Short-term volatility is monitored and in part managed through longer-term investment objectives.

Investments are held across a range of asset classes (fixed income; mortgages; public and private equity; real estate; infrastructure and renewable resources), industry sectors and global markets. The board oversees the management of plan assets through its investment management agent, the British Columbia Investment Management Corporation (BCI).

Risk management is a fiduciary responsibility of the board and BCI. Measuring and monitoring risk, and taking appropriate steps to limit exposure or capitalize on opportunities are essential to BCI's business plan and risk-management activities.

The board oversees the management of plan assets through its investment management agent, BCI

Five-year financial summary ($ millions)
for the year ended December 31

	2019	2018	2017	2016	2015
Increase in assets					
Investment income	**$ 6,693**	$ 1,210	$ 5,205	$ 2,659	$ 3,592
Contributions					
Members	**1,035**	971	923	884	863
Employers	**1,185**	1,117	1,067	1,022	993
Transfers from other plans	**17**	97	11	16	14
Total increase in assets	**8,930**	3,395	7,206	4,581	5,462
Decrease in assets					
Benefit payments	**2,068**	1,928	1,808	1,690	1,601
Transfers to other plans	**13**	11	15	15	12
Retired member group benefits	**50**	51	69	105	86
Investment and administration costs[1,2]	**143**	170	127	135	124
Total decrease in assets	**2,274**	2,160	2,019	1,945	1,823
Increase in net assets	**6,656**	1,235	5,187	2,636	3,639
Net assets at beginning of year	**52,784**	51,549	46,362	43,726	40,087
Net assets at end of year	**$59,440**	$52,784	$51,549	$46,362	$43,726
Investment and administration costs as a percentage of net assets (%)[1]					
Investment management[1,2]	**0.37**	0.35	0.28	0.28	0.24
Benefits administation	**0.09**	0.09	0.09	0.10	0.09

1 Investment and administration costs as a percentage of net assets include external investment management and unallocated costs netted against investment income of $112.1 million (2018—$61.8 million; 2017—$52.4 million; 2016—$33.5 million; 2015—$18.5 million). They are not included in investment and administration costs in the financial statements.

2 Investment and administration costs as a percentage of net assets exclude external indirect investment management costs netted against investment income. This is consistent with current industry practice; including these costs using the budgeted amount would have increased investment management costs as a percentage of net assets by an estimated 30 basis points in 2019. External indirect investment management costs include limited partnership costs incurred within investments held in the private equity, infrastructure and global real estate asset classes.

Investment highlights

Learn more about the plan's investments at mpp.pensionsbc.ca. Click About us > Investments

The plan's investment portfolio earned 12.5 per cent net of fees for 2019, underperforming against the benchmark of 13.2 per cent. The market value of the plan's investments increased from $53.0 billion in 2018 to $59.4 billion in 2019. Over a five-year period, the investment portfolio earned 8.0 per cent on an annualized basis, exceeding the benchmark of 7.3 per cent.

Public equities returned 19.3 per cent for the year, compared to a benchmark of 19.7 per cent. In part, this performance is due to developed markets in North America reaching all-time highs in 2019, as risk appetite was spurred by continued accommodative monetary policies from the U.S. Federal Reserve and declining geopolitical tension. However, returns were hindered by the underperformance of quantitative strategies.

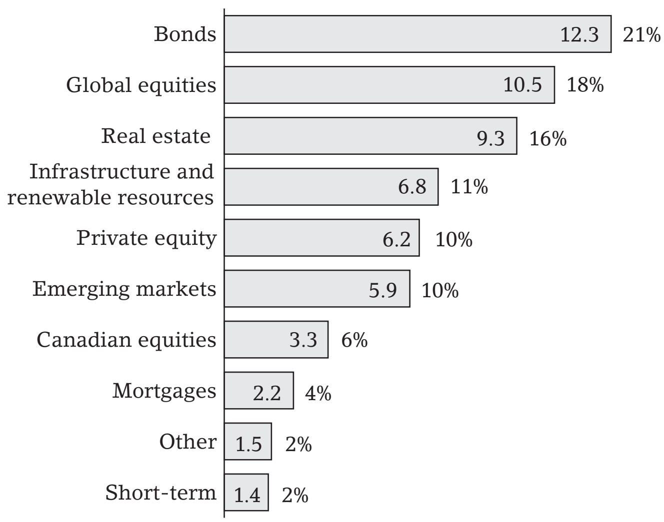
The combined fixed income portfolio, which includes money market, bonds, private debt, and mortgages, returned 7.2 per cent against a benchmark of 7.3 per cent. As fixed income yields fell throughout the majority of 2019, BCI's portfolios were invested in longer-duration bonds, resulting in positive returns in both universe and corporate bonds. The Bank of Canada held its policy interest rate steady at 1.75 per cent as of December 31, 2019; there had not been a rate change since October 2018.

Private market assets include real estate, private equity, and infrastructure and renewable resources. These assets play an important role in the plan's strategy since they are a good match for the plan's long-term pension liabilities and provide stable cash flows with capital appreciation.

Real estate outperformed, returning 8.2 per cent for the year against a benchmark of 7.6 per cent. Market conditions for Canadian industrial and residential apartment properties were strong, with national vacancy rates at historically low levels. However, strength in some Canadian markets masked weakness in others, such as the Edmonton and Calgary markets, which continued to experience higher vacancy rates. In U.S. markets, healthy economic growth continued to fuel strong leasing activity, but investment activity for commercial real estate was down over the first nine months of 2019. A similar trend existed in Europe.

Robust competition in private equity markets characterized 2019 with record levels of committed capital. Private equity ended the year with a 15.2 per cent return against the benchmark of 22.2 per cent. The 2019 year saw pronounced volatility as markets rallied towards the end of the year, which is reflected in the benchmark. Infrastructure and renewable resources returned 7.3 per cent, against a benchmark of 7.0 per cent as demand for quality assets remains high. Despite heated market conditions, BCI will continue to make decisions with a long-term view while exercising prudence and caution.

Investment holdings ($ billions)
as at December 31, 2019



Investment portfolio[1]
as at December 31, 2019

	Market value ($ millions)	Asset mix (% market value)
Short-term		
Money market	$ 1,112	1.9
Bonds (1–5 years)	269	0.5
	1,381	2.4
Mortgages	2,249	3.8
Bonds		
Corporate bonds	3,581	6.0
Leveraged bonds (net)	259	0.4
Government bonds	8,472	14.3
	12,312	20.7
Private debt	1,460	2.5
Canadian equities		
Indexed	1,433	2.4
Actively managed	1,808	3.1
	3,241	5.5
Global equities		
Indexed	6,110	10.3
Actively managed	4,422	7.4
	10,532	17.7
Emerging markets		
Indexed	4,425	7.5
Actively managed	1,509	2.5
	5,934	10.0
Real estate		
Domestic	6,142	10.3
Global	3,141	5.3
	9,283	15.6
Private equity	6,191	10.4
Infrastructure and renewable resources		
Infrastructure	5,653	9.5
Renewable resources	1,156	1.9
	6,809	11.4
Total Investments	**$59,392**	**100.0**
2018 comparison	$ 52,966	

1 Asset classifications vary from the financial statements for the purpose of performance reporting on strategic investments and infrastructure

Market value asset mix and rates of return (%)
as at December 31, 2019

	Approved range	Target asset mix market value	Actual asset mix market value	Rate of return	Performance benchmark
Short-term	0–10	2	2.4	1.0	1.6
Mortgages	0–10	5	3.8	5.9	3.7
Bonds[1]	5–40	18	20.7	7.6	7.4
Private debt	0–10	4	2.5	4.6	9.7
Fixed income	**15–50**	**39**	**29.4**	**7.2**	**7.3**
Canadian equities	0-15	5	5.5	22.6	22.9
Global equities	10-35	17	17.7	21.1	21.2
Emerging markets	3-15	10	10.0	12.2	12.4
Equity	**30-60**	**32**	**33.2**	**19.3**	**19.7**
Domestic real estate			10.3	7.8	7.6
Global real estate			5.3	8.3	7.6
Real estate	**10–25**	**17**	**15.6**	**8.2**	**7.6**
Private equity	**3–15**	**10**	**10.4**	**15.2**	**22.2**
Infrastructure and renewable resources	**5–16**	**12**	**11.4**	**7.3**	**7.0**
Total portfolio		**100**	**100.0**	**12.5**	**13.2**
Annual rates					
2019				**12.5**	**13.2**
2018				2.1	0.2
2017				11.0	9.9
2016				5.9	6.6
2015				8.7	7.0
Five-year annualized rates					
2019				**8.0**	**7.3**
2018				7.8	6.6
Ten-year annualized rates					
2019				**8.9**	**7.7**
2018				8.8	7.7

1 Actual target range for bonds is 28% with 10% leveraging.

Analysis—Understanding the plan's investment portfolio

Recognizing the importance of taking a long-term investment perspective, the board approves the plan's strategic asset allocation policy. The strategic asset allocation policy reflects an increased focus on renewable resources and real assets, such as land and buildings. Real assets, primarily transacted in private markets, are tangible physical investments ideally suited for the long-term financial objectives of the plan. These assets typically provide capital appreciation, income and inflation protection, while reducing the short-term volatility associated with public markets. Many investments also allow for more direct asset management, which enables BCI to influence the strategic direction of these companies.

In 2019, the board updated its investment beliefs, which help define how we seek to create investment value in the context of future uncertainty, risk and opportunity. These beliefs also help us make practical decisions about our investment style, selection and monitoring of investment managers, asset allocation, investment decisions, performance objectives and approach to active ownership.

The beliefs fall into the following categories:

- The importance of good governance and oversight, aligning the investment activities with the plan's overall objectives
- Managing the total asset portfolio as the most impactful role of the board on determining asset returns
- Implementing specific guidance to BCI on diversification of assets, long-term investing, active strategies, and currency and costs
- The importance of environmental, social and governance concerns to the plan and the board

Investment profiles

The investment profiles demonstrate a broad range of portfolio companies across the asset classes the plan is invested in. They showcase the breadth and depth of BCI's global portfolio, and are exemplary representations of each asset class' investment strategy and thesis. The investments are sought after for their expected ability to generate long-term returns for clients.

Learn more about BCI's investments at bci.ca. Click on Investments

Verifone Systems Inc.

Verifone is a global provider of innovative payment (point-of-sale terminals) and commerce solutions. It serves customers in retail, restaurants, hospitality, health care, petrol and other markets. Verifone is a market leader with quality products, strong market share, robust and globally diversified cash flows, and attractive growth prospects. With the investment, BCI holds seats on the board.

Corix Infrastructure

Corix is a $1 billion North American multi-utility company held in BCI's infrastructure and renewable resources program. The company provides water and wastewater services, as well as managing community-based utility systems for large customers, such as universities and military bases. The company was created from the buyout of Terasen Water in 2006, led by BCI, CAI Capital and Banyan Capital Partners. BCI subsequently increased its ownership position to 100 per cent over multiple transactions. Since then, our team has been actively managing the asset to improve profitability and operational efficiency. This included serving on the board and working with management to reorganize select divisions and refine mergers and acquisition activities for continued growth.

The Post

The Post is an office and retail heritage development taking shape at the site of the former Canada Post building in downtown Vancouver. The development will include 1.13 million square feet of state-of-the-art office space in two new towers, surrounded by retail and public spaces. Located at the convergence of Yaletown, Downtown, Gastown and Chinatown neighbourhoods, The Post will provide convenient access to a best-in-class shopping experience for a growing and diverse community catering to thousands of technology workers, businesses and residents in the Crosstown neighbourhood.

Responsible investing

Responsible investing is an integral part of the plan's investment approach. The board and BCI believe that assessing and managing risk over the long term—the cornerstone of our responsible investing beliefs—is a fundamental way to meet the mandate to grow and protect the value of the plan's fund. Taking environmental, social and governance (ESG) matters into account enables us, as investors, to better understand, manage and mitigate risks associated with long-term investments. We believe that companies that employ robust ESG practices are better positioned to generate long-term value for investors than similar companies with less favourable practices.

As an active owner, BCI monitors ESG factors and engages with companies to raise awareness that good corporate governance is the overarching framework for effective management of risks. ESG considerations are integrated into investment analysis, decisions and processes. Influence as a shareholder is used to encourage companies to manage and report on ESG risks.

Collaborating with like-minded investors and organizations to enhance governance practices and standards is important to the board. The board and BCI are signatories to the Principles for Responsible Investment (PRI), an international network of investors coordinated by the UN that share the goal of incorporating ESG elements into the processes and activities of institutional investors. BCI and the board's approach for responsible investing are aligned with PRI, which provides a set of principles for institutional investors to consider as they integrate ESG factors into their investment processes and analysis, ownership activities and interactions with long-term investors.

In addition, the board supports BCI in responsible investing as an active member and contributor to a number of initiatives. For example, BCI is a member of the steering committee for the 30% Club, which advocates for companies to enhance gender diversity at board and senior management levels, and of the Sustainability Accounting Standards Board, which has a mandate to promote standards of sustainability reporting.

Plan members can learn more about ESG activities on the BCI website at BCI.ca.

ENVIRONMENTAL, SOCIAL AND GOVERNANCE MATTERS

ESG is the integration of environmental, social and governance factors in investment decision making.

Examples:

- Environmental: including greenhouse gas emissions, waste management or energy efficiency
- Social: including human rights, labour standards in the supply chain, or adherence to workplace health and safety
- Governance: including board structure, diversity, and compensation, or transparency and disclosure

PRINCIPLES FOR RESPONSIBLE INVESTMENT

PRI is a United Nations–supported initiative to develop and promote best practices in the area of responsible investing. PRI provides a set of principles for institutional investors to consider as they integrate ESG factors into their investment processes and analysis, ownership activities, and interactions with other long-term investors.

For more information, visit unpri.org.

Climate change

Climate change remains a concern for the board, plan members and global investors. BCI's Climate Action Plan helps position the plan's assets to mitigate the associated physical and investment risks, while capitalizing on investment opportunities arising from the gradual transition to a lower-carbon economy. By measuring the exposure to climate-related risks, assessing market trends and managing investments, BCI is able to mitigate clients' climate change risk.

BCI collaborates with a number of other organizations to advance its objectives in mitigating climate change risks, including The International Corporate Governance Network, CDP (formerly Carbon Disclosure Project) and Investor Network on Climate Risk.

The investor-organized Climate Action 100+ initiative seeks to encourage the world's largest corporate greenhouse gas emitters to take meaningful action to curb their emissions. The plan is a signatory to this important initiative.

BCI also joined a group of investors to co-sign letters to 47 of the largest greenhouse gas emitters in the U.S. The letters expressed the signatories' collective expectations on corporate lobbying for climate change, calling on the companies to review their lobbying practices, including to lobby in line with the Paris Agreement.

Managing investment costs

BCI operates on a cost-recovery, not-for-profit basis. Its large asset size provides access to substantial economies of scale. Managing investment costs is important to the board, and BCI's fees continue to be lower than those available in the private sector. The board focuses on overall net returns, as these returns contribute to the plan's long-term sustainability.

Top 25 company holdings—worldwide
as at December 31, 2019

Company	% of portfolio	% of public equity	Total exposure ($ millions)
Chinese State-Controlled Companies[1]	0.8	2.3	446
Alibaba Group Holding Ltd.	0.7	2.0	390
Tencent Holdings Ltd.	0.5	1.5	289
Samsung Electronics Co. Ltd.	0.5	1.4	280
Microsoft Corp.	0.5	1.4	276
Taiwan Semiconductor Manufacturing	0.5	1.4	275
Apple Inc.	0.4	1.2	237
Amazon.com Inc.	0.3	1.0	207
The Toronto-Dominion Bank	0.3	0.9	187
Alphabet Inc.	0.3	0.9	182
Royal Bank of Canada	0.2	0.8	150
Facebook Inc.	0.2	0.7	129
Berkshire Hathaway Inc.	0.2	0.6	116
Citigroup Inc.	0.2	0.6	116
Ping An Insurance (Group) of China	0.2	0.6	108
Brookfield Asset Management Inc.	0.2	0.5	108
Allergan Plc	0.2	0.5	105
The Boeing Co.	0.2	0.5	103
Russian State-Controlled Companies[1]	0.2	0.5	93
MasterCard Inc.	0.1	0.5	91
Visa Inc.	0.1	0.4	85
UnitedHealth Group Inc.	0.1	0.4	84
Johnson & Johnson	0.1	0.4	81
Housing Development Finance Corp. Ltd.	0.1	0.4	81
Suncor Energy Inc.	0.1	0.4	81
Total top 25	7.2	21.8	4,300
Total public equity			19,707
Total portfolio			**$59,392**

1 Company exposures are based on the ultimate parent company exposure regardless of where the security is listed or traded.

Climate-related disclosures

In its *Fifth Assessment Report,* the Intergovernmental Panel on Climate Change outlines the widely recognized theory that continued greenhouse gas (GHG) emissions will cause further warming of the earth. It also acknowledges that the earth warming two degrees Celsius above pre-industrial temperatures could lead to catastrophic economic and social consequences. Therefore, climate change has global significance.

Although the timing and extent of the effects of climate change are uncertain, the Municipal Pension Board of Trustees (board) believes that actions to reduce GHG emissions through investor stewardship, the selection of assets and advocating for appropriate public policies directly and indirectly benefit the plan. The board is committed to understanding the issues, risks and opportunities posed by climate change to support informed decision making. We also believe that better access to data will improve how climate-related risks are assessed, priced and managed.

The board recognizes that climate change results in both an investment opportunity and a long-term material systemic risk to the plan. And, alongside physical risks of climate change are the potential broader social and economic implications.

The Statement of Investment Policies and Procedures (SIPP) articulates our approach to responsible investing and stewardship generally and climate change specifically. The board delegates the management of investment risks and selection of investments to British Columbia Investment Management Corporation (BCI).

We have a multi-prong climate change approach both directly and through BCI that includes engagement, advocacy, education, and the management of climate change risks and opportunities.

As part of its commitment to climate action, the board is disclosing climate-related financial information starting with this annual report. The board is making disclosures based on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). The TCFD was created by the global Financial Stability Board to develop climate-related disclosures that will lead to a better understanding of the financial system's exposure to climate-related risks.[1]

As part of its commitment to climate action, the board is disclosing climate-related financial information starting with this annual report.

This work followed the entry into force of the Paris Agreement in 2016,[2] an international environmental treaty focused on "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C

1 www.fsb-tcfd.org/wp-content/uploads/2017/12/FINAL-TCFD-Annex-Amended-121517.pdf
2 unfccc.int/process/the-paris-agreement/status-of-ratification

above pre-industrial levels."[3] The efforts to limit global average temperature increase to below these thresholds seeks to reduce the physical impact of climate change. These efforts will necessitate the transition to a lower-carbon economy—the emission of GHGs is the key driver of warming—presenting transition risks and investment opportunities for asset owners around the world.

This disclosure aligns with the broader guidelines set out by the TCFD, as well as the supplemental guidance for asset owners.

It lays out our actions and those of BCI as they relate to climate change:

› The governance section describes the board's oversight of climate-related risks and opportunities
› The strategy section identifies specific climate-related issues that could have a significant effect on the plan's portfolio over the short-, medium- and long-term
› Under risk management**,** we describe how we identify and manage climate-related risks, in relation to other risks
› As part of metrics and targets, we include measures we are monitoring, including the impact of climate scenarios on total expected returns, our carbon footprint and capital invested in climate-related opportunities

This disclosure expresses the board's current activities and understanding of climate-related financial risks. We are starting by measuring and monitoring our investments before considering setting targets. The board expects climate-related data to evolve as more information becomes available and our reporting to evolve with it.

This disclosure is one way the board reports on climate-related risks and opportunities. Other information about the plan's responsible investing approach, investment oversight and advocacy activities is available on the plan website.

3 unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

Governance

The plan's governance on climate-related risks and opportunities

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TCFD recommendation

Describe the board's oversight of climate-related risks and opportunities.

The plan's alignment

Board governance

The board is responsible for the administration of the Municipal Pension Plan (plan) and investment of the plan's assets, in accordance with the Joint Trustee Agreement (JTA), the plan rules and applicable legislation. BCI, our investment agent, is responsible for the day-to-day investment of the pension fund.

BCI has a role that goes beyond that of a typical fund manager, effectively functioning as the board's internal investment staff. For example, the board believes that BCI is in the best position to make the decision on the weightings between active and passive strategies and has delegated this decision to BCI. BCI manages several pooled investment portfolios on behalf of its clients. The pools provide participating unitholders with a wide range of diversified investment opportunities.

Our SIPP outlines the board's investment strategy and overall framework for managing plan assets. The board approves the long-term asset mix policy, recognizing diversification of investments as a key principle in managing risk. The board monitors and manages short-term volatility in part through longer-term investment objectives. Risk management is a fiduciary responsibility of the board and of BCI. BCI's chief investment officer (CIO) is ultimately responsible to the board for all investment decisions, including the consideration of climate-related risks and opportunities as part of all investment decisions and strategies.

The board is committed to balancing risks and returns in developing its investment policy in the best financial interests of plan beneficiaries and recognizes that consideration of ESG issues, including climate change, is fundamental to maximizing the fund's risk-adjusted returns. The board is actively engaged with responsible investment initiatives, understanding the issues, risk and opportunities posed by climate change to support informed decision making is a board priority.

The board has delegated to the investment committee the responsibility for recommending investment policy and monitoring performance.

The board updated its investment beliefs in 2019, which will better support the board in making investment decisions and provide clear guidance to BCI on how to manage the plan's assets. Investment beliefs help define how an asset owner will seek to create investment value in the context of future uncertainty, risk and opportunity. They also help asset owners make practical decisions about their investment style, asset allocation, investment decisions, performance objectives and approach to active ownership. The new investment belief related to climate change is as follows:

> *Climate change is an investment opportunity and a long-term material systemic risk to the plan. Although the timing and extent of the effects of climate change are uncertain, actions to reduce GHG emissions through investor stewardship, the selection of assets and advocating for appropriate public policies directly and indirectly benefit the plan.*

TCFD recommendation

Describe management's role in assessing and managing climate-related risks and opportunities.

The plan's alignment

Management oversight

Our investment manager, BCI, has a role that goes beyond that of a typical fund manager, effectively functioning as the board's internal investment staff. Our board oversees the management of plan assets and BCI's CIO is ultimately responsible to the board for all investment decisions, including the consideration of climate-related risks and opportunities.

Management competence

Trustees have participated in climate change education sessions that were designed to help develop an understanding of 1) how climate change may affect the portfolio, 2) best practices for fund governance and fiduciary duty related to climate change, 3) climate change and investment agent oversight and 4) TCFD disclosure recommendations.

Our board is leveraging the relationship with BCI to increase the board's understanding and practice related to climate risks and opportunities.

Strategy

The actual and potential impacts of climate-related risks and opportunities on the plan's operations, strategy and financial planning.

TCFD recommendation

Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term.

The plan's alignment

The plan delegates day-to-day investment management to BCI, which identifies short, medium and long-term climate-related risk and opportunities relevant for the fund:

- In the **short term**, BCI has identified rapid changes in policy and regulation to limit GHG emissions as the most prominent climate-related risk to our investment portfolio performance. This could lead to additional costs to investments exposed to carbon-intensive energy and supply chains and impact the business models of several sectors in the broader economy. Investment opportunities exist as technologies and industries that benefit from low-carbon economy alignment increase in scale and value.
- Over the **medium term**, BCI expects transition risks and physical risks to materialize. BCI will explore opportunities that are aligned with our investment approach and meet our requirements as an investor of scale. Although the physical impacts of climate change are not expected to be widespread over the medium term, certain regions may be affected, and asset valuations will reflect the trajectory of climate change. Each climate scenario will pose different implications for companies and sectors. Some will face costs as they adapt and transition to a lower carbon model; others may seize opportunities to expand and grow their businesses.
- The following are key areas BCI believes could present investment opportunities over the medium to long term in the transition to a lower carbon economy:
  - **Alternative energy:** products, services or infrastructure projects supporting the development or delivery of renewable energy and alternative fuels
  - **Energy efficiency:** products, services, infrastructure or technologies that proactively address the growing global demand for energy while minimizing effects on the environment

See BCI's report, "*BCI's Climate Action Plan and Approach to the TCFD Recommendations*" at bci.ca.

- **Green buildings:** design, construction, redevelopment, retrofitting or acquisition of "green" certified properties (subject to local green building criteria)
- **Sustainable water:** products, services and projects that attempt to resolve water scarcity and water quality issues, including minimizing and monitoring current water use and demand increases, improving the quality of water supply and improving the availability and reliability of water
- **Pollution prevention:** products, services or projects that support pollution prevention, waste minimization or recycling as a means of alleviating the burden of unsustainable waste generation

In the **long term,** if the world warms past two degrees Celsius, physical impacts of climate change will become more acute, frequent and intense. This will disrupt regional and global economies and will negatively impact capital markets. If global temperatures are limited to two degrees Celsius or less, the physical risks are minimized and there are significant opportunities for capital deployment and growth in low-carbon aligned investments.[4]

TCFD recommendation

Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy and financial planning.

The plan's alignment

When managing all of our investments, we, and BCI, are guided by the common fiduciary duty required under applicable legislation and other governance documents to act in the best financial interests of the plan beneficiaries. BCI is guided by the plan's SIPP, which notes that we expect BCI to seek appropriate ESG disclosure and give favourable consideration to investment opportunities that exceed environmental regulations and aspire to reduce their impact on the environment. The SIPP also recognizes the direct and indirect benefits of actions to reduce GHG emissions through investor stewardship, the selection of assets and advocating for appropriate public policies on the plan.

Climate-related risks and opportunities are incorporated into BCI's investment analysis, recommendations and management activities in numerous ways. We supported BCI's development of Climate Action Plan to address

Climate-related risks and opportunities are incorporated into BCI's investment analysis, recommendations and management activities in numerous ways.

4 UNPRI MPP Transparency Report, 2019, p. 13: mpp.pensionsbc.ca/documents/391208/1204793/%28PDF%29+Principles+for+Responsible+Investment+%28PRI%29++%E2%80%93+Responsible+Investing+Transparency+Report/20737842-8e73-4afd-93e6-1a4da5082e81

climate risk and opportunities across its activities. The plan has four pillars, which BCI is now implementing:

- **Manage risk** by quantifying BCI's and clients' (including our) specific climate change risks and monitoring changes in expected climate outcomes
- **Integrate** climate analysis in investment decision making at the asset, pool and total client portfolio levels (including ours)
- **Seek opportunities** to invest in beneficiaries of the transition to a low-carbon economy, where it makes financial sense
- **Engage and advocate** for climate-related disclosure and strategy with investee companies, peers, policymakers and industry associations

BCI believes the most effective way to manage climate investment impacts is to integrate climate-related considerations into its investment decision-making processes. Each asset class requires distinct considerations, and BCI currently incorporates climate change analysis into all investment decision-making processes where materially relevant. BCI continues to build additional tools to identify and assess all forms of climate-related risk, which will be applied to the plan's investments.

BCI believes the most effective way to manage climate investment impacts is to integrate climate-related considerations into its investment decision-making processes.

BCI continues exploring options for establishing a consistent approach to integrating climate considerations across all assets, both internally and externally managed.

In 2018, the board updated the long-term policy asset mix intended to support the best financial interests and the overall investment risk profile of the plan. The updated long-term policy asset mix was updated in line with the recommendation stemming from an asset-liability review prepared by BCI for the board. This review incorporated analysis of long-term economics scenarios, a review of the types of investment risk taken by the plan and climate change scenario analysis.

TCFD recommendation

Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a two degrees Celsius or lower scenario.

The plan's alignment

The current long-term policy asset mix decision came after the board undertook an asset-liability review in 2017/2018. This review included assessment of potential impact on long-term investment performance under multiple climate scenarios using a model based on Mercer's Climate

Change Risk Assessment Research Package. This climate change work was developed based on the board's desire to undertake this work, and its endorsement to have BCI conduct climate change scenario analysis.

In addition to a three-degree global warming scenario, where impacts were not expected to be material on an aggregate total fund level, BCI evaluated our potential long-term return impacts under both a:

- **Two-degree global warming scenario,** where the transition to a lower carbon economy occurs faster than expected and creates elevated levels of transition risk for certain assets, while resulting in less risk of the physical impacts brought on by climate change. This scenario leads to reduced returns from assets tied to traditional energy and gains in assets that are tied to renewables.
- **Four-degree global warming scenario,** where climate action policies, technological advancements and sentiment are largely insufficient, resulting in less transition risk but experiencing significant increases in physical impacts on certain assets. Under this scenario, emissions grow another 33 per cent over 2010 levels, peaking after 2040. Fossil fuels represent 85 per cent of the energy mix by 2050.

Using our long-term policy asset mix targets and the projected expected returns for each asset class, BCI found that both the two- and four-degree climate scenarios would create an expected reduced return for our portfolio over the 15-year forecast horizon, relative to the base case scenario.

Beneath the total fund aggregate impacts, asset class performance is expected to vary significantly depending on which scenario unfolds. In the four-degree scenario, real assets are more likely to suffer from the rising risk of physical impacts. In contrast, in a two-degree scenario, the performance of developed market public equities is expected to be impacted as companies exposed to traditional energy assets, such as oil, would likely experience valuation adjustment.

Risk management

Process for identifying, assessing and managing climate-related risks

TCFD recommendation

Describe the organization's processes for identifying and assessing climate-related risks.

The plan's alignment

Risk identification

Our investment manager, BCI, is currently using climate scenario analysis to identify macro-economic climate-related risks and opportunities that could impact client investment returns. The scenarios provide a directional indication of areas in the portfolios that require more detailed assessments.

Each asset class currently identifies material climate change risks on a case-by-case basis. BCI has developed processes to assess climate change materiality and performance across asset classes.

Additionally, BCI is developing processes to effectively measure and determine material climate change risks and opportunities across the total portfolio. These tools will build on insights generated by carbon footprint metrics by introducing further fundamental research and analysis, as well as developing evaluations of the resiliency of specific assets to climate-related risks in the long term. The tools are intended to help BCI understand specific investments in the portfolio that may be at risk or will benefit in the context of climate change.

Stewardship

BCI addresses climate change on the plan's behalf by exercising ownership rights through proxy voting and shareholder engagement and by policy advocacy.

We have delegated our proxy voting to BCI, and as per our SIPP, the board expects BCI to use proxy voting and shareholder engagement to encourage companies to focus on long-term value creation by effectively managing ESG risks that may emerge over time and materially affect the valuation of the company and/or asset.

We are both signatories of Climate Action 100+, a five-year program calling on companies to curb emissions. The purpose of Climate Action 100+ is to improve governance on climate change, curb emissions and strengthen climate-related financial disclosures. We are seeing progress on engagement

We are both signatories of Climate Action 100+, a five-year program calling on companies to curb emissions.

with BCI as a lead in Climate Action 100+ activities; this progress continues to support our belief that engagement is more effective than divestment in managing climate risk. As an active owner, BCI monitors ESG factors and engages with companies to raise awareness that good corporate governance is the overarching framework for effective management of risks. BCI uses its influence as a shareholder to encourage companies to manage and report on ESG risks.

Climate change has been a top engagement priority for BCI for over 10 years. BCI engages with company management, regulators and standard-setting bodies via four main activities:

1. Proxy voting, in which BCI has supported about 50 per cent of all 2019 climate-related shareholder proposals, out of which BCI supported 71 per cent of proposals specific to GHG emissions disclosure and/or reduction targets. BCI also has a policy to vote against appropriate board directors at companies that fail to disclose adequate climate-related data.

2. Direct engagement, in which BCI focuses on achieving better climate change disclosure and risk management practices from invested companies.

3. Collaborative engagement, in which BCI works with its peers globally asking companies to take action to reduce greenhouse gas emissions. Examples are BCI's involvement with the PRI Methane Engagement Working Group and the Climate Action 100+ investor initiative to ensure the world's largest corporate greenhouse gas emitters take necessary action on climate change. Main Climate Action 100+ engagement objectives are to curb emissions, improve governance of climate risk management and strengthen climate-related financial disclosures.

4. Policy advocacy, in which BCI advocates for policy changes that will improve the investing environment for long-term investors, including at least 20 climate-related submissions with provincial, federal and international policymakers, regulators and standard-setters between 2007 and 2020.

BCI continuously refines its approach to managing climate change risks across the portfolio

Advocacy

We advocate, through BCI, for climate action policies that will limit the rise in global average temperatures to below two degrees Celsius. Since the mid-2000s, BCI has been advocating for reforms to address climate-related issues on behalf of the board. BCI's Climate Action Plan aligns with both our objectives and industry best practices. The board and BCI are signatories to the Principles for Responsible Investment (PRI), an international network of investors, supported by the UN, that share the goal of incorporating ESG elements into the processes and activities of institutional investors. In addition, in 2017, the board signed the Letter from Global Investors to Governments of the G7 and G20 Nations on climate action. The letter calls for the implementation of the Paris Agreement, policies to drive investment in the low-carbon transition and green investment, and implementation of the TCFD recommendations.

TCFD recommendation

Describe the organization's processes for managing climate-related risks.

The plan's alignment

Portfolio risk management

The board approved a long-term policy asset mix, which was developed following our asset-liability review conducted in 2017/2018 and recognizes the importance of taking a long-term investment perspective.

In addition to public markets and private equity assets, the plan's long-term policy asset mix includes infrastructure, renewable resources and real estate assets. These real assets, primarily transacted in private markets, are tangible physical investments ideally suited for the long-term financial objectives of the plan. These assets typically appreciate, produce income and provide some inflation protection, while reducing the short-term volatility associated with public markets. These types of investments may also allow for more direct asset management, which enables BCI to influence the strategic direction of these companies and create long-term value for the plan.

BCI is an active owner and is continuously refining its approach to appropriately managing climate change risks across the portfolio.

BCI also examines possible climate change outcomes and is developing a framework of indicators that can signal changing market conditions and potential re-examination of strategies and assumptions. By managing these risks, BCI strives to limit wealth erosion due to unexpected climate risks.

Product risk management
In BCI's **public market investments**, climate change indicators are integrated in internally managed, fundamental active equity mandates based on the Sustainability Accounting Standards Board framework. BCI also encourages fixed income credit rating agencies to incorporate climate analysis.

In BCI's **private market investments,** reports on legal, environmental, regulatory and other climate factors are commissioned and reviewed for each direct private asset due diligence. BCI uses similar materiality-based climate change indicators as those in public markets and conducts ESG risk reviews on all direct investments, which includes explicit evaluation of climate change risks. As a next step, BCI will also conduct physical climate change risk assessment for all directly held private investments.[5] Physical climate change risk analysis is currently conducted for real estate investments.

TCFD recommendation

Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management.

The plan's alignment

BCI manages the integration of climate-related risks into our portfolio. Climate-related risk management at the total portfolio level occurs within the Investment Strategy and Risk department. As per other investment risks, it is part of the ongoing investment risk monitoring discussed at BCI's senior management committee level and with clients like us.

At times, climate-related risks may warrant further analysis and action from BCI, and ad-hoc recommendations are brought to its senior management and/or asset class staff as they arise.

Where appropriate, portfolio managers consider climate-related risks during asset-level due diligence of other investment risks. In public markets, this assessment is supported by the BCI ESG integration team. In private markets, this is supported by the ESG team in Investment Strategy and Risk. See BCI's TCFD disclosure for more information.

5 BCI Climate Action Plan, 2018

Metrics and targets

TCFD recommendation

Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.

The plan's alignment

As our investment manager, BCI manages the metrics used by the organization to assess climate-related risks and opportunities.

The climate-related metrics BCI currently measures and monitors are:

- Impact of climate scenarios on total expected returns
- Public markets' portfolio carbon footprint
- Domestic real estate carbon footprint
- Capital invested in climate-related opportunities

Climate-related opportunity investment metric

BCI currently uses the MSCI ESG Sustainable Impact Metrics[6] and the corresponding methodology, which considers the United Nations Sustainable Development Goals to quantify the amount invested in climate change opportunities. Detailed information on the percentage of revenue companies derive from climate change opportunity categories was mapped to the portfolio holdings across listed equity, fixed income, private equity and infrastructure investments. Real estate investments are not currently included in this calculation. BCI determined the value of plan assets invested in climate-related opportunities is about $1.0 billion as at December 31, 2019.

TCFD recommendation

Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions, and the related risks.

The plan's alignment

BCI currently calculates portfolio carbon emission across public equities, fixed income and real estate and continues to evaluate and expand the coverage of the assets as data availability and methodological issues are improved. For public markets, BCI calculates the carbon footprint normalized by the market vale of the portfolio, expressed in tonnes of CO_2e/$M invested.

6 www.msci.com/esg-sustainable-impact-metrics

For real estate, QuadReal Property Group calculates the absolute carbon footprint of the domestic real estate portfolio as well as all Renewable Energy Certificates (RECs) and Voluntary Emission Reductions (VERs).

The plan-specific footprint calculations for 2019 are provided below:

- We measured our **public equities** carbon footprint as 83 tonnes of CO_2e per million invested as at December 31, 2019, compared to the benchmark[7] intensity of 135 tCO_2e/$M invested
- We measured our **fixed income** carbon footprint[8] as 40 tonnes of CO_2e per million invested as at December 31, 2019, compared to the benchmark intensity of 80 tCO_2e/$M invested
- We measured our net **real estate** carbon footprint as 5.5 tonnes of CO_2e per million invested as at December 31, 2019. The absolute emissions and breakdown by scope is as follows:

	GHG Emissions [tCO_2e]				
	Scope 1	**Scope 2**	**Scope 3**	**RECs/VERs**	**Net total**
Domestic Real Estate Portfolio	24,415	25,680	18,490	-32,178	36,408

TCFD recommendation

Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

The plan's alignment

BCI leads and implements our engagement work. Currently BCI uses the following targets to measure the effectiveness of engagement activities.

- Within its Public Markets department, BCI is committed to increasing the following key performance indicators for the Canadian, U.S. and global universes:
  - Percentage of companies responding to the CDP questionnaire; the average disclosure score received; and companies receiving the highest CDP score placing them on the A-list
  - Percentage of respondents that have adopted reduction targets
  - Percentage of companies that have adopted an internal price on carbon
  - Percentage of index constituents reporting Scope 1 GHG emissions

7 The benchmark is a weighted combination of multiple indices as specified in the SIPP

8 The fixed income carbon footprint includes public corporate bond exposures but excludes private debt, money market and some sovereign debt exposure

- BCI also commits to disclosing its public markets carbon footprint annually in line with the expectations of the Montreal Carbon Pledge. Next steps involve developing carbon footprints for all asset classes in the future.
- Within the real estate portfolio, managed by QuadReal, we have aligned with the science-based target for our Canadian portfolio:
  - an 80 per cent reduction in carbon emissions by 2050 compared with our 2007 baseline.[9] To achieve this target, QuadReal is focusing on low-carbon operations for new developments, continuing efforts to improve the energy efficiency of existing buildings, using renewable energy and less carbon-intensive fuels, and assisting tenants, residents and peers in meeting their own carbon goals.

9 www.quadreal.com/sustainability/

Plan details

A look at our membership

The Municipal Pension Plan (plan) had 213,111 active members who worked for 929 employers as at December 31, 2019. The total membership was 364,485.

There are four types of members:

- **Active:** Currently contributing, on a leave of absence or receiving benefits from an approved long-term disability plan. There were 213,111 active plan members, an increase of 4.2 per cent from 2018.
- **Inactive:** Not currently contributing; has ended employment with a plan employer and left contributions in the plan. Inactive members may be eligible for a pension in the future, or may become eligible if they return to work for a plan employer, contribute to the plan and accrue additional service. There were 45,316 inactive plan members, a 5.1 per cent increase from 2018.
- **Retired:** Currently receiving a pension, including a survivor or disability benefit. There were 106,058 retired plan members, a 5.0 per cent increase from 2018.
- **Limited:** A plan member's former spouse who has the right to a portion of the plan member's pension; applies to become a limited member after a separation or divorce. These members are included in the retired total if they are receiving a pension.

The plan had

213,111

active members,

106,058

retired members

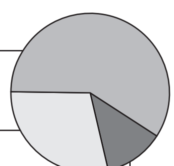
and

929

employers

Membership profile
as at December 31, 2019

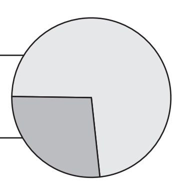
Active	213,111	58.5%
Retired	106,058	29.1%
Inactive[1]	45,316	12.4%
Total	364,485	



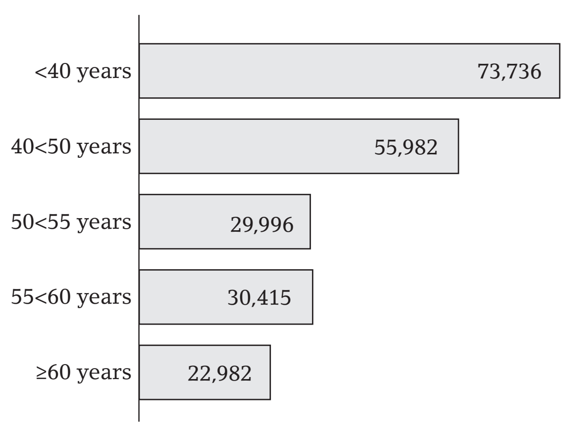
1 Members no longer employed by a plan employer but with money in the plan

Active membership by gender
as at December 31, 2019

Female	155,350	73%
Male	57,761	27%
Total	213,111	



Active members by age
as at December 31, 2019



Plan contributions

Plan members and employers both contribute to fund future pension payments.

Contribution rates are set by the board based on a valuation conducted by an independent actuary (a professional with specialized training in financial modelling, the laws of probability and risk management). The valuation is performed at least every three years to ensure there is enough money in the pension fund to pay all members' basic lifetime pensions.

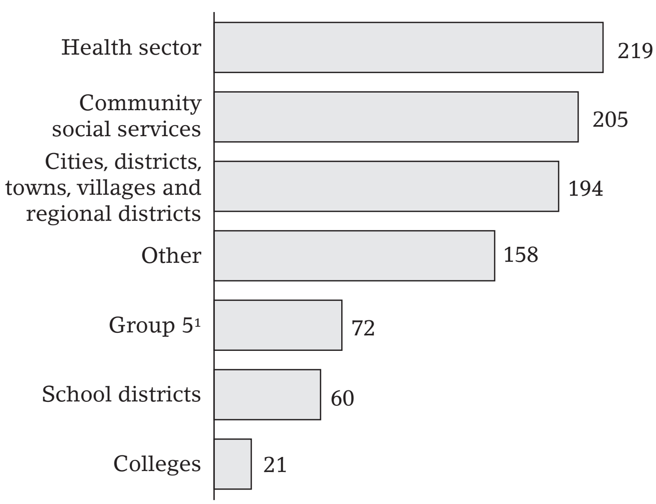
If a contribution rate increase is necessary, the Municipal Pension Plan Joint Trust Agreement requires that all contribution rate increases be split equally between members and employers.

Membership in the plan is divided into member groups, some of which have separate accrual rates or earlier retirement ages. Employers are assigned blended contribution rates annually based on the member groups they have within their employee populations.

A look at our employers

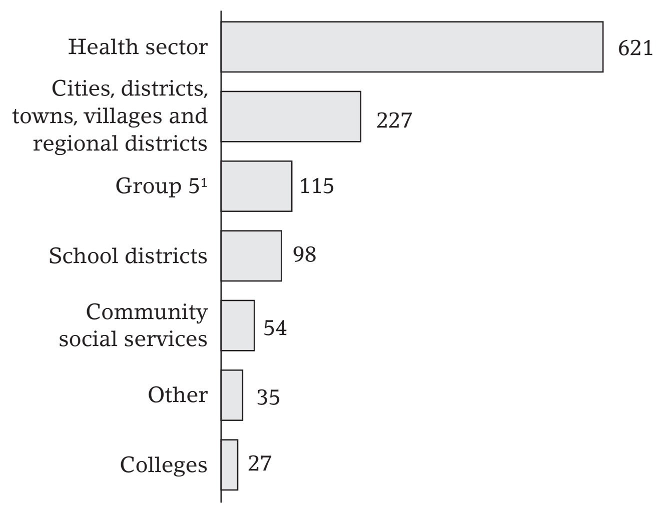
As at December 31, 2019, there were 929 plan employers.

Employers
as at December 31, 2019



1 A member group established to provide an enhanced pension for members employed as police officers and firefighters.

Total regular employer contributions, by sector
($ millions) for the year ended December 31, 2019



1 A member group established to provide an enhanced pension for members employed as police officers and firefighters.

Contribution rates

Members (including police officers and firefighters who are not members of Group 5) contribute 8.5 per cent of salary up to and including the year's maximum pensionable earnings (YMPE), which was $57,400 in 2019. They contribute 10 per cent of salary above that amount. YMPE is set annually by the federal government and determines the maximum salary on which Canada Pension Plan contributions must be made.

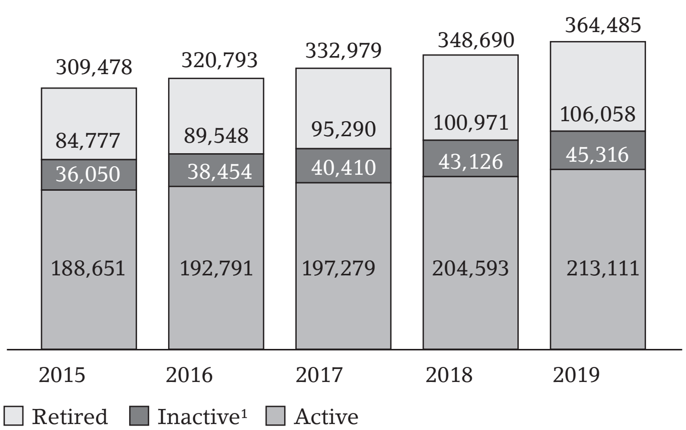
Police officers and firefighters who are members of Group 5 contribute 10.44 per cent of salary up to and including YMPE, and 11.94 per cent above that amount.

Employers pay a blended rate based on their plan member demographics. As of January 1, 2019, employer contribution rate simplification has eliminated gender- and age-based differences in employer contribution rates.

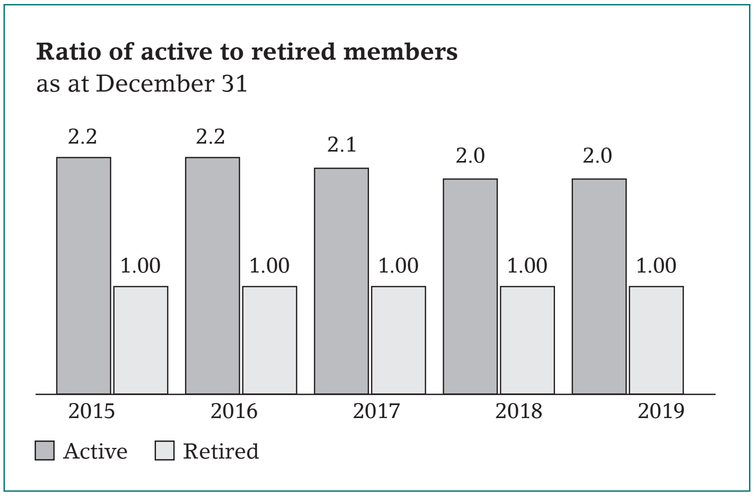
Member demographics

An aging membership and increased lifespans mean that the plan's retired member population is slowly growing faster than its active member population. In other words, the plan's ratio of active to retired members is getting smaller. This affects the plan because the funding source for non-guaranteed group benefits for retired members is not pre-paid; it comes from a small portion of employer contributions (the size of this portion is based on the number of active members). A decreasing ratio of active to retired members affects the level of funding available for group benefit premium subsidies.

Total membership profile
as at December 31



Note: Vested members are included within the inactive member category.



Basic lifetime pension

The basic pension is based on the years of pensionable service a member has accrued in the plan and the member's highest average salary (HAS). HAS is determined by calculating the average salary the member earned over the 60 months they were paid the most as an active member (not necessarily the last 60 months worked before retirement). It is the board's first priority to pay out the basic pension. The plan also provides survivor and disability benefits.

Pensions in pay

As at December 31, 2019, the average annual pension in pay was $18,338, and the median annual pension in pay was $13,007.

New pension profile
for the year ended December 31, 2019

Years of service	All new pensions by age of retirement <55	55<60	60<65	≥65	Total	Average salary	Average annual pension[1]	Median annual pension[1]	Average present value of pensions	Total present value of all new pensions ($ millions)
< 10 years	21	520	730	637	1,908	$57,300	$6,400	$4,800	$95,000	$181.3
10 < 15	10	311	496	461	1,278	60,500	13,200	11,500	212,000	270.9
15 < 20	8	299	432	312	1,051	64,000	19,700	18,300	328,000	344.7
20 < 25	12	222	371	258	863	69,300	26,800	24,600	452,000	390.1
25 < 30	64	326	387	188	965	74,200	37,000	33,400	649,000	626.3
30 < 35	11	288	172	109	580	80,200	47,900	42,600	822,000	476.8
≥ 35 years		65	72	73	210	71,900	42,100	40,000	720,000	151.2
Total	126	2,031	2,660	2,038	6,855	$65,200	$21,200	$15,600	$355,000	$2,441.3
Average service	22	19	17	16	17					
Average age					61					

1 Values for average and median pensions include bridge benefits and temporary annuities.

New pensions 2015–2019
for the year ended December 31

	Regular	Post-retirement limited member	Pre-retirement limited member	Disability	Survivor	Deferred	LTD[1] to pension	Total
2019	5,222	16	98	3	95	925	496	**6,855**
2018	5,370	29	86	2	78	963	508	**7,036**
2017	5,555	31	111	5	117	854	508	**7,181**
2016	4,995	30	72	2	86	744	523	**6,452**
2015	4,891	23	92	4	98	663	422	**6,193**

1 Long-term disability.

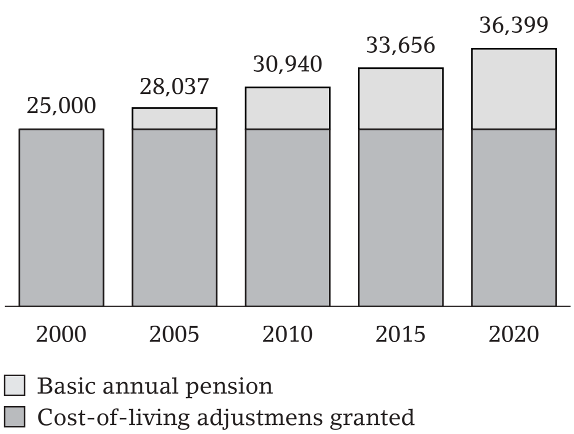
Cost-of-living adjustments

Each year, the board considers all relevant factors to determine if a cost-of-living adjustment (COLA) will be granted. Effective January 1, 2019, retired members received a COLA of 2.1 per cent.

The board monitors the plan's ability to grant future COLAs; once granted, a COLA is added to each component of the pension for as long as the member receives it. Future COLAs are not guaranteed.

A supplement to the basic pension, a COLA cannot exceed the annual increase in the Canadian consumer price index or the amount of money in the plan's inflation adjustment account (IAA). Starting January 1, 2016, the board implemented a sustainable COLA methodology: a COLA cap, the maximum amount of COLA the board can grant in a year. A cap helps maintain the long-term sustainability of funds in the IAA so they are not used up faster than they can be replaced. Every three years, the plan's independent actuary assesses the cap for the next three years and recommends the board adjust it if needed. The current COLA cap is 2.1 per cent.

Basic pensions plus cost-of-living adjustments[1] ($)



1 This is an illustration of the historical value of COLA.

Health care coverage for retirees

Retired members and beneficiaries who receive a pension have access to subsidized Medical Services Plan (MSP) premiums and group coverage for extended health care. Non-subsidized group dental plans are also available. These group benefit subsidies are not funded by member contributions and are not guaranteed. (The province eliminated MSP premiums effective January 1, 2020.)

The plan's funding policy sets limits on group benefits for retired members. A small portion of employer contributions is used two ways. One part goes into the IAA, from which COLAs are paid. The other part subsidizes extended health care premiums for current retirees based on their years of service.

Actuarial valuation results

Under the rules of BC's *Pension Benefits Standards Act* and the JTA, the board must appoint an independent actuary to conduct a valuation of the plan's funded position every three years. The actuary examines the plan's finances, membership and relevant economic and demographic factors. Specifically, the actuary reviews assets (money the plan has or is expected to receive) and liabilities (money the plan is paying out or expects to pay out).

Once the review is complete, the actuary presents the findings to the board in a valuation report. This tells the board if there is a funding shortfall or if there is a surplus adequate to maintain existing benefits for the future.

Completed in 2019, the 2018 valuation report determined the plan had a 105.1 per cent funding ratio—on the basis that current contributions continue as scheduled following the 2015 valuation—and a surplus of $2.87 billion. This surplus amount includes the value of the amortization components of the current contribution rates (established to pay for historical unfunded liabilities)—valued at $2.2 billion. The adjusted surplus, excluding amortization, is $663 million. The board's authority to increase or decrease contribution rates and to use surplus is limited by specific provisions in the JTA.

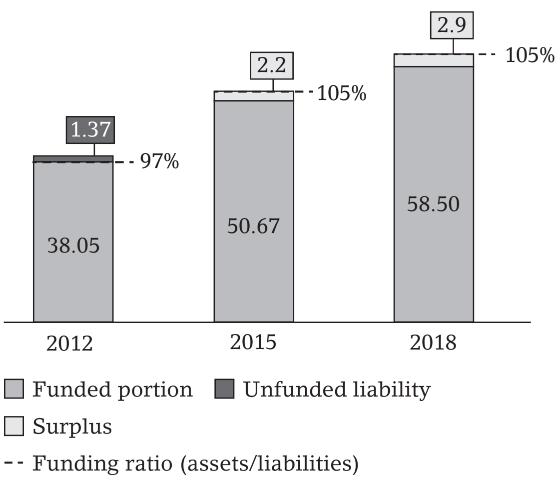
To meet JTA instructions, a surplus must pay off unfunded liabilities from previous actuarial valuations and, when all unfunded liabilities are eliminated, to then use the surplus to simultaneously decrease contribution rates and improve benefits by changing the normal form of pension and the benefit formula. While the current surplus is sufficient to pay off the unfunded liabilities from previous actuarial valuations, it is not large enough to meet these other conditions. As a result, the surplus will be kept in the basic account, and the current contribution rates will not be reduced. Until the surplus is large enough to meet these other conditions, the board has no discretion regarding the use of surplus and the reduction of contribution rates.

In addition, the rate stabilization account, which was set up to help offset potential future contribution rate increases, has a balance of about $2.5 billion.

The board decided the 2020–2022 sustainable COLA funding limit (COLA cap) would remain at 2.1 per cent.

The results of the next valuation, as at December 31, 2021, will be announced in fall 2022.

Funding of the total basic benefit liability*
($ billions) as at December 31



* Assuming the contribution rates in effect at the valuation date

Funding ratios 2012 to 2018 (%)

Year	Ratio
2018	105
2015	105
2012	97

Plan rules and policy changes

Effective January 2019
Increasing contributions to the inflation adjustment account—plan rule amendment no. 44 implemented phase three of employer contribution rate simplification, and reduced member and employer contributions to the basic account while increasing contributions to the inflation adjustment account (IAA) by the same amount. Employer rate simplification was a three-year process of removing gender- and age-based differentials in the contributions rates.

Board approved June 2019, effective retroactive to April 2001
Repealing a provision regarding transfers—plan rule amendment no. 47 repealed an impractical provision requiring that the plan locking-in provisions continue to apply to locked-in pension credits transferred to another pension plan. Pension transfer agreements will continue to be administered using applicable governing legislation. The amendment was approved in June 2019 and applied to the plan rules retroactively to April 5, 2001.

Board approved November 2019
Updating leave entitlements—plan rule amendment no. 48 aligned the plan rules with changes to the British Columbia *Employment Standards Act* regarding new unpaid leave entitlements for critical illness or injury of a family member, and for victims of domestic or sexual violence. It also clarified that the temporary annuity provided by the plan is calculated solely in reference to the maximum pension payable under the *Old Age Security Act* (Canada).

Board approved June 2019, effective January 2020
Post-retirement group benefits—plan rule amendment no. 6 removes all references to Medical Services Plan premiums, as these ceased January 1, 2020.

Who we are

Your 2019 trustees

Board membership includes trustees who served during 2019; committee appointments are as at December 31, 2019.

For an up-to-date list of 2020 trustees, visit the plan website at mpp.pensionsbc.ca.

Gary Yee, Chair,
Appointed by: Municipal Employees' Pension Committee
Committee(s): Appeals panel, governance, valuation, executive forum
Additional board appointment(s): BC Pension Corporation Board of Directors
Board term: January 2014–present

Hilary Brown, Board vice-chair
Appointed by: British Columbia Public School Employers' Association
Committee(s): Appeals panel, governance, valuation, executive forum
Board term: January 2012–present

Chris Armeanu
Appointed by: British Columbia Nurses' Union
Committee(s): Investment
Board term: January 2019–present

Wayne Baldwin
Appointed by: Union of British Columbia Municipalities
Committee(s): Valuation
Board term: January 2016–December 2019

Donisa Bernardo
Appointed by: Municipal Employees' Pension Committee
Committee(s): Benefits (chair), appeals panel, governance, interplan trustee education
Board term: May 2001–present

Dennis Blatchford
Appointed by: Health Sciences Association of British Columbia
Committee(s): Benefits
Board term: April 2001–present

Lucas Corwin
Appointed by: Government of British Columbia
Committee(s): Communications and advocacy
Board term: September 2008–present

Chris Finding
Appointed by: Hospital Employees' Union
Committee(s): Benefits (alternate chair), investment (alternate chair)
Board term: January 2015–present

Lyn Kocher
Appointed by: Health Employers Association of British Columbia
Committee(s): Governance (chair), valuation
Board term: April 2001–present

Diana Lokken
Appointed by: Plan Employer Partner—excluded member
Committee(s): Communications and advocacy, investment, interplan audit
Board term: October 2013–December 2019

Donna Lommer
Appointed by: Health Employers Association of British Columbia
Committees: Communications and advocacy
Additional board appointments: BCI board of directors
Board term: March 2017–present

Bonnie Pearson
Appointed by: Member partner–retired
Committee(s): Benefits, valuation
Board term: October 2016–present

Patti Price
Appointed by: Canadian Union of Public Employees, British Columbia
Committee(s): Communications and advocacy (chair), governance, valuation
Board term: March 2006–present

Al Richmond
Appointed by: Union of British Columbia Municipalities
Committee(s): Communications and advocacy, investment
Board term: January 2017–present

Brian Schramm
Appointed by: Council of Joint Organizations and Unions
Committee(s): Investment committee (chair), governance
Board term: January 2014–present

Angie Sorrell
Appointed by: Government of British Columbia
Committee(s): Valuation
Board term: February 2008–present

Robert Weeks
Appointed by: British Columbia Professional Fire Fighters Association and British Columbia Police Association
Committee(s): Governance, valuation (alternate chair)
Board term: January 2016–present

Alternate trustees

Ron Amos
Appointed by: British Columbia Public School Employers' Association
Committee(s): Benefits, investment
Board term: February 2014–present

Lorne Burkart
Appointed by: British Columbia Nurses' Union
Committee(s): Benefits
Board term: April 2018–January 2019, April 2019–present

Trevor Davies
Appointed by: Canadian Union of Public Employees, British Columbia
Committee(s):
Board term: January 2014–July 2019

Talitha Dekker
Appointed by: Hospital Employees' Union
Committee(s): Communications and advocacy
Board term: December 2018–present

Dean Levangie
Appointed by: Health Employers Association of British Columbia
Committee(s): Benefits, appeals panel
Board term: January 2019–present

Gary MacIsaac
Appointed by: Union of British Columbia Municipalities
Committee(s): Benefits
Board term: January 2014–present

Brian Northam
Appointed by: Council of Joint Organizations and Unions
Committee(s): Valuation
Board term: April 2001–present

Mary Procter
Appointed by: Plan Employer Partner—excluded member
Committee(s): Pension Corporation board of directors
Additional board appointment(s): BC Pension Corporation board of directors
Board term: October 2009–December 2019

Chris Rathbone
Appointed by: Government of British Columbia
Committee(s): Benefits, investment
Board term: January 2019–present

Josef Rieder
Appointed by: Health Sciences Association of British Columbia
Committee(s): Investment
Board term: October 2016–present

Dominique Roelants
Appointed by: British Columbia Nurses' Union
Committee(s):
Board term: January 2019–April 2019

Harpinder Sandhu
Appointed by: Canadian Union of Public Employees, British Columbia
Committee(s):
Board term: July 2019–present

Tom Stamatakis
Appointed by: British Columbia Professional Fire Fighters Association and British Columbia Police Association
Committee(s): Communications and advocacy, governance (alternate chair)
Board term: March 2018–present

Don Sutton
Appointed by: Member partner—retired member
Committee(s): Communications and advocacy (alternate chair)
Board term: January 2018–present

Richard Taylor
Appointed by: Union of British Columbia Municipalities
Committee(s): Governance, investment
Board term: April 2001–present

Philip Twyford
Appointed by: Government of British Columbia
Committee(s): Governance, interplan trustee education, interplan audit (vice-chair), valuation (chair)
Board term: June 2012–present

David Williams
Appointed by: Health Employers Association of British Columbia
Committee(s): Appeals panel, benefits
Board term: January 2019—present

Trustee remuneration
For the year ended December 31, 2019

Name[1]	Meetings attended/ scheduled[2]	Additional meetings attended	Total remuneration paid ($)[3]	Remuneration by payee ($)	Remuneration payee
Yee, Gary (Chair)[4]	13/15	6	32,884.32	32,884.32	CUPE BC
Brown, Hilary (Vice-Chair)[4]	11/15	7	26,692.00	26,692.00	BC Public School Employers' Association
Amos, Ron	10/12		11,569.75	3,609.25 7,960.50	Board Member School District #69 Qualicum
Armeanu, Chris	6/7		5,750.50	4,637.50 1,113.00	BC Nurses' Union Board Member
Baldwin, Wayne	9/9		11,501.00	11,501.00	Board Member
Bernardo, Donisa	11/13	1	16,880.50	16,880.50	Board Member
Blatchford, Dennis	8/8		4,452.00	1,113.00 3,339.00	Board Member Health Sciences Association of BC
Burkart, Lorne	5/5		8,996.75	8,996.75	BC Nurses' Union
Corwin, Lucas	8/9		5,176.00	5,176.00	Ministry of Finance
Davies, Trevor	2/4		2,226.00	1,484.00 742.00	CUPE BC Board Member
Dekker, Talitha	6/8		6,956.25	6,956.25	Hospital Employees' Union
Ducharme, Debra			2,268.75	2,268.75	Board Member
Finding, Chris	11/12	2	18,893.00	18,893.00	Board Member
Kocher, Lyn	15/15		9,355.75	9,355.75	Health Employers' Association of BC
Levangie, Dean	7/7	1	6,863.50	927.50 5,936.00	Board Member Health Employers' Association of BC
Lokken, Diana	13/13		18,065.05	18,065.05	Board Member
Lommer, Donna	7/9		8,904.00	8,904.00	Interior Health Authority
MacIsaac, Gary	8/8		6,956.25	6,956.25	Board Member
Northam, Brian	11/11		15,834.25	15,834.25	Board Member
Pearson, Bonnie	9/10	2	9,753.59	9,753.59	Board Member
Price, Patti	9/17	2	11,529.75	7,001.00 4,528.75	CUPE BC Board Member
Procter, Mary	6/7	1	5,008.50	5,008.50	First Nations Health Authority
Rathbone, Chris	8/9	1	10,851.75	10,851.75	Public Sector Employers' Council Secretariat
Richmond, Al	11/12		11,872.00	11,872.00	Board Member
Rieder, Josef	10/10	1	10,340.00	9,428.50 911.50	Health Sciences Association of BC Board Member
Roelants, Dominique	2/2		2,411.50	2,411.50	BC Nurses' Union
Sandhu, Harpinder	2/3	2	2,226.00	2,226.00	Board Member
Schramm, Brian	10/15	4	14,413.00	14,413.00	BCGEU
Sorrell, Angie	10/11	1	4,823.00	4,823.00	Public Sector Employers' Council Secretariat
Stamatakis, Tom	10/11		8,162.00	8,162.00	Vancouver Police Union

Trustee remuneration continued

Name[1]	Meetings attended/ scheduled[2]	Additional meetings attended	Total remuneration paid ($)[3]	Remuneration by payee ($)	Remuneration payee
Sutton, Donald	7/8	1	6,307.00	6,307.00	Board Member
Taylor, Richard	10/11	2	9,073.50	9,073.50	Board Member
Twyford, Philip	15/19		5,379.50	5,379.50	Minister of Finance
Weeks, Robert	10/13		9,260.15	2,689.75	BC Professional Fire Fighters' Association
				6,570.40	Board Member
Williams, David	3/6		0.00		
Total remuneration paid			341,636.86		
Average meeting attendance	85%				

1 Additional information on trustees is available on pages [38-41]

2 Comparison of the number of meetings attended vs. the number of meetings scheduled. The number of meetings scheduled varies by trustee due to committee membership.

3 Total remuneration paid includes attendance at board and committee meetings, educational events, conferences, and preparation and travel time for these meetings/events.

4 Includes Board Chair annual stipend of $7,260 and Vice-Chair annual stipend of $5,445.

Agents and service providers

British Columbia Investment Management Corporation (BCI)
BCI is a leading provider of investment management services to British Columbia's public sector and one of the largest asset managers in Canada. With its global outlook, BCI seeks investment opportunities that convert savings into capital that will meet clients' risk and return requirements over time. BCI offers investment options across a range of asset classes: fixed income, mortgages, public and private equity, real estate, and infrastructure and renewable resources.

BC Pension Corporation
BC Pension Corporation is one of the largest professional pension services providers in Canada, serving over 560,000 active and retired plan members and more than 1,100 employers, and paying out more than $349 million in benefits each month ($4.2 billion a year) to more than 180,000 retirees. As the administrative agent working on behalf of the board, it provides pension administration services to the plan. These services include providing plan information to members and employers; managing contributions and member records; paying pension benefits; and providing policy, financial and communication services.

Eckler Ltd.
Eckler is a Canada-based actuarial and consulting firm specializing in financial services, pensions and benefits, and global consulting solutions. As the plan's independent actuary, Eckler conducts an actuarial valuation on the plan's funding every three years and supports the board in its decision making, as appropriate.

Hatch Law
Shawn Hatch is a legal advisor who serves as legal counsel for the plan.

KPMG LLP
KPMG provides external audit services for the plan.

Pacific Blue Cross
Pacific Blue Cross administers retired plan member access to group extended health care coverage and provides insured dental plan options.

ZLC and Cubic Health
ZLC and Cubic Health are the plan's benefit advisors.

Financial statements

BC PENSION
CORPORATION

June 23, 2020

Re: Municipal Pension Plan

Administrative Agent's Responsibility for Financial Reporting

The financial statements of the Municipal Pension Plan (Plan) were prepared by the British Columbia Pension Corporation (Pension Corporation), the administrative agent for the Municipal Pension Board of Trustees (Board) in accordance with Canadian accounting standards for pension plans. The Board is responsible for approving the Plan's financial statements. The Board is assisted by the Interplan Audit Committee (Committee), which is made up of representatives from the Public Service, Municipal, Teachers' and College pension board of trustees. As part of their responsibility, the committee reviews the financial statements, and performs steps and procedures as necessary, prior to recommending them to the Board for approval.

Pension Corporation prepares the financial statements and is responsible for the integrity and fairness of the data presented, including significant accounting judgments and estimates. This responsibility includes selecting appropriate accounting policies consistent with Canadian accounting standards for pension plans. In discharging its responsibility, Pension Corporation maintains a system of internal controls designed to provide reasonable assurance that transactions are properly authorized, reliable financial records are maintained, and assets are adequately safeguarded, ensuring the fair presentation of the financial statements. Pension Corporation has assessed that the Plan will continue as a going concern, and ensured that other financial information contained in the *Municipal Pension Plan Annual Report* is consistent with these financial statements.

The Board appointed KPMG LLP as the independent auditor to the Plan. The role of the auditor is to perform an independent audit of the financial statements of the Plan in accordance with Canadian generally accepted auditing standards. The resulting audit opinion is set out in the independent auditor's report attached to these financial statements.

Trevor Fedyna, CPA, CGA, C. Dir.
Vice-president, Corporate Services
and Chief Financial Officer
British Columbia Pension Corporation

Allan Chen, CPA, CA
Controller, Financial Services
British Columbia Pension Corporation

Executive Offices
Mail: PO Box 9460
Victoria, BC V8W 9V8
Phone: 250 387-8201
Fax: 250 953-0429
bcpensioncorp.ca

KPMG LLP
PO Box 10426 777 Dunsmuir Street
Vancouver BC V7Y 1K3
Canada
Telephone (604) 691-3000
Fax (604) 691-3031

INDEPENDENT AUDITORS' REPORT

To the Members of the Municipal Pension Plan

Opinion

We have audited the financial statements of the Municipal Pension Plan (the "Plan"), which comprise:

- the statement of financial position as at December 31, 2019
- the statement of changes in net assets available for benefits for the year then ended
- the statement of changes in accrued pension obligations for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies.

(hereinafter referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Plan as at December 31, 2019, and the changes in its net assets available for benefits and the changes in its accrued pension obligations for the year then ended in accordance with Canadian accounting standards for pension plans.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the "***Auditors' Responsibilities for the Audit of the Financial Statements***" section of our auditors' report.

We are independent of the Plan in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.
KPMG Canada provides services to KPMG LLP.

British Columbia Pension Corporation - Municipal Pension Plan
Page 2

Other Information

Management is responsible for the other information. Other information comprises the information, other than the financial statements and the auditors' report thereon, included in the annual report.

Our opinion on the financial statements does not cover the other information and we do not and will not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit and remain alert for indications that the other information appears to be materially misstated.

We obtained the information, other than the financial statements and the auditors' report thereon, included in the annual report as at the date of this auditors' report.

If, based on the work we have performed on this other information, we conclude that there is a material misstatement of this other information, we are required to report that fact in the auditors' report.

We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian Standards for pension plans, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Plan's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Plan or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Plan's financial reporting process.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit.

We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.

  The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Plan's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditors' report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditors' report. However, future events or conditions may cause the Plan to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

- Communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit**.**

KPMG LLP

Chartered Professional Accountants

Vancouver, Canada
June 23, 2020

MUNICIPAL PENSION PLAN

Statement of financial position

($ millions)

As at December 31	Note		2019		2018
Assets					
Investments	3a	$	**59,392**	$	52,966
Directly held derivatives	3b		**133**		10
Receivables					
Members' contributions			**40**		38
Employers' contributions			**44**		42
Due from sale of investments			**12**		636
			96		716
Prepaid expenses			**4**		1
Total assets			**59,625**		53,693
Liabilities					
Payable for purchase of investments			**121**		697
Directly held derivatives	3b		**28**		190
Accounts payable and accrued expenses			**18**		22
Taxes payable			**18**		-
Total liabilities			**185**		909
Net assets available for benefits		$	**59,440**	$	**52,784**
Accrued pension obligations					
Accrued basic pension obligations	4a	$	**41,047**	$	39,875
Non-guaranteed pension obligations	4b		**9,531**		8,297
Retirement annuity account	4c		**411**		411
Accrued pension obligations			**50,989**		48,583
Surplus					
Funding surplus	5a		**1,538**		2,026
Measurement differences between funding and accounting positions	5a		**6,913**		2,175
Surplus			**8,451**		4,201
Accrued pension obligations and surplus		$	**59,440**	$	**52,784**

The accompanying notes are an integral part of the financial statements including:

Commitments (note 14)

Subsequent event (note 16)

Approved by the Municipal Pension Board of Trustees:

Ron Amos, CPA, CMA, Trustee
Municipal Pension Board of Trustees

Lorne Burkart, Trustee
Municipal Pension Board of Trustees

MUNICIPAL PENSION PLAN

Statement of changes in net assets available for benefits

($ millions)

For the year ended December 31	Note	Basic account	Inflation adjustment account	Retirement annuity account	Supplemental benefits account	Totals 2019	Totals 2018
Increase in assets							
Investment income	8	$ 5,621	$ 1,041	$ 31	$ -	**$ 6,693**	$ 1,210
Contributions							
Members	9	847	180	2	6	**1,035**	971
Employers	9	976	151	2	56	**1,185**	1,117
		1,823	331	4	62	**2,220**	2,088
Transfers from other plans		15	2	-	-	**17**	97
Total increase in assets		7,459	1,374	35	62	**8,930**	3,395
Decrease in assets							
Benefits	10	1,957	87	12	12	**2,068**	1,928
Transfers to other plans		7	6	-	-	**13**	11
Retired member group benefits	11	-	-	-	50	**50**	51
Investment and administration	12	129	14	-	-	**143**	170
Total decrease in assets		2,093	107	12	62	**2,274**	2,160
Increase in net assets before transfers		5,366	1,267	23	-	**6,656**	1,235
Account transfers	13	56	(33)	(23)	-	**-**	-
Increase in net assets		**$ 5,422**	**$ 1,234**	**$ -**	**$ -**	**$ 6,656**	**$ 1,235**
Net assets available for benefits at beginning of year		$ 44,076	$ 8,297	$ 411	$ -	**$ 52,784**	$ 51,549
Net assets available for benefits at end of year		**$ 49,498**	**$ 9,531**	**$ 411**	**$ -**	**$ 59,440**	**$ 52,784**

The accompanying notes are an integral part of the financial statements.

MUNICIPAL PENSION PLAN

Statement of changes in accrued pension obligations

($ millions)

For the year ended December 31	Note	2019	2018
Increase in accrued pension obligations			
Interest on accrued pension obligations		$ **2,426**	$ 2,352
Benefits accrued		**1,634**	1,676
Account transfers		**391**	287
Total increase in accrued pension obligations		**4,451**	4,315
Decrease in accrued pension obligations			
Changes in actuarial assumptions		**199**	-
Experience gains		**1,034**	-
Benefits paid		**2,046**	1,916
Total decrease in accrued pension obligations		**3,279**	1,916
Net increase in accrued pension obligations		**1,172**	2,399
Accrued basic pension obligations at beginning of year		**39,875**	37,476
Accrued basic pension obligations at end of year	4a	**41,047**	39,875
Non-guaranteed pension obligations			
Increase in non-guaranteed pension obligations	4b	**1,234**	307
Non-guaranteed pension obligations at beginning of year		**8,297**	7,990
Non-guaranteed pension obligations at end of year	4b	**9,531**	8,297
Retirement annuity account			
Decrease in retirement annuity account	4c	**-**	(3)
Retirement annuity account at beginning of year		**411**	414
Retirement annuity account at end of year	4c	**411**	411
Total accrued pension obligations		$ **50,989**	$ **48,583**

The accompanying notes are an integral part of the financial statements.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

1. DESCRIPTION OF THE MUNICIPAL PENSION PLAN

The following description of the Municipal Pension Plan (Plan) is a summary provided for general information only. For more information, please refer to the Joint Trust Agreement (Agreement) and the Municipal Pension Plan Rules (pension plan rules).

a) General

The Plan is a jointly trusteed pension plan continued in agreement with the *Public Sector Pension Plans Act*, SBC 1999, s.44 (Act). The Act enabled the establishment of the Agreement. Joint trusteeship was established on April 5, 2001. The partners to the Agreement are the Municipal Employees' Pension Committee, as the member partner, and the Provincial Government of British Columbia and the Union of British Columbia Municipalities, as the employer partners (Partners). The Agreement describes the composition, appointment, powers, functions and duties of the Municipal Pension Board of Trustees (Board) and provides the authority for the Board to make the pension plan rules.

The Plan is registered with the Superintendent of Pensions, who administers and enforces the *Pension Benefits Standards Act* (PBSA). PBSA governs employment pension plans registered in British Columbia that have active, inactive and retired members.

Membership in the Plan is open to all eligible employees of a municipality, school district, college, health service organization, police and fire fighters, and many other eligible employers as designated by the Board.

b) Roles and responsibilities

Partners

The Partners and appointing authorities representing the Plan members and employers are responsible for appointing 16 trustees and 16 alternate trustees. The Partners have responsibility for resolving trustee disputes and, if certain conditions are met, may direct amendments to the pension plan rules.

Board

The Board is responsible for the management of the Plan, including investment of assets and administration of the Plan. The Board may amend the pension plan rules as long as changes can be funded by the Plan's surpluses or are cost-neutral to the Plan (subject to transitional funding provisions in note 5a). Unless required to ensure compliance with regulatory enactments applicable to the Plan, only the Partners can initiate pension plan rule changes that result in contribution rate increases. The Chair and Vice-chair are appointed by the trustees.

British Columbia Pension Corporation (Pension Corporation)

Pension Corporation provides benefit administration services as an agent of the Board. The Board appoints two members to the eight-member board of directors of Pension Corporation.

British Columbia Investment Management Corporation (BCI)

BCI provides investment management services, including the valuation of investments, as an agent of the Board. The Board appoints one member to the seven-member board of directors of BCI.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

1. DESCRIPTION OF THE MUNICIPAL PENSION PLAN (CONTINUED)

c) Funding

Contributions and investment earnings fund plan benefits. Contributions are made by active members and employers of the Plan. The determination of the value of the benefits and required contributions is based on a triennial actuarial valuation for funding purposes.

The Board's funding policy is intended to secure the pension benefit obligation and achieve long-term stability in contribution rates for both employers and members.

d) Contributions

The following member and employer contributions apply to the majority of members, excluding a limited group with higher contribution rates required to fund the cost of their benefits.

Basic Account

Members contributed to the Basic Account 6.97% (7.50% to December 31, 2018) of salaries up to and including the Canada Pension Plan Year's Maximum Pensionable Earnings (YMPE) (2019: $57,400; 2018: $55,900) and 8.47% (9.00% to December 31, 2018) of salaries over YMPE, less amounts allocated to the Supplemental Benefits Account.

The limited group of members contributed to the Basic Account 8.49% (9.02% to December 31, 2018) of salaries up to and including the Canada Pension Plan YMPE and 9.99% (10.52% to December 31, 2018) of salaries over YMPE, less amounts allocated to the Supplemental Benefits Account.

Employers contributed to the Basic Account at varying rates, depending on the mix of employees in the group rate classifications specified by the Plan, less amounts allocated to the Supplemental Benefits Account. The Board approved on September 22, 2016, a three-year process to simplify employer contribution rates. The new simplified employer contribution rates are effective January 1, 2019.

Inflation Adjustment Account and Supplemental Benefits Account

Members and employers each contributed 1.53% (1.00 % to December 31, 2018) (1.95% for limited group; 1.42% to December 31, 2018) of salaries to the Inflation Adjustment Account (IAA), less amounts allocated to the Supplemental Benefits Account.

Retirement Annuity Account

Some employers have special agreements with members by which additional contributions are made to increase members' pension benefits. These contributions are credited to the Retirement Annuity Account (RAA). Depending on benefit eligibility, the accumulated monies at retirement are used to fund the purchase of additional pension benefits or are paid out to a locked-in retirement vehicle.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

1. DESCRIPTION OF THE MUNICIPAL PENSION PLAN (continued)

e) Pension benefits

All members are eligible for a pension benefit.

Members are eligible for unreduced pension benefits

- at age 65 (age 60 for certain groups);
- at age 60, with at least two years contributory service (age 55 for certain groups); or
- at age 55 or older, with age plus years of service totaling 90 or more (age 50 or older with age plus service totaling 80 or more for certain groups).

Other retiring members have a reduction formula applied to their pensions.

The defined basic plan benefit is integrated with the Canada Pension Plan (CPP). The Plan provides an unreduced benefit of 1.3% of pensionable earnings up to the year's maximum pensionable earnings (YMPE) and 2.0% of pensionable earnings over the YMPE, for each year of pensionable service (to a maximum of 35 years). Pensionable earnings are based on the member's highest five-year average annual salary (HAS).

The Plan also provides a bridge benefit payable to age 65 (or the date of death, if earlier). The bridge benefit is 0.7% of the lesser of YMPE or the HAS for each year of pensionable service.

Future cost-of-living adjustments are not guaranteed. These adjustments are granted at the discretion of the Board and may not exceed the annual increase in the Canada Consumer Price Index (CPI) as at the previous September 30, subject to the availability of funds in the IAA. Any cost-of-living adjustment the Board grants is applied in January. The Board annually considers relevant factors to determine if an adjustment will be granted.

f) Termination and portability benefits

A terminating member who is eligible for a pension but has not reached the earliest retirement age may choose

- a deferred pension, or
- a transfer of the commuted value of the pension benefit (the minimum value is the member's contributions with interest) to a locked-in retirement vehicle or similar tax-sheltered plan.

A terminating member may also choose to leave monies on deposit in anticipation of future re-employment with a plan employer.

Where there are portability arrangements between the Plan and other pension plans, members may be able to transfer certain pension rights.

g) Other benefits

Disability and survivor benefits are also available under the Plan. A disability benefit is available to a member under age 60 who has terminated employment, becomes totally and permanently disabled as defined by the Plan, has at least two years of contributory service, is not eligible to receive benefits from an approved long-term group disability plan and meets other eligibility requirements. The disability benefit is calculated using a member's years of pensionable service to the date of termination of employment and HAS. Disability benefits continue for the member's lifetime unless the member is no longer totally and permanently disabled before age 60 or returns to work.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

1. DESCRIPTION OF THE MUNICIPAL PENSION PLAN (CONTINUED)

g) Other benefits (continued)

A death benefit may be available to a surviving spouse or designated beneficiary upon the death of an active member. Depending on eligibility requirements, the benefit may be paid in the form of a survivor pension or lump-sum payment.

Supplemental benefits are funded from the Supplemental Benefits Account.

h) Tax registration

The Plan is a registered pension plan (RPP) as defined in the *Income Tax Act* (Canada) (Tax Act) (registration number 0359158), except for any supplemental benefits, which are funded in addition to the RPP. The Plan is not subject to income tax but is subject to indirect taxes, including British Columbia provincial sales tax (PST) and Canadian federal goods and services tax (GST). The Plan receives a 33% rebate of GST paid.

2. SIGNIFICANT ACCOUNTING POLICIES

a) Basis of presentation

These financial statements are prepared on the going-concern basis in accordance with Canadian accounting standards for pension plans, Part IV of the *Chartered Professional Accountants of Canada Handbook* (CPA Canada Handbook), and present the Plan as a separate financial reporting entity, independent of the Plan's contributing employers and members, and independent of any associated retired member group benefit plans.

Accounting standards for private enterprises in Part II of the CPA Canada Handbook have been chosen for accounting policies that do not relate to the Plan's investment portfolio or accrued pension obligations.

b) Investments

Investments are stated at fair value. Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

Investment purchases and sales are recorded on the trade date (the date upon which the substantial risks and rewards of ownership have been transferred).

c) Accrued pension obligations

Accrued pension obligations are determined based on an actuarial valuation prepared by an independent actuarial consulting firm. The Plan actuary is Eckler Ltd. The valuation of accrued pension obligations is based on data extrapolated to the financial statement date. The valuation uses the projected benefit method pro-rated on service that incorporates the independent actuary's estimate of various economic and demographic assumptions. These assumptions are the same as those used in the determination of the actuarial position of the Plan for funding purposes.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

2. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

d) Investment income

Income from investments is recorded on the accrual basis and represents pooled investment portfolio income attributable to the Plan as a unit holder and income from directly held investments. The current period change in fair value includes realized and unrealized gains and losses that are included in investment income.

Within the pools, dividends are accrued on the ex-dividend date and interest is recognized on an accrual basis. Gains and losses on derivative contracts are recognized concurrently with changes in their fair values.

e) Foreign currency translation

Assets and liabilities denominated in foreign currencies are translated into Canadian dollars at the prevailing exchange rates on the year-end date. Income and expenses are translated into Canadian dollars at the prevailing exchange rates on the dates of the transactions. The realized and unrealized gains and losses arising from these translations are included within the current period change in fair value in investment income.

f) Use of estimates

The preparation of financial statements, in conformity with Canadian accounting standards for pension plans, requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of increases and decreases in assets and liabilities during the period. Significant areas requiring the use of management estimates relate to the valuation of investments based on unobservable inputs, as further described in note 7, and the calculation of the accrued pension obligations of the Basic Account for accounting and funding purposes, as further described in notes 4 and 5. Actual results could differ materially from these estimates.

3. INVESTMENTS

a) Investments

Fair value of investment holdings			2019			2018
	Basic account	Inflation adjustment account	Total	Basic account	Inflation adjustment account	Total
Short-term	$ 1,161	$ 220	$ 1,381	1,003	186	1,189
Bonds	11,579	2,194	13,773	8,221	1,526	9,747
Canadian equities	2,725	516	3,241	4,120	765	4,885
U.S. equities	1,846	349	2,195	1,101	204	1,305
International equities	11,997	2,273	14,270	11,770	2,185	13,955
Mortgages	1,891	358	2,249	1,570	291	1,861
Real estate	7,804	1,479	9,283	7,627	1,416	9,043
Private equity	5,205	986	6,191	4,120	765	4,885
IRR*	5,724	1,085	6,809	5,141	955	6,096
	49,932	9,460	59,392	44,673	8,293	52,966

* Infrastructure and renewable resources

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

3. INVESTMENTS (CONTINUED)

a) Investments (continued)

Plan investments consist primarily of direct ownership in units of pooled investment portfolios. Each unit gives its holder a proportionate share in the value of the net assets of the pooled investment fund. The Basic and IAA accounts are combined for investment management purposes.

One or more pooled investment portfolios exist for different types of investments, such as short-term investments; bonds; Canadian, U.S. and international equities; mortgages; real estate; private equity; and infrastructure and renewable resources. While the purpose of each fund is to invest in a particular type of investment, at any time, given the timing of trading activities, the fund may hold a certain amount of cash, short-term investments, accrued interest income and net accounts receivable or payable from outstanding sales and purchases of investments.

Short-term investments consist of Canadian and U.S. money market securities such as treasury bills, with maturities of 15 months or less, and short-term bonds with one to five year terms. Short-term investments are valued using current market yields.

Bonds consist of government bonds, investment grade and non-investment grade corporate bonds, and debentures. Bonds are valued based on current market yields and, in some cases, quoted market prices. Equities consist primarily of publicly traded shares and, are valued based on quoted market prices on the primary exchanges on which they are traded.

Mortgages consist mainly of Canadian construction, commercial and multi-family residential mortgages. The mortgages are secured by real estate and valued using current market yields. Real estate investments consist mainly of diversified Canadian and U.S. income-producing properties. Real estate investments are valued quarterly by external investment managers and, at least once every 10 to 18 months, by accredited independent appraisers to establish current market values.

Private equity consists mainly of equity investments made outside the structure of public markets. Private equity is valued annually based on audited financial statements from external investment managers using a market-based approach or net asset value method.

Infrastructure and renewable resources consist of privately owned and managed infrastructure assets, as well as timber, agriculture and other renewable assets. Infrastructure and renewable resources investments are valued annually using a market-based approach or net asset value method.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

3. INVESTMENTS (CONTINUED)

b) Derivatives

Derivatives contracts are directly and indirectly held by the Plan. The details of these contracts are as follows:

Fair value of derivative contracts	2019		2018	
	Positive fair value	Negative fair value	Positive fair value	Negative fair value
Directly held				
Foreign currency forwards	$ 133	$ (28)	$ 10	$ (190)
	$ 133	$ (28)	$ 10	$ (190)
Indirectly held in pooled investment portfolios				
Foreign currency forwards	$ 70	$ (4)	$ -	$ (32)
Repurchase agreements	-	-	-	-
Options	9	(9)	-	-
Futures	6	-	3	-
Interest rate swaps	8	(10)	-	(13)
Total return swaps	350	(68)	95	(139)
	$ 443	$ (91)	$ 98	$ (184)
Total derivatives	$ 576	$ (119)	$ 108	$ (374)

Derivatives by investment asset classification				
Bonds	$ 95	$ (5)	$ 3	$ (44)
Canadian equities	3	(2)	4	(11)
U.S. equities	17	(28)	5	(2)
International equities	353	(57)	86	(139)
Mortgages	18	(1)	-	(18)
Real estate	35	(20)	-	(76)
IRR*	55	(6)	10	(84)
Total derivatives	$ 576	$ (119)	$ 108	$ (374)

Derivative contracts consist of foreign currency forward contracts, repurchase agreements, options, futures, interest rate swaps, and total return swaps held directly by the Plan or indirectly through various pooled investment portfolios. Directly held and indirectly held derivative contracts are reflected at fair value based on expected settlement amounts at the date of the Statement of Financial Position. Directly held derivatives are disclosed on the face of the Statement of Financial Position while indirectly held derivatives are included in investments.

A foreign currency forward contract is a privately negotiated contractual obligation to exchange one currency for another at a specified price for settlement on a predetermined date in the future. Foreign currency forward contracts are directly held by the plan to manage exposure to foreign currency risk.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

3. INVESTMENTS (CONTINUED)

b) Derivatives (continued)

Repurchase agreements (repo) are short-term agreements to sell securities in order to buy them back at a slightly higher price. The one selling the repo is effectively borrowing and the other party is lending, since the lender is credited the implicit interest in the difference in prices. Repos are used in the leveraged bond pool fund to borrow funds and create leverage.

Options are contracts that give the buyer the right, but not the obligation, to buy or sell a certain security or index at an agreed-upon price on or before a specified date. Futures contracts are exchange-traded contractual obligations to take or make delivery of an asset at a predefined price and date in the future. Options and futures are held for synthetic indexing, a modern technique used to replicate the performance of a security or index without directly purchasing or selling the underlying assets.

An interest rate swap is an agreement between two counterparties in which one stream of future interest payments is exchanged for another based on a specified principal amount. Interest rate swaps usually involve the exchange of a fixed interest rate for a floating interest rate, or vice versa, to reduce or increase exposure to fluctuations in interest rates or to obtain a marginally lower interest rate than would have been possible without the swap.

A total return swap is a swap agreement in which one party makes payments based on a set rate, either fixed or variable, while the other party makes payments based on the return of an underlying asset, including both the income it generates and any capital gains. In total return swaps, the underlying asset (referred to as the reference asset) is usually an equity index or basket of equity securities. Interest rate swaps and total return swaps are held indirectly through various pooled investment portfolios for synthetic indexing purposes.

Derivative transactions are supported with collateral to mitigate counterparty credit risk. A single net fair value amount is used to determine the value of collateral with each counterparty. Collateral approximately equal to the positive fair value of each derivative contract is provided by counterparties, and collateral approximately equal to the negative fair value of each derivative contract is delivered to counterparties. Acceptable forms of collateral include Canadian federal or provincial bonds, and U.S. federal government treasury bills and bonds.

The notional value of derivatives is the total value of a position, how much value a position controls, or an agreed-upon amount in a contract.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

3. INVESTMENTS (CONTINUED)

b) Derivatives (continued)

Notional value of derivatives			2019	2018
Term to maturity	Within 1 year	1 to 5 years	Total	Total
Derivatives by type of contract				
Foreign currency forwards	$ 11,948	$ -	$ 11,948	$ 7,055
Repurchase agreement	5,894	-	5,894	-
Options	474	-	474	104
Futures	229	-	229	11
Interest rate swaps	1,203	3,406	4,609	2,175
Total return swaps	12,946	-	12,946	6,350
	$ 32,694	$ 3,406	$ 36,100	$ 15,695
Derivatives by investment asset classification				
Bonds	$ 11,203	$ -	$ 11,203	$ 1,670
Canadian equities	915	223	1,138	494
U.S. equities	1,001	139	1,140	355
International equities	12,493	3,044	15,537	7,739
Mortgages	1,088	-	1,088	515
Real estate	3,127	-	3,127	2,300
Private equity	4	-	4	1
IRR*	2,953	-	2,953	2,621
	$ 32,784	$ 3,406	$ 36,190	$ 15,695

4. ACTUARIAL VALUATION OF THE BASIC ACCOUNT FOR ACCOUNTING PURPOSES

a) Basic Account

In accordance with the Agreement and PBSA, an actuarial valuation is performed at least every three years. Its primary objective is to assess the financial position and adequacy of funding for the Basic Account of the Plan as described in note 5a. As part of the actuarial valuation, the Plan actuary also calculates values, for accounting purposes, of the basic account assets as at, and pension liabilities accrued to, the financial statement date. For this purpose, contributions and benefits for future service are not included, in contrast to their inclusion in the valuation for funding purposes as described in note 5a. Also, for accounting purposes, the full impact of investment fair value changes is reflected in the financial statements as at the financial statement date compared with the deferral and amortization of fair value gains or losses in the valuation for funding purposes. The liability for accrued basic pension obligations at the valuation date is determined using the projected benefit method pro-rated on service.

The latest full actuarial valuation for accounting purposes was prepared as at December 31, 2018, by Eckler Ltd. This valuation calculated the liability for accrued basic pension obligations for financial statement purposes to be $38,642 (2015: $33,294).

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

4. ACTUARIAL VALUATION OF THE BASIC ACCOUNT FOR ACCOUNTING PURPOSES (CONTINUED)

a) Basic Account (continued)

Between valuations, an estimate of the actuarial position is required. This estimate, an extrapolation, has been made to December 31, 2019, using the following long-term actuarial assumptions:

- Annual investment return 6.25% (2015: 6.25%)
- Annual salary escalation rate 3.5% (2015: 3.5%)

The extrapolation calculated the liability for accrued basic pension obligations to be $41,047 (2018: $39,875 based on the December 31, 2015 valuation).

In 2019 the extrapolation reflected assumption changes made during the 2018 valuation that resulted in a decrease in the 2018 accrued benefit liability of $199, primarily due to changes in mortality assumptions. Further, the 2018 valuation accrued pension benefit liabilities were $1,034 lower than anticipated by the 2018 extrapolation as a result of experience gains, primarily salary increases being lower than the actuarial assumption.

Extrapolations may not be reliable indicators of the next valuation results, nor do they necessarily reflect the overall trend of results. Between valuations, actual wage increases, investment earnings, and the incidence of retirements, withdrawals and changes in other factors may vary significantly from the long-term assumptions used in the extrapolation. In the event of a major change to the Plan, a new valuation or review of the assumptions may be required.

The next full actuarial valuation will be carried out as at December 31, 2021, and the results will be included in the December 31, 2022, financial statements.

Actuarial liabilities are also affected by changes in the assumed investment return. Based on the actuarial valuation completed as at December 31, 2018, a reduction in the investment return assumption from 6.25% to 6.00% would have increased the December 31, 2019, liability for accrued basic obligations of $41,047 by $1,249 or 3.04%. Changes to assumptions included in the actuarial valuation are interrelated, and the cumulative impact of changed assumptions may be offsetting.

b) Inflation Adjustment Account (IAA), non-guaranteed pension obligations

No unfunded liability exists for the IAA since the obligation for future cost-of-living adjustments is limited to the amount of the available assets in the account. There is no minimum level of inflation adjustment required to be paid under the pension plan rules, nor is there any plan provision to fund the IAA to any minimum level of future potential inflation adjustments (note 5b). The non-guaranteed pension obligation is therefore equal to the net assets available for benefits in the IAA $9,531 (2018: $8,297). The net increase of $1,234 (2018: $307) in the IAA balance consists of employee and employer contributions, investment income and net transfers reduced by payments out of the account (see note 13 for details on amounts transferred).

c) Retirement Annuity Account (RAA)

The RAA is comprised of additional contributions by employers and members under special agreements. If a member is entitled to, and chooses to, purchase additional pension benefits at retirement, monies are transferred from the RAA to the Basic Account and the IAA to fund the additional benefits. No unfunded liability exists as the obligation to purchase a pension is limited to the amount of the available assets in the account. The pension benefit for the RAA is therefore equal to the net assets available in the RAA, $411 (2018: $411).

The net assets available in the RAA remained constant (2018: $3 decrease) as employee and employer contributions and earnings on investments were reduced by payments out of the account.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

5. ACTUARIAL VALUATION OF THE BASIC ACCOUNT FOR FUNDING PURPOSES

a) Basic Account

The Basic Account is the account from which the defined basic benefits of the Plan are paid. In accordance with the Agreement and PBSA, an actuarial valuation of the Plan's assets and pension obligations is performed at least every three years by an independent actuary to determine an appropriate combined employer and member contribution rate to fund the Basic Account. For this purpose, the Plan's actuary values both accrued assets and accrued pension obligations to the financial statement date, and contributions and benefits for future service. The contribution requirements are calculated by the actuary using the entry-age normal cost method (entry-age method).

This method produces the long-term rate of member and employer contributions sufficient to provide benefits for the average future new entrants to the Plan. This rate may be adjusted for the amortization of any actuarial funding surplus, and this rate will be adjusted for the amortization of any unfunded actuarial liability. Contribution rate determination excludes consideration of the assets in the rate stabilization account; if contribution rate increases are considered, funds will be transferred from the rate stabilization account to keep the rate at its current level or to minimize the increase.

The Basic Account is also the account from which any cost-of-living adjustments granted to retired members are paid. Future cost-of-living adjustments are not guaranteed within the plan provisions and are granted to retired members only to the extent that sufficient assets are available from the IAA to fund those benefits (note 5b). As cost-of-living adjustments are granted, the Basic Account receives from the IAA the present value funding necessary for the cost-of-living adjustments granted. Therefore, accrued basic pension obligations for valuation purposes include the liability for all cost-of-living adjustments granted to the date of the valuation, but not for as-yet-unknown future cost-of-living adjustments.

Actuarial valuation

The latest full actuarial valuation for funding purposes was prepared as at December 31, 2018, by the independent actuary based on the entry-age method; the valuation indicated an actuarial surplus of $2,866 or $663 excluding previously scheduled amortization (2015: $2,224 of which $1,927 was transferred to the rate stabilization account). As a result of the 2018 actuarial valuation surplus, the amortization was eliminated, except for a limited group whose members continue to pay amortization of 0.23% of pay until the end of 2024. Interest is added to the rate stabilization account at the smoothed investment return rate, subject to a maximum rate stabilization account balance of $2,500.

An estimate of the actuarial position of the Plan for funding purposes has been made to December 31, 2019, using the following long-term actuarial assumptions:

- Annual investment return 6.25% (2015: 6.25%)
- Annual salary escalation rate 3.5% (2015: 3.5%)

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

5. ACTUARIAL VALUATION OF THE BASIC ACCOUNT FOR FUNDING PURPOSES (CONTINUED)

a) Basic Account (continued)

Actuarial valuation (continued)

This estimate, called an extrapolation, produced an estimated funding surplus of $1,538 as at December 31, 2019 (2018: $2,026), as follows:

Funding extrapolation		2019		2018
Net assets available for basic pension benefits	$	**49,498**	$	44,076
Actuarial asset value adjustment		**(2,450)**		(511)
Smoothed assets for basic pension benefits		**47,048**		43,565
Rate stabilization account		**(2,500)**		(2,485)
Smoothed assets excluding rate stabilization account		**44,548**		41,080
Present value of future contributions (entry-age method)		**16,271**		14,996
Present value of future amortization		**8**		2,060
Net actuarial assets for basic pension benefits		**60,827**		58,136
Actuarial liability for accrued and future basic pension benefits		**(59,289)**		(56,110)
Entry-age method actuarial surplus	$	**1,538**		**2,026**

Changes in the extrapolated entry-age method funded status		2019		2018
Extrapolated entry-age method actuarial surplus, beginning of year	$	**2,026**	$	1,132
Adjustment to reflect the 2018 valuation		**(1,355)**		-
Extrapolated change in actuarial assets for basic pension benefits		**4,496**		3,803
Extrapolated change in actuarial liability for accrued and future basic pension benefits		**(3,629)**	$	(2,909)
Entry-age method actuarial surplus, end of year	$	**1,538**	$	**2,026**

Extrapolations may not be reliable indicators of the next valuation results, nor do they necessarily reflect the overall trend of results. Between valuations, various factors, including actual wage increases, investment earnings, and the incidence of retirements and withdrawals, may vary significantly from the long-term assumptions used in the extrapolation.

Measurement differences between funding and accounting positions

The primary components of the measurement differences between the extrapolated entry-age method funding surplus and the financial statement accounting surplus are as follows:

Measurement difference between funding and accounting positions		2019		2018
Entry-age method funding surplus	$	**1,538**	$	2,026
Actuarial asset value adjustment		**2,450**		511
Rate stabilization account adjustment		**2,500**		2,485
Difference in actuarial methods – present value of future contributions		**(16,271)**		(14,996)
Difference in actuarial methods – present value of future amortization		**(8)**		(2,060)
Difference in actuarial methods – present value of future liabilities		**18,242**		16,235
Measurement differences between funding and accounting positions		**6,913**		2,175
Surplus for financial statement purposes	$	**8,451**	$	**4,201**

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

5. ACTUARIAL VALUATION OF THE BASIC ACCOUNT FOR FUNDING PURPOSES (CONTINUED)

a) Basic Account (continued)

Actuarial asset value adjustment

For the purposes of determining the entry-age method surplus for funding purposes, the actuarial value of net assets available for benefits is determined on an adjusted value basis that smooths the difference between the actual investment return and the expected return based on a long-term real return rate over a five-year period.

The funding policy requires that the value of the assets be smoothed within a certain corridor. In the 2018 valuation, the corridor required that the smoothed value be no more than 108% and no less than 92% of the market value of the assets. The smoothed value of the assets at December 31, 2019, was 95.1% of the market value of the assets (2018: 98.8%).

The following schedule indicates the year the components of the actuarial asset value adjustment will be recognized in the entry-age method actuarial surplus. The amounts are based on that proportion of the total fund related to the basic account assets.

Actuarial asset value adjustment	2019	2018
2019	$ -	$ 451
2020	**805**	208
2021	**741**	144
2022	**306**	(292)
2023	**598**	-
Total adjustment	**$ 2,450**	**$ 511**

Rate stabilization account adjustment

As a result of the December 31, 2015 actuarial funding valuation, $1.9 billion of assets was transferred to the RSA that is held notionally within the Basic Account. Interest on the RSA is determined by applying the smoothed rate of return to the fiscal year-end balance. For 2019, the smoothed rate of return was 8.18%, but only $15 of interest was transferred from the Basic Account to the RSA as the maximum rate stabilization account balance is $2,500. (2018: $183 interest based on the 2018 smoothed rate of return of 7.94%).

Rate stabilization account	2019	2018
Opening balance	**$ 2,485**	$ 2,302
Plus: interest	**15**	183
Ending balance	**$ 2,500**	**$ 2,485**

Difference in actuarial methods

While the accrued pension obligations liability for financial statement purposes uses the projected benefit method pro-rated on service, the pension liability for funding purposes uses an entry-age funding method, where the present value of future normal cost contributions, basic pension benefits for future service and future amortization amounts are included in the determination of the funded status of the Plan.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

5. ACTUARIAL VALUATION OF THE BASIC ACCOUNT FOR FUNDING PURPOSES (CONTINUED)

a) Basic Account (continued)

Transitional period

The Agreement specifies a transitional period during which actuarial deficits will be amortized over 15 years, as required by the PBSA, and actuarial gains must be used to achieve the following objectives, in order of priority:

1. Eliminating any unfunded liability.
2. Simultaneously rebalancing member and employer contribution rates to the level of member contribution rates in effect at the time the Agreement was negotiated and providing specified benefit improvements.
3. Transfer funds in equal measure to a Contribution Rate Stabilization Reserve and to the IAA, to an aggregate total of $1 billion. The Contribution Rate Stabilization Reserve will be shared on an equal (50/50) basis in order to maintain or reduce future member and employer contribution rates.

If these transitional objectives are achieved, the Agreement describes the manners in which the Board can elect to apply surplus assets so as to achieve over time an equitable sharing of the benefits of the surplus assets between members and employers.

The Agreement describes that if, at any time, an actuarial valuation indicates that increased basic contribution rates are required to fully fund the Plan on a going-concern basis, the increase must be shared equally by members and employers.

b) Inflation Adjustment Account (IAA)

No unfunded liability exists for the IAA since the obligation for future cost-of-living adjustments is limited to the amount of the available assets in the account. As cost-of-living adjustments are granted to retired members, full funding for that granted cost-of-living adjustment, on a net present value basis, is transferred from the IAA to the Basic Account, from which the pensions are paid. There is no minimum level of cost-of-living adjustment required to be paid under the pension plan rules, nor is there any plan provision to fund the IAA to any minimum level of future potential cost-of-living adjustments.

The Board annually considers all relevant factors and its IAA funding policy to determine if a cost-of-living adjustment will be granted on pensions in pay and the amount of the cost-of-living adjustment, if any.

The Board established a cap for cost-of-living adjustments for retired members on January 1, 2014. As a result of the 2018 actuarial valuation, the new cap effective January 1, 2020 until January 1, 2022, has been set at 2.10% (2015: 2.10%). The cap for sustainable cost-of-living adjustments will be reviewed following each subsequent triennial actuarial valuation.

c) Retirement Annuity Account (RAA)

No unfunded liability exists for the RAA, since the obligation to purchase a pension is limited to the amount of the available assets in the account. The pension benefit for the RAA is therefore equal to the net assets available in the RAA.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

6. FINANCIAL RISK MANAGEMENT

The Board approves the long-term asset mix policy for investment assets through its Statement of Investment Policies and Procedures (SIPP) and oversees the management of these assets through the Board's investment management agent, BCI. The SIPP requires diversification of investments among asset classes, sets guidelines on investment categories and limits the exposure to individual investments and counterparties.

Significant risks are regularly monitored and managed by BCI, and actions are taken when appropriate, according to the Plan's SIPP. In addition, these risks are reviewed periodically with the Board. Such risks include liquidity risk, as well as other financial risks, which comprise currency, interest rate, other price risk and credit risks.

Financial risks are disclosed on a unit-of-account basis (note 6b), which represents the legal ownership of securities held, and at the underlying securities level (note 6c), which provides additional insight to other risks that may impact the financial instruments of the Plan. Both forms of disclosure provide valuable perspectives into the financial risks that may directly or indirectly impact the financial statements and the funded status of the Plan. These two forms of risk disclosure are not additive to each other.

a) Liquidity risk

Liquidity risk is the risk of not being able to meet the Plan's cash requirements in a timely and cost-effective manner. Expenditures relate primarily to pensions, termination and refund benefits, and investment and administration costs. The Plan's approach to mitigating liquidity risk is to forecast its cash requirements over the near and long term to determine whether sufficient funds are available.

The Plan's primary source of liquidity is income generated from the Plan's investments, and employer and employee contributions. Investments are primarily held in pooled funds, and the securities held are traded in active markets and can be readily sold, and where the pooled fund units can thereby be redeemed to fund cash requirements. Accounts payable of $18 (2018: $22) and payable for purchase of investments of $121 (2018: $697) are generally due within one month. Derivatives payable of $28 (2018: $190) are due within the next fiscal year.

b) Financial risks on a unit-of-account basis

Plan investments consist primarily of direct ownership in units of pooled investment portfolios. Each unit gives its holder a proportionate interest in the value of the net assets of the respective pooled investment fund. The unit-of-account for the majority of the Plan's investments is the units of the pooled investment funds.

Investments by unit-of-account	2019	%	2018	%
Pooled investment fund units	$ 58,429	98.4	$ 52,115	98.4
Directly held equity	692	1.2	726	1.4
Directly held debt	271	0.4	125	0.2
Investments	**$ 59,392**	**100.0**	**$ 52,966**	**100.0**

Market risk is the risk that the fair values of an investment will fluctuate as a result of changes in market conditions, whether those changes are caused by factors specific to the individual investment or factors affecting all securities traded in the market. Market risk consists of currency risk, interest rate risk, and other price risk.

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Notes to the financial statements for the year ended December 31, 2019

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6. FINANCIAL RISK MANAGEMENT (CONTINUED)

b) Financial risks on a unit-of-account basis (continued)

Currency risk

Currency risk is the risk that the value of financial instruments denominated in currencies other than the functional currency of the fund will fluctuate due to changes in foreign exchange rates. The Plan holds primarily Canadian dollar denominated investment pooled fund units and is exposed to currency risk through holdings of small amounts of foreign currency denominated private equity, agricultural, bond and debt investments. See note 6c for currency exposure related to underlying securities.

Foreign denominated investments held as a percentage of the fund

		2019	%		2018	%
United States	$	**1,019**	1.7	$	887	1.7
Australia		**119**	0.2		125	0.2
	$	**1,138**	**1.9**	$	**1,012**	**1.9**

As at December 31, 2019, if the Canadian dollar had strengthened/weakened by 10% in relation to all foreign currencies, with all other factors remaining constant, net assets available for benefits would have decreased or increased by approximately $114 (2018: $101).

Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of plan investments will change as a result of future fluctuations in market interest rates. The majority of the Plan's investment assets are non-interest bearing and not subject to interest rate risk. See note 6c for interest rate risk related to underlying securities.

Other price risk

Other price risk is the risk that the fair value of a financial instrument will fluctuate because of changes in market prices (other than those arising from currency or interest rate risk), whether those changes are caused by factors specific to the individual financial instrument, its issuer, or factors affecting all similar financial instruments traded in the market. The Plan's investments are subject to other price risk through its public equity investments and private market investments, including equity in real estate companies, held directly and through pooled investment portfolios. This risk is managed by diversifying investments across asset classes based on criteria established in the SIPP.

As at December 31, 2019, if the pooled investment fund unit and directly held equity prices increased or decreased by 10%, with all other factors remaining constant, net assets available for benefits would have increased or decreased by approximately $5,912 (2018: $5,284).

Credit risk

Credit risk is the risk that the counterparty to a financial instrument will fail to discharge an obligation or commitment it has entered into, resulting in a financial loss to the Plan. The majority of the Plan's investments are held in securities that are not subject to credit risk. See note 6c for credit risk related to underlying securities.

Credit exposure exists for members' and employers' contributions receivable directly held by the Plan totaling $84 (2018: $80), for the derivatives $133 (2018: $10) and for the due from sale of investments of $12 (2018: $636).

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6. FINANCIAL RISK MANAGEMENT (continued)

c) Financial risks of underlying securities held through pooled investment funds

Pooled investment funds exist for different types of investments, such as short-term investments; bonds; Canadian, U.S. and international equities; mortgages; real estate; private equity; and infrastructure and renewable resources. Examining the risks of the underlying securities contained in pooled investment funds provides additional disclosure to assess the overall financial risks of the plan investments. Viewing the financial risks of underlying securities is an alternative way of disclosing financial risks from the unit-of-account basis in note 6b. These risks are not considered additive to the financial risks already disclosed in note 6b.

Market risks are reduced through asset class diversification, diversification within each asset class and credit quality requirements on investments.

Currency risk

Currency exposure also arises from foreign currency denominated investments held directly and from underlying investments held indirectly in pooled investment funds. BCI has currency exposure management programs under which it enters into economic hedges of foreign currency exposure through the use of forward foreign currency contracts.

The Plan's total direct and indirect currency exposure, the impact of economic hedging and trading activities, and its net exposure as at December 31 are as follows:

Fair value of foreign denominated investment holdings

(Cdn dollar equivalent)	Total exposure	Economic hedging	Net exposure	% of total
			2019	
United States	$ 15,697	$ 8,100	$ 7,597	49%
Asia-Pacific, excluding Japan	4,209	684	3,525	23%
Euro countries	2,963	738	2,225	14%
Other	1,772	-	1,772	11%
Other Europe	341	-	341	2%
Japan	491	362	129	1%
United Kingdom	708	699	9	0%
	$ 26,181	**$ 10,583**	**$ 15,598**	**100%**
			2018	
United States	$ 13,338	$ 5,469	$ 7,869	55%
Asia-Pacific, excluding Japan	3,847	635	3,212	18%
Euro countries	2,504	395	2,109	10%
Other	1,632	-	1,632	10%
Japan	713	18	695	3%
Other Europe	605	-	605	3%
United Kingdom	571	538	33	1%
	$ 23,210	**$ 7,055**	**$ 16,155**	**100%**

The net foreign currency exposure of its underlying investments represents 26% (2018: 31%) of the Plan's total investments.

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6. FINANCIAL RISK MANAGEMENT (CONTINUED)

c) Financial risks of underlying securities held through pooled investment funds (continued)

Interest rate risk

The Plan's pooled investment funds hold interest-bearing financial instruments in short-term investments, bonds and mortgages. The risk of adverse changes in interest rates is reduced within the underlying investment pools through management of duration in exposure to fixed income securities, the use of floating rate notes and interest rate swaps, and general diversification by security type and geographic region. During the year the Plan entered into a leveraged bond strategy using repurchase agreements, and is included in the terms to maturity table below.

The terms to contractual maturity of interest-bearing financial instruments held directly and through pooled investment portfolios as at December 31, are as follows:

Terms to maturity of interest-bearing financial instruments

	Within 1 year	1 to 5 years	6 to 10 years	Over 10 years	Total	Effective yield to maturity
			2019			
Short-term	$ 1,117	$ 264	$ -	$ -	$ 1,381	1.83%
Bonds	(4,861)	6,136	6,739	5,759	13,773	2.54%
Mortgages	810	1,132	307	-	2,249	3.45%
Debt	2	-	269	-	271	5.69%
	$ (2,932)	**$ 7,532**	**$ 7,315**	**$ 5,759**	**$ 17,674**	
			2018			
Short-term	$ 944	$ 245	$ -	$ -	$ 1,189	2.24%
Bonds	359	3,062	2,828	2,362	8,611	2.94%
Real return bonds*	147	8	24	957	1,136	0.99%
Mortgages	669	948	244	-	1,861	3.16%
Debt	-	-	125	-	125	6.40%
	$ 2,119	**$ 4,263**	**$ 3,221**	**$ 3,319**	**$ 12,922**	

*Effective yield to maturity percentages are only the interest return; inflation has not been considered.

As at December 31, 2019, if the prevailing interest rates increased or decreased by 1%, assuming a parallel shift in the yield curve with all other variables remaining constant, the fair value of interest-bearing financial instruments and net assets available for benefits would have decreased or increased by approximately $1,022 (2018: $805).

Other price risk

Other price risk associated with the underlying investments held in pooled investment funds is consistent with that described earlier in note 6b, which describes financial risks on a unit-of-account basis.

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6. FINANCIAL RISK MANAGEMENT (CONTINUED)

c) Financial risks of underlying securities held through pooled investment funds (continued)

Credit risk

The Plan's underlying investment assets held in pooled investment funds attract credit risk. This is the risk that a loss may occur from the failure of another party to perform according to the terms of a contract.

It's also the risk of losses when issuers and debtors are downgraded by credit rating agencies, usually leading to a fall in the market value of the debtors' obligations. Credit risk is managed by establishing specific investment criteria, such as minimum credit ratings for investees and counterparties and maximum concentration limits with given counterparties.

Credit risk ratings on financial instruments (short-term investments, bonds, mortgages and debt) held directly and through pooled investment portfolios are as follows:

Credit rating of financial instruments		2019			2018	
AAA/AA	$	**9,931**	**56%**	$	5,768	45%
A		**6,103**	**35%**		2,756	21%
BBB		**1,670**	**9%**		1,125	9%
Non-investment grade		**2,500**	**14%**		937	7%
		20,204	**114%**		10,586	82%
Unrated		**(2,530)**	**-14%**		2,336	18%
	$	**17,674**	**100%**	$	**12,922**	**100%**

The ratings used are defined by Standard & Poor's rating agency. Obligations rated AAA/AA have the highest rating assigned. The lender's capacity to meet its financial commitment on the obligation is very strong. Bonds rated A, BBB or non-investment grade are weaker, with the BBB rating denoting an obligation with adequate protection parameters and a non-investment grade rating denoting major ongoing uncertainties or exposure to adverse business, financial or economic conditions that could lead to the debtor's inadequate capacity to meet its financial commitment on the obligation. Unrated financial instruments consist mainly of mortgages secured by real estate, debt and corporate bonds.

7. FAIR VALUE OF FINANCIAL INSTRUMENTS

a) Fair value hierarchy

Fair value measurements of the investment assets and liabilities are based on inputs from one or more levels of a fair value hierarchy. Each level is based on the transparency of the inputs used to measure the fair values of assets and liabilities. The three levels of the fair value hierarchy are as follows:

Level 1

Inputs are unadjusted quoted prices in active markets for identical assets or liabilities

Level 2

Inputs other than quoted prices that are observable for the asset or liability either directly or indirectly

Level 3

Inputs that are not based on observable market data

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7. FAIR VALUE OF FINANCIAL INSTRUMENTS (CONTINUED)

a) Fair value hierarchy (continued)

Plan investments are carried at fair value in the financial statements. The following table details the classification of the Plan's investments based on the fair value hierarchy as at December 31:

Fair value hierarchy	Level 1	Level 2	Level 3	Total
		2019		
Pooled fund units	$ 1,112	$ 39,727	$ 17,590	$ 58,429
Directly held equity	-	-	692	692
Directly held debt	-	-	271	271
Investments	**$ 1,112**	**$ 39,727**	**$ 18,553**	**$ 59,392**
Derivatives	**$ -**	**$ 105**	**$ -**	**$ 105**
		2018		
Pooled fund units	$ 935	$ 37,180	$ 14,000	$ 52,115
Directly held equity	-	-	726	726
Directly held debt	-	-	125	125
Investments	**$ 935**	**$ 37,180**	**$ 14,851**	**$ 52,966**
Derivatives	**$ -**	**$ (180)**	**$ -**	**$ (180)**

During 2019 and 2018, there were no significant transfers of investments between levels.

The following table reconciles the Plan's Level 3 fair value measurements:

Level 3 fair value hierarchy	Pooled fund units	Direct equity	Direct debt	Total
		2019		
Balance, beginning of year	$ 14,000	$ 726	$ 125	$ 14,851
Net gains (losses) included in investment income	987	(28)	(1)	958
Purchases	4,632	391	150	5,173
Sales	(2,029)	(397)	(3)	(2,429)
Balance, end of year	**$ 17,590**	**$ 692**	**$ 271**	**$ 18,553**
Unrealized gains (loss) in investment income	$ 310	$ (28)	$ -	$ 282
		2018		
Balance, beginning of year	$ 10,016	$ 599	$ 131	$ 10,746
Net gains (losses) included in investment income	1,434	121	(3)	1,552
Purchases	3,953	42	6	4,001
Sales	(1,403)	(36)	(9)	(1,448)
Balance, end of year	**$ 14,000**	**$ 726**	**$ 125**	**$ 14,851**
Unrealized gains (loss) in investment income	$ 859	$ 109	$ (2)	$ 966

7. FAIR VALUE OF FINANCIAL INSTRUMENTS (CONTINUED)

b) Valuation models

The objective of valuation techniques is to arrive at a fair value measurement that reflects the price that would be received to sell the asset or paid to transfer the liability in an orderly transaction between market participants at the measurement date.

BCI uses widely recognized valuation methods for determining the fair value of common and less complex financial instruments such as investments in pooled funds, where fair value is based on the underlying net asset value of the respective pooled fund as determined by the underlying fund manager. Observable prices and model inputs are usually available in the market for listed equity and debt securities, simple derivatives such as forward or future currency contracts and pooled funds.

The availability of observable market prices and model inputs reduces the need for management judgment and estimation, and reduces the uncertainty associated with the determination of fair values. The availability of observable market prices and inputs varies depending on the financial instrument and is subject to change based on specific events and general conditions in the financial markets.

For more complex financial instruments, such as direct private equity investments held by the Plan, BCI uses proprietary valuation models, which are usually developed from recognized valuation models. Some or all of the significant inputs into these models may not be observable in the market, and are derived from market prices or rates, or estimated based on assumptions. Valuation models that employ significant unobservable inputs require a higher degree of judgment and estimation in the determination of fair value. BCI's judgment and estimation are usually required for the selection of the appropriate valuation model to be used, determination of expected future cash flows of the financial instrument being valued, determination of the probability of counterparty default and prepayments, and selection of appropriate discount rates.

Fair value estimates obtained from models are adjusted for any other factors, such as liquidity risk or model uncertainties, to the extent that BCI believes that a third-party market participant would take them into account in pricing a transaction. Fair values reflect the credit risk of the instrument and include adjustments to take account of the credit risk of the Plan and the counterparties where appropriate.

c) Valuation framework

BCI has an established framework with respect to the measurement of fair values of financial instruments. Where possible, for direct private equity investments held by the Plan, external, independent valuation specialists are engaged annually to assist in the determination of fair value. In those circumstances where BCI is reliant on the third-party manager for the determination of fair value, BCI reviews the appropriateness of such valuations using audited financial statements of the underlying investments, where available, and other information from the underlying third-party manager or other sources.

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7. FAIR VALUE OF FINANCIAL INSTRUMENTS (CONTINUED)

c) Valuation framework (continued)

In addition, BCI applies the following specific controls in relation to the determination of fair values:

- Verification of observable pricing inputs
- Appraisal of domestic real estate properties once every 10 to 18 months by accredited independent appraisers
- Analysis and investigation of significant valuation movements
- Review of unobservable inputs and valuation adjustments

When third-party information such, as broker quotes or pricing services, is used to measure fair value, BCI assesses and documents the evidence obtained from the third parties to support the conclusion that such valuations are appropriate. This includes:

- Verifying that the broker or pricing service is approved by BCI for use in pricing the relevant type of financial instrument
- Understanding how the fair value has been arrived at and the extent to which it represents actual market transactions
- Understanding how fair value has been determined when a number of quotes for the similar financial instruments have been obtained
- Understanding how prices for similar financial instruments used to measure fair value have been adjusted to reflect the characteristics of the financial instrument subject to measurement

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7. FAIR VALUE OF FINANCIAL INSTRUMENTS (CONTINUED)

d) Significant unobservable inputs used in measuring fair value

The following table sets out information about significant unobservable inputs used at year-end in measuring financial instruments categorized as Level 3 in the fair value hierarchy:

Significant unobservable inputs used in measuring fair value

Description	Fair value	Valuation technique	Unobservable input	Amount / range	Sensitivity to change in significant unobservable input
			2019		
					The estimated fair value would increase if:
Pooled fund units	**$ 17,590**	**Net asset value**	**Net asset value**	**$ 17,590**	**The net asset value increased**
Direct private equity	**$ 500**	**Discounted cash flows**	**Discount rate**	**7.2%**	**The discount rate decreased**
Direct private agriculture investments	**$ 192**	**Net asset value**	**Net asset value**	**$ 192**	**The net asset value increased**
Direct debt	**$ 271**	**Discounted cash flows**	**Discount rate**	**4.8%-17%**	**The discount rate decreased**
			2018		
					The estimated fair value would increase if:
Pooled fund units	$ 14,000	Net asset value	Net asset value	$ 14,000	The net asset value increased
Direct private equity	$ 530	Market approach	Multiple of EBITDA*	11.5x	The multiple of EBITDA increased
Direct private agriculture investments	$ 196	Net asset value	Net asset value	$ 196	The net asset value increased
Direct debt	$ 125	Market approach	Multiple of EBITDA	11.5x	The multiple of EBITDA increased

* Earnings before interest, tax, depreciation and amortization

Net asset value

Net asset value is determined by BCI based on fair value of assets less liabilities. Such investments are closed funds with significant restrictions on redemptions and, accordingly, BCI is unable to dispose of the pooled fund investment until the maturity or wind-up and liquidation of the respective pooled fund. In such cases, it is the Plan's policy to categorize the pooled fund investment as Level 3 within the fair value hierarchy.

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7. FAIR VALUE OF FINANCIAL INSTRUMENTS (CONTINUED)

d) Significant unobservable inputs used in measuring fair value (continued)

Multiple of EBITDA

Enterprise value (EV) represents amounts market participants would use when pricing direct equity investments. Earnings before interest, tax, depreciation and amortization (EBITDA) multiples are selected from comparable public companies based on geographic location, industry, size, target markets and other factors that BCI management considers reasonable. The traded multiples for the comparable companies are determined by dividing the EV of the company by its EBITDA and further discounted for considerations such as the lack of marketability and other differences between a comparable peer group and specific company.

Discount rate

This represents the discount rate applied to the expected future cash flows of the direct private equity and direct debt investments. For the discount rates used, the underlying investment manager assesses both the risk premium and the appropriate risk-free rate based on the economic environment in which the investee entity operates. The discount rate is adjusted for such matters as liquidity differences, credit and market factors. The estimated future cash flows are then discounted using the discount rate determined. Cash flows used in the discounted cash flow model are based on projected cash flows or earnings of the respective investee entity.

e) Effects of unobservable input on fair value measurement

The use of different methodologies or assumptions could lead to different measurements of fair value. For fair value measurements in Level 3, changing one or more of the assumptions used for to a reasonable alternative assumption could have the following effects on net assets attributable to holders of redeemable units.

The pooled fund units, direct private agriculture investments and direct debt investments were valued based on information received from BCI, the manager of the respective investments. The fair value of these investments fluctuates in response to changes to specific assumptions for these particular investments, as determined by BCI. The favourable and unfavourable effects of reasonable alternative assumptions for the valuation of pooled fund units, direct private agriculture investments and direct debt investments have been calculated by adjusting the respective underlying net asset value by 10%.

Effects of unobservable input on Level 3 fair value measurement

	2019		2018	
	Favourable	Unfavourable	Favourable	Unfavourable
Pooled fund units	$ **1,759**	$ **(1,759)**	$ 1,400	$ (1,400)
Direct private equity	**35**	**(35)**	33	(33)
Direct private agriculture investments	**19**	**(19)**	20	(20)
Direct debt	**27**	**(27)**	13	(13)
	$ **1,840**	$ **(1,840)**	$ **1,466**	$ **(1,466)**

For direct private equity investments, BCI engages third-party independent valuators to estimate the fair market value. The valuators produce comprehensive reports for each applicable investment. The favourable and unfavourable effects of reasonable alternative assumptions for the valuation of direct investments have been calculated by recalibrating the model values using unobservable inputs based on the upper and lower threshold of the respective investment's range of possible estimates.

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7. FAIR VALUE OF FINANCIAL INSTRUMENTS (CONTINUED)

f) Financial instruments not measured at fair value

The carrying value of members' contributions receivable, employers' contributions receivable, due from sale of investments, accounts payable and accrued expenses and payable for purchase of investments approximate their fair value given their short-term nature. These financial instruments are classified as level 2 in the fair value hierarchy because, while prices are available, there is no active market for these instruments.

8. INVESTMENT INCOME

	2019			2018		
	Income allocation	Change in fair value	Total	Income allocation	Change in fair value	Total
Short-term	$ 19	$ (4)	$ 15	$ 43	$ 3	$ 46
Bonds	334	498	832	264	(128)	136
Canadian equities	133	770	903	156	(706)	(550)
U.S. equities	27	353	380	23	90	113
International equities	325	2,054	2,379	316	(727)	(411)
Mortgages	73	38	111	63	62	125
Real estate	598	41	639	178	640	818
Private equity	386	421	807	356	303	659
IRR*	365	(43)	322	239	362	601
	2,260	4,128	6,388	1,638	(101)	1,537
Directly held derivatives	-	305	305	-	(327)	(327)
	$ 2,260	$ 4,433	$ 6,693	$ 1,638	$ (428)	$ 1,210

* Infrastructure and renewable resources

Investment income represents realized and unrealized pooled investment portfolio income attributable to the Plan, as a unitholder, and income from directly held investments. Income allocation is composed of interest, dividends and other investment payments. Change in fair value is composed of realized gains and losses on the disposal of investments and derivatives, and unrealized gains and losses on investments and derivatives held at year-end. All income earned within a pooled investment portfolio is reinvested within the portfolio. The RAA was allocated a share of basic account investment income based on the five-year annualized rate of return of the Basic Account per the pension plan rules.

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9. CONTRIBUTIONS

	Basic account	Inflation adjustment account	Retirement annuity account	Supplemental benefits account	Total
			2019		
Members' contributions					
Regular	$ 840	$ 179	$ -	$ 6	$ 1,025
Special agreements	-	-	2	-	2
Past service purchases	7	1	-	-	8
	847	180	2	6	1,035
Employers' contributions					
Regular	971	150	-	6	1,127
Special agreements	-	-	2	-	2
Past service purchases	5	1	-	-	6
Retired member group benefits	-	-	-	50	50
	976	151	2	56	1,185
	$ 1,823	$ 331	$ 4	$ 62	$ 2,220
			2018		
Members' contributions					
Regular	$ 846	$ 111	$ -	$ 5	$ 962
Special agreements	-	-	1	-	1
Past service purchases	7	1	-	-	8
	853	112	1	5	971
Employers' contributions					
Regular	968	83	-	5	1,056
Special agreements	-	-	2	-	2
Past service purchases	7	1	-	-	8
Retired member group benefits	-	-	-	51	51
	975	84	2	56	1,117
	$ 1,828	$ 196	$ 3	$ 61	$ 2,088

Member and employer contributions are as defined under the pension plan rules. Members' past service purchases are voluntary contributions.

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10. BENEFITS

	Basic account	Inflation adjustment account	Retirement annuity account	Supplemental benefits account	Total
2019					
Regular pension benefits	$ 1,604	$ -	$ -	$ 11	$ 1,615
Indexing – regular pension benefits	259	-	-	1	260
Termination and refund benefits	65	73	12	-	150
Death benefit payments	28	14	-	-	42
Disability benefit	1	-	-	-	1
	$ 1,957	$ 87	$ 12	$ 12	$ 2,068
2018					
Regular pension benefits	$ 1,506	$ -	$ -	$ 9	$ 1,515
Indexing – regular pension benefits	234	-	-	1	235
Termination and refund benefits	63	63	16	-	142
Death benefit payments	23	12	-	-	35
Disability benefit	1	-	-	-	1
	$ 1,827	$ 75	$ 16	$ 10	$ 1,928

11. SUPPLEMENTAL BENEFITS ACCOUNT

The Supplemental Benefits Account funds certain supplemental benefits; for example, pension benefits which exceed the Tax Act limits for registered pension plans are paid through this account. Certain group benefit coverage has been provided for retired members through this account. The availability, type and level of retired member group benefit coverage are contingent upon the availability of funding for such benefits.

To the extent extended health benefits are funded through the Supplemental Benefits Account (2019: $29; 2018: $27), they are funded from current contributions that would otherwise be employer inflation contributions. The amount of funding that can be used for extended health benefits is limited to 0.8% of pensionable salaries. For 2019, this funding totaled 0.3% of pensionable salaries (2018: 0.2%).

To the extent medical service plan premiums are funded through the Supplemental Benefits Account (2019: $21; 2018: $24), they are funded from current contributions that would otherwise be employer basic contributions.

Retired member group benefits costs (shown on the Statement of Changes in Net Assets Available for Benefits) represent group benefit costs paid by the Plan less any premiums paid by retired members.

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12. INVESTMENT AND ADMINISTRATION COSTS

	2019	2018
Investment management	$ **94.6**	$ 121.7
Benefit administration	**45.0**	45.1
Other professional services	**1.4**	0.9
Board secretariat costs	**1.0**	1.1
Board remuneration and expenses	**0.7**	0.6
Actuarial	**0.6**	0.4
Audit	**0.1**	0.1
	$ **143.4**	$ **169.9**

BCI and Pension Corporation are related parties to the Plan. The Board appoints members to each of the respective corporate boards. Investment management and benefit administration costs are approved by the Board.

Investment management costs represent amounts charged to recover internal and external management costs incurred by BCI, except those external management fees related to investments managed by an underlying external manager, where management fees are embedded in the net assets of the respective investment. Underlying external investment management fees of $75.8 (2018: $36.0) were netted against investment income.

Benefit administration costs represent amounts charged to recover benefit administration costs incurred by Pension Corporation. These transactions are in the normal course of operations and are measured at the exchange amount of consideration established and agreed to by the related parties.

Board secretariat costs represent amounts directly incurred by the Board for costs associated with supporting the Board.

Other professional services costs include insurance and legal fees incurred directly by the Plan.

Board remuneration and expenses represent amounts for trustee compensation and direct expenses.

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13. ACCOUNT TRANSFERS

	2019			2018		
	Basic account	Inflation adjustment account	Retirement annuity account	Basic account	Inflation adjustment account	Retirement annuity account
Cost-of-living adjustment	$ 366	$ (366)	$ -	$ 259	$ (259)	$ -
Indexing of deferred pensions	9	(9)	-	9	(9)	-
Pensions purchased from retirement annuity account	16	7	(23)	18	8	(26)
Excess investment return	(335)	335	-	(277)	277	-
	$ 56	$ (33)	$ (23)	$ 9	$ 17	$ (26)

The IAA is a separate account that is maintained for funding current and future cost-of-living adjustments. The IAA is funded through a portion of ongoing contributions from employers and members, investment income earned and excess investment return earned in the Basic Account.

All pension payments are made from the Basic Account. Each year, if members' pension payments are adjusted for the current cost-of-living adjustment, monies are transferred from the IAA to the Basic Account to cover the present value of all future payments arising from the current cost-of-living adjustment. The Board annually considers all relevant factors and its IAA funding policy to determine if a cost-of-living adjustment will be granted on pensions in pay and the amount of the cost-of-living adjustment, if any. As at January 2019, retired members received a cost-of-living adjustment of 2.1% (2018: 1.6%) and indexing supplements were transferred.

When a deferred pension commences, the present value of the cost-of-living adjustments during the deferral period is transferred from the IAA to the Basic Account. Approximately $134 (2018: $126) of the current IAA balance is for cost-of-living adjustments already granted for deferred pensions but not yet transferred to the Basic Account.

When investment earnings in the Basic Account are in excess of the actuarial assumption regarding investment rates of return, the excess investment returns are transferred from the Basic Account to the IAA. Excess investment return is based on investment income earned on those assets in the Basic Account required for pensions currently being paid: approximately $19 billion of assets for 2019 (2018: $18 billion). The excess investment return rate is determined by taking the difference between the actual five-year annualized market rate of return (8.00%) and the rate of return used by the actuary (6.25%) in valuing the Plan's liabilities. The calculated excess investment return rate for 2019 was 1.75% (2018: 1.55%), resulting in an excess investment return amount of $335 transferred to the IAA (2018: $277).

Should the excess investment return calculation ever result in a negative balance, it will be carried forward cumulatively with interest and offset against future excess interest. The cumulative negative excess investment interest is an amount determined by applying the five-year annualized market rate of return to the fiscal year opening balance. This component of the calculation is the opportunity cost related to the opening cumulative return deficit.

MUNICIPAL PENSION PLAN

Notes to the financial statements for the year ended December 31, 2019

($ millions except as otherwise noted)

13. ACCOUNT TRANSFERS (CONTINUED)

A separate RAA is maintained to record additional contributions by employers and members under special agreements. If a member is entitled to, and chooses to, purchase additional pension benefits at retirement, monies are transferred from the RAA to the Basic Account and the IAA to fund the additional benefits.

14. COMMITMENTS

The Plan participates in private equity, international real estate, mortgage and infrastructure and renewable resource pools. As at December 31, 2019, the Plan's share of commitments for future investment contracts in these pools over the next several years is approximately $9,431 (2018: $7,813).

15. CAPITAL DISCLOSURES

Capital is defined as the funded status (surplus or deficit) of the Plan as determined by the actuary. The Plan's objective for managing capital is to ensure that the assets of the Plan are invested prudently and effectively, and with contributions adequate to meet the obligations of the Plan. Management of the Plan's funded status is achieved by adjusting member and employer contribution rates; through implementation of the SIPP, which affects the earnings of the Plan; and, in the case of the IAA, by changing the benefits paid. The Board has a funding policy that outlines the principles that provide guidance in managing this process. The investment performance of the Plan's assets is reviewed by the Board on a regular basis and compared to relevant industry benchmarks. Benefit entitlement is based on the provisions of the Agreement and the pension plan rules. Funding deficits must be funded over a period not to exceed 15 years.

An actuarial valuation must be prepared at least once every three years. The latest actuarial valuation for funding purposes was prepared as at December 31, 2018, and has three components: the basic account non-indexed benefits and, by considering the valuation of the entire Plan, the non-guaranteed IAA benefits and the RAA (note 1d). The next full actuarial valuation will be carried out as at December 31, 2021.

The Act and the Board's funding policy require that contribution rates comply with the going- concern requirements of PBSA.

16. SUBSEQUENT EVENT

Subsequent to December 31, 2019, the COVID-19 outbreak was declared a pandemic by the World Health Organization. The situation is dynamic with various cities and countries around the world responding in different ways to address the outbreak. As a result of the COVID-19 outbreak, global financial markets have experienced significant volatility. Given the extent of the crisis, it is difficult to estimate the ultimate impact or duration of the volatility on the Plan.

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