Annual Report 2019

Strong

Sustainable

Resilient

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Trustees' Message

The Teachers' Pension Plan's solid foundation

This past year marked a major milestone for the Teachers' Pension Plan (plan). For the first time in its history, the number of plan members reached 100,000. This means that 100,000 members are contributing to their future retirement with every paycheque, enjoying a secure retirement after a career of contributions or working outside of BC's public education system but with previous contributions that have remained in the plan.

The plan is a concrete retirement program where members and employers work together with plan governors and administrators to build a safe and secure retirement income. And after nine decades, the plan remains fully funded and sustainable based in part on a solid foundation designed around four strong pillars.

Joint trusteeship

The plan's foundation starts with its joint trusteeship model. Back in 2000, the plan (and other provincial public sector plans) changed its governance model. Instead of a pension solely administered by the provincial government, the new model established shared governance, with BC Teachers' Federation (BCTF) and the government as partners. The partners share the risk and rewards of plan sponsorship.

This model differs from many pension plans that are essentially organized and governed by the employer who can make decisions without consulting member representatives.

Joint Trust Agreement

One of the first items the plan partners finalized when joint trusteeship was established was the Joint Trust Agreement (JTA). The JTA is the guiding document for the plan from which all major decisions are made.

The Teachers' Pension Board of Trustees

A significant part of the JTA deals with the establishment and roles of the Teachers' Pension Board of Trustees (board), made up of five trustees appointed by the BCTF and five appointed by the government.

Under the guidance of the JTA, trustees are responsible for governing the plan and managing the pension fund. They provide direction to British Columbia Investment Management Corporation (BCI, the plan's investment agent) and British Columbia Pension Corporation (the plan's administrative agent).

COVID-19 UPDATE

This report reflects 2019. Since then, the COVID-19 pandemic has adversely affected financial markets around the world. BC Investment Management Corporation (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.

The Teachers' Pension Plan is healthy and 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.

They also work closely with actuaries (professionals with specialized knowledge of finance, statistics and risk theory), auditors and lawyers to ensure the plan is administered efficiently and effectively.

The actuarial valuation

The board's most important job is to ensure the plan's long-term financial health and ability to pay pensions. Its best tool for doing that is the actuarial valuation. Every three years, an independent actuary conducts this valuation. It's like a report card that determines if the plan has sufficient funds to pay the pensions of its members, from those who have been receiving a pension for decades to those who won't be retiring until the middle of the century.

Working from a number of assumptions, the actuary compares the plan's assets (current financial holdings, future contributions and expected investment returns) against the money to be paid out in the future for pensions (liabilities). If the assets are the same as or more than the liabilities, the plan is fully funded and in a surplus position. If there is a shortfall in assets, the plan has an unfunded liability. The board must address an unfunded liability by adjusting contribution rates for members and employers.

The most recent valuation report, completed as at December 31, 2017, showed that the plan had a surplus and was 102.5 per cent funded. The next valuation will be as at December 31, 2020, with results available in late 2021.

Looking ahead

As trustees, we are always keeping an eye on the future. While the actuarial valuation tells us the plan is financially sustainable, this good news doesn't stop us from carrying out activities to better ensure the plan's strength for years to come.

For example, as a result of the 2018 valuation, we established a rate stabilization account (RSA). Created according to BC *Pension Benefits Standards Act* rules about surpluses, the RSA will help mitigate any significant increases to contribution rates that may result from a market downturn.

Additionally, we are actively working with BCI to better assess and manage plan risks due to climate change. BCI continues to manage risks by integrating climate considerations into investments, and engaging and advocating with companies in our portfolio. You can read more about responsible investing on page 7.

With the plan's governance structure as its foundation, and with the ongoing collaboration of the board and its administrative and investment agents, the plan will continue to be an outstanding model for pension plans everywhere into the next decades.

Executive summary

2019 by the numbers

Net assets

2019

$31.5 billion

2018

$28.4 billion

2017

$28.1 billion

Membership

The plan has more than

100,400 members

Growth of active members in 2018–2019

1.4%

Growth of retired members in 2018–2019

1.8%

Benefits

The plan paid out

$1.2 billion

in benefits in 2019

Performance

13.0%

2019 annual rate of return **just below the performance benchmark by**

– 0.1%

9.1%

10-year annualized rate of return **beat the performance benchmark by**

+ 1.3%

As at December 31, 2019, there were

39,146 pensions being paid

Teachers' Pension Plan

Plan financials

Highlights for 2019: the year in review

- The assets in the plan's investment portfolio (the fund) increased to $31.5 billion at December 31, 2019, compared to $28.1 billion at December 31, 2018*
- The fund earned 13.0 per cent after fees during 2019 relative to the benchmark of 13.1 per cent
- Over a five-year period, the fund returned 8.4 per cent, outperforming its benchmark of 7.6 per cent
- The fund continues to outperform its actuarial target rate of return over the long term
- Performance breakdown:
  - The fund's combined public equities returned 19.2 per cent as developed markets reached all-time highs and emerging markets rebounded in the fourth quarter
  - Global equity was the largest contributor to total fund returns in 2019, earning 21.1 per cent, while emerging market equity returned 12.2 per cent; both benefited from continued quantitative easing by major central banks and waning uncertainty over trade and geopolitics
  - In Canada, strong investment and consumer spending, as well as a rebound in oil prices, contributed to an equity return of 21.8 per cent in 2019
  - The fund's combined fixed income portfolio, which includes money market, bonds, and mortgages, delivered solid returns at 6.5 per cent, as BC Investment Management Corporation (BCI), the plan's investment management agent, took a long-duration position during a period of falling yields
  - Private equity returned 16.4 per cent as the buyout market continued to see record demand
  - Real estate earned 8.1 per cent, driven by robust market conditions in major Canadian centres

Investment overview

The board oversees an investment portfolio of more than $31 billion for the benefit of plan members. The board's primary financial objective is to ensure the long-term sustainability of the plan, which depends on several factors. These include generating sufficient returns over the long term. The plan'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.

* Differs from the information on page 4 because net assets are calculated differently than actuarial assets

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 BCI.

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

Report on investments

During 2019, the market value of the plan's investments rose to $31.5 billion. The plan's investment portfolio earned 13 per cent, or $3.4 billion, after fees for 2019, relative to the benchmark of 13.1 per cent. Over the last 10 years, the investment portfolio earned 9.1 per cent on an annualized basis, exceeding the benchmark of 7.8 per cent.

As fixed income yields fell throughout most of 2019, BCI positioned bond portfolios to longer-duration assets. In the fund's bond portfolio, BCI returned 7.8 per cent against a benchmark of 6.9 per cent due to strong performance in both Canadian bonds and corporate bonds.

Developed equity markets in North America reached 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. The fund's global equity investments returned 21.1 per cent for the year, just under the benchmark of 21.2 per cent. Returns were bolstered by strong performance in U.S. markets, but hindered by the underperformance of quantitative strategies.

In Canada, public equity market returns were bolstered by recovering oil prices and strong economic fundamentals, leading to fund returns of 21.8 per cent against a benchmark of 22.9 per cent. However, strong returns in most Canadian funds were hindered by the underperformance of quantitative strategies.

The fund's emerging markets investments returned 12.2 per cent against a benchmark of 12.4 per cent. Underperformance was driven by the timing of asset allocation decisions as BCI restructured the active emerging markets fund. Key drivers for emerging markets equities over the last two years have been the shift in developed market monetary policy from tightening to easing, Chinese efforts to rein in credit growth and U.S.–China trade conflict and strategic competition.

Real estate delivered strong results, returning 8.1 per cent for the year. 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 as Edmonton and Calgary 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. Investment volumes in Asia increased by 10 per cent, driven primarily by China.

Robust competition in private equity characterized 2019 with record levels of committed capital. Fundraising cycles are becoming shorter and managers are raising larger amounts than ever before. BCI expects this trend to continue until there is a prolonged market correction. Private equity ended the year with a 16.4 per cent return against the benchmark of 22 per cent as demand for buyouts fuelled strong valuations. Infrastructure and renewable resources returned 6.8 per cent against a benchmark of 7.0 per cent as demand for quality assets remained high. Despite heated market conditions, BCI will continue to make decisions with a long-term view and exercise prudence and caution.

Investment strategy

Recognizing the importance of taking a long-term investment perspective, the board approves the plan's strategic asset allocation policy. The plan's long-term asset mix policy reflects an increased focus on private equity, regulated utilities, 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 and create long-term value for the plan.

Responsible investing

Responsible investing is integral to the plan's investment approach. The board and BCI believe that assessing and managing risk over the long term—the cornerstone of responsible investing—is fundamental to meeting the mandate to grow and protect the value of the 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 compared to 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 risk management. 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. BCI is a signatory to Principles for Responsible Investment (PRI), an international network of investors, coordinated by the United Nations, 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 align 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, and 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.

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.

Plan members can read BCI's Climate Action Plan on the BCI website at BCI.ca.

BCI collaborates with other organizations to advance its objectives in mitigating climate change risks, including International Corporate

Governance Network, CDP (formerly Carbon Disclosure Project), and Investor Network on Climate Risk.

The investor-organized Climate Action 100+ initiative encourages the world's largest corporate greenhouse gas emitters to take meaningful action to curb their emissions. BCI is leading the engagement effort with four companies: Marathon Petroleum, Suncor, Canadian Natural Resources and Teck Resources.

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 our collective expectations on corporate lobbying for climate change, calling on the companies to review their lobbying practices, including lobbying 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 contribute to the plan's long-term sustainability.

Actuarial valuation: the plan's report card

Every three years, an independent actuary assesses the long-term financial health of the plan. The valuation produced is like a report card showing whether the plan is on track to meet its financial goals.

Working from a number of assumptions, the actuary compares current assets, future contributions and investment returns against the money to be paid out in the future for pension benefits. If the assets are the same as or more than the liabilities, the plan is fully funded. If there is a shortfall in assets, there is an unfunded liability. The board must address an unfunded liability by adjusting contribution rates for members and employers.

The actuarial valuation, measured as at December 31, 2017, showed the plan is 102.5 per cent funded. The valuation showed the plan's basic account has actuarial assets of $26.8 billion and actuarial liabilities of $26.2 billion, with a surplus of $644 million.

The next valuation will occur as at December 31, 2020.

$26.8

The plan has $26.8 billion in actuarial assets

$26.2

and $26.2 billion in actuarial liabilities as at December 31, 2017

Valuation history ($ millions)
as at December 31

	Basic pension benefit surplus (unfunded liability)		
	2017	**2014**	**2011**
For funding purposes (entry-age basis)	$ 644	$ 449	$ (855)
Funding ratio	102.5%	102.0%	96.0%

Tables, charts and graphs

Investment asset mix and performance (%)
as at December 31, 2019

	Target Approved range	Actual asset mix market value	Asset mix market value	Rate of return	Performance benchmark
Fixed income					
Short–term	0–10	2	3.6	1.4	1.6
Mortgages	0–10	5	3.2	6.0	3.9
Bonds	5–25	15	12.8	7.8	6.9
	12–32	**22**	**19.6**	**6.6**	**5.7**
Public equity					
Canadian equities	2–15	5	5.4	21.8	22.9
Global equities	15–35	25	25.8	21.1	21.2
Emerging markets	5–15	10	10.0	12.2	12.4
	30–60	**40**	**41.2**	**19.2**	**19.4**
Real estate	**8–22**	**16**	**15.0**	**8.1**	**6.3**
Private equity	**2–18**	**10**	**10.7**	**16.4**	**22.2**
Infrastructure and renewable resources	**5–20**	**12**	**11.0**	**6.8**	**7.0**
Other	**0–5**	**0**	**2.5**	**4.6**	**9.7**
Total asset mix		**100**	**100.0**	**13.0**	**13.1**

Investment performance (%)
year ended December 31, 2019

	Market value rates of return	
	Investment returns	**Performance benchmark**
Annual rates		
2019	**13.0**	**13.1**
2018	2.3	0.8
2017	11.8	10.5
2016	6.0	6.4
2015	9.3	7.5
Five-year annualized rates		
2019	**8.4**	**7.6**
2018	8.2	7.0
Ten-year annualized rates		
2019	**9.1**	**7.8**
2018	8.9	7.8

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

	2019	2018	2017	2016	2015
Increase in assets					
Investment income	**$ 3,712**	$ 720	$ 3,038	$ 1,488	$ 2,149
Contributions					
Members	**365**	404	381	362	356
Employers	**368**	413	392	403	418
Transfers from other plans	**6**	6	10	9	4
Total increase in assets	**4,451**	1,543	3,821	2,262	2,927
Decrease in assets					
Pension benefits	**1,248**	1,203	1,166	1,124	1,093
Transfers to other plans	**3**	9	7	7	7
Investment and administration costs	**64**	81	61	62	56
Total decrease in assets	**1,315**	1,293	1,234	1,193	1,156
Increase in net assets	**3,136**	250	2,587	1,069	1,771
Net assets available for benefits at beginning of year	**28,366**	28,116	25,529	24,460	22,689
Net assets available for benefits at end of year	**$31,502**	$ 28,366	$ 28,116	$ 25,529	$ 24,460
Investment and administration costs as a percentage of net assets (%)[1, 2]					
Investment management[1, 2]	**0.35**	0.35	0.29	0.26	0.22
Benefits administration	**0.05**	0.05	0.05	0.06	0.05

1 Investment costs as a percentage of net assets include certain external investment management costs totalling $38.6 million (2018—$19.2 million; 2017—$28.7 million; 2016—$15.0 million; 2015—$10.6 million; 2014—$10.7 million) that are netted against investment income; they are not included in investment and administration costs in the financial statements.

2 Investment costs as a percentage of net assets exclude external indirect investment management costs netted against investment income on the statement of changes in net assets available for benefits. 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 29 basis points in 2019. External indirect investment management costs include limited partnership management fees and other fees principally incurred within investments held in the private equity, infrastructure and global real estate asset classes.

Investments held
as at December 31, 2019

	Market value[1] ($ millions)	Asset mix market value (%)
Short-term		
Money market	$ 895	2.8
Bonds (1–5 years)	236	0.8
	1,131	**3.6**
Bonds		
Canadian bonds universe	3,790	12.0
Corporate bond fund	241	0.8
	4,031	**12.8**
Mortgages	**1,017**	**3.2**
Canadian equities		
Indexed	783	2.5
Active	914	2.9
	1,697	**5.4**
Global equities		
Global indexed	4,338	13.8
Global active	3,797	12.0
	8,135	**25.8**
Emerging markets	**3,150**	**10.0**
Real estate	**4,725**	**15.0**
Private equity	**3,372**	**10.7**
Infrastructure and renewable resources		
Infrastructure	2,891	9.2
Renewable resources	586	1.9
	3,477	**11.1**
Other	**790**	**2.5**
Total investments	**31,525**	**100.0**
2018 Comparison	**$28,085**	

1 Asset classifications vary from the financial statements for the purpose of performance reporting.

Top 25 public equity exposures[1]
as at December 31, 2019

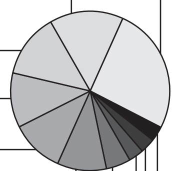
Company	% of portfolio	% of public equity	Total exposure ($ millions)
Chinese State-Controlled Companies[2]	0.8	1.8	$ 239
Alibaba Group Holding Ltd.	0.7	1.6	213
Microsoft Corp.	0.6	1.5	201
Apple Inc.	0.6	1.4	182
Tencent Holdings Ltd.	0.5	1.2	155
Amazon.com Inc.	0.5	1.2	151
Samsung Electronics Co. Ltd.	0.5	1.2	149
Taiwan Semiconductor Manufacturing	0.4	1.1	145
Alphabet Inc.	0.4	1.0	133
The Toronto-Dominion Bank	0.3	0.8	106
Facebook Inc.	0.3	0.7	96
Berkshire Hathaway Inc.	0.3	0.6	84
Citigroup Inc.	0.3	0.6	83
Royal Bank of Canada	0.2	0.6	77
The Boeing Co.	0.2	0.6	74
Allergan Plc	0.2	0.6	73
MasterCard Inc.	0.2	0.5	67
UnitedHealth Group Inc.	0.2	0.5	64
JPMorgan Chase & Co.	0.2	0.5	61
Johnson & Johnson	0.2	0.5	60
Visa Inc.	0.2	0.5	59
Ping An Insurance (Group) of China	0.2	0.5	58
Brookfield Asset Management Inc.	0.2	0.4	56
Russian State-Controlled Companies[2]	0.2	0.4	50
Procter & Gamble Co.	0.1	0.4	48
Total top 25	**8.5**	**20.7**	**$ 2,684**
Total public equity			**$12,982**
Total portfolio			**$31,525**

1 Company regional exposures are based on pool fund asset class designations, per Statement of Investment Policy and Procedures.

2 Company exposures are based on the ultimate parent company exposure regardless of where the security is listed or traded. As a result, the above exposure report shows Chinese and Russian state-controlled companies as two of the top exposures because the ultimate parent company for many companies in China and Russia are the Chinese and Russian governments. The advantage of showing exposure in this manner is that it aggregates the concentration risk more accurately.

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

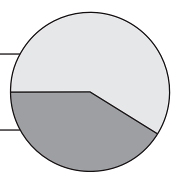
Global equities	$8.1	26%
Real estate	$4.7	15%
Bonds	$4.0	13%
IRR[1]	$3.5	11%
Private equity	$3.4	11%
Emerging markets equities	$3.2	10%
Canadian equities	$1.7	5%
Short-term	$1.1	3%
Mortgages	$1.0	3%
Other	$0.8	3%



1 Infrastructure and renewable resources

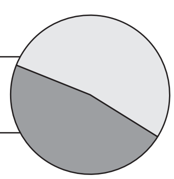
Canadian equities (%)
market value as at December 31, 2019

Actively managed	54
Indexed	46



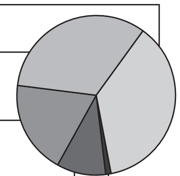
Global equities (%)
market value as at December 31, 2019

Indexed	53
Actively managed	47



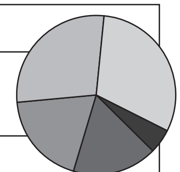
Domestic real estate, by type (%)
as at December 31, 2019

Office	37
Residential	33
Industrial	19
Retail	10
Other	1



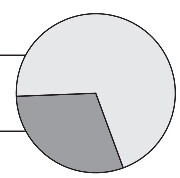
Real estate, by location (%)
as at December 31, 2019

International	31
Ontario	28
British Columbia	19
Alberta	17
Rest of Canada	5

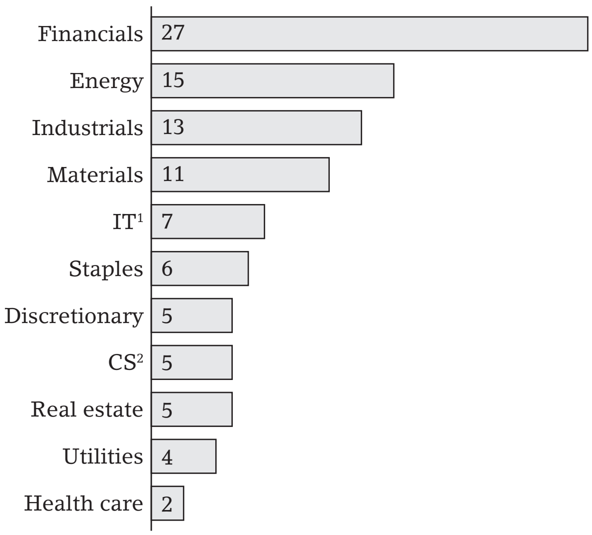


Bonds (%)
market value as at December 31, 2019

Government	70
Corporate	30

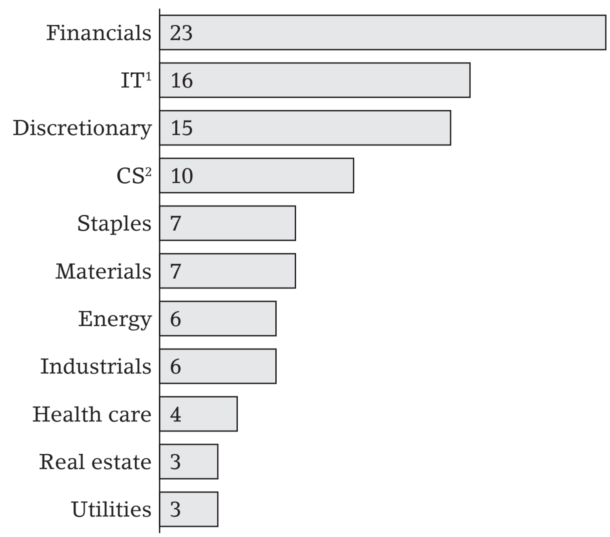


Canadian equities, by sector (%)
as at December 31, 2019



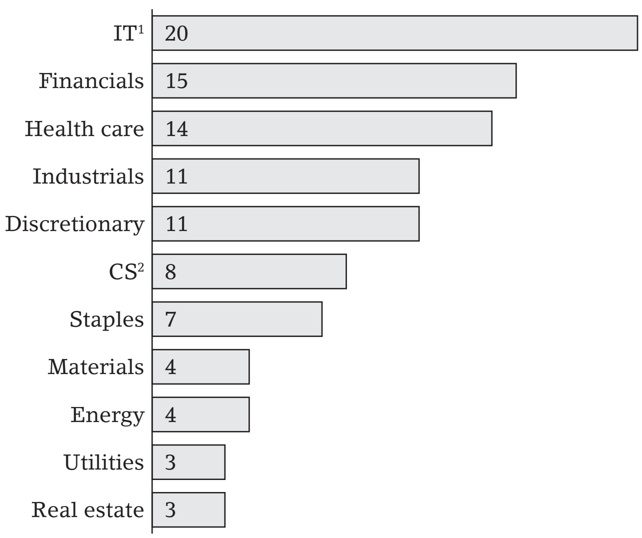
1 Information technologies
2 Communication services

Emerging markets equities, by sector (%)
as at December 31, 2019



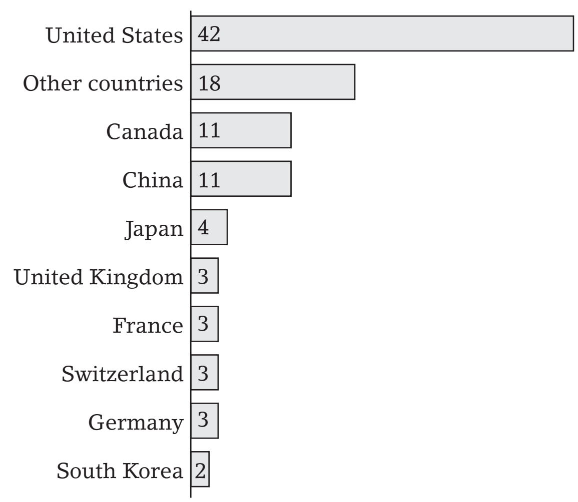
1 Information technologies
2 Communication services

Global equities, by sector (%)
as at December 31, 2019



1 Information technologies
2 Communication services

Public equities, by country (% of public equity)
as at December 31, 2019



Who we are

Meet the trustees

Standing (left to right): Reg Bawa, appointed by BC government; Liz Baverstock, appointed by BCTF; Brad Underwood, appointed by BC government; Cheryl Eason, appointed by BC government; Chung Yan Ip, appointed by BCTF; Hilary Woodward, appointed by BC government; Leslie Roosa, appointed by BCTF; Rob Taylor, appointed by BCTF

Seated (left to right): Wayne Jefferson, vice-chair, appointed by BC government; Ken Tannar, chair, appointed by BCTF

2019 Teachers' Pension Board of Trustees

The plan is jointly managed by trustees appointed by the employer partner, Province of British Columbia, and the member partner, BC Teachers' Federation (BCTF). The trustees themselves appoint a board chair and vice-chair.

The board aims to meet the pension goals of providing retirement income to plan members.

The board also appoints directors to the boards of British Columbia Pension Corporation (corporation), which provides pension administration services, and British Columbia Investment Management Corporation (BCI), which provides investment management services.

Trustee remuneration

The plan compensates trustees or their employers for time spent on board business. Guidelines and rates are set out in the board's remuneration policy. Under the policy, remuneration may be adjusted annually by an amount equal to the cost-of-living adjustment (COLA) made to pension payments.

Trustee remuneration
year ended December 31, 2019

Board member	Meeting days	Per diem ($418/ meeting)[1]	Annual stipend	Chair and vice-chair remuneration	Total payments	Paid to
Joan Axford	1.5	$ 622.50	$ —		$ 622.50	Board Member
Liz Baverstock	22.5	9,400.50	4,180.00		13,580.50	Richmond Teachers' Association
Reg Bawa	20.5	8,569.00	4,180.00		12,749.00	Minister of Finance
Cheryl Eason	26.5	11,072.50	4,180.00		15,252.50	Royal Roads University
Chung Yan Ip	31.0	12,953.50	—		12,953.50	BC Teachers' Federation
	—	—	4,180.00		4,180.00	Board Member
Wayne Jefferson (vice-chair)	40.5	16,924.50	4,180.00	$2,090.00	23,194.50	Board Member
Dale Lauber	1.5	622.50	—		622.50	Board Member
Leslie Roosa	32.0	13,376.00	—		13,376.00	BC Teachers' Federation
	—	—	4,180.00		4,180.00	Board Member
Ken Tannar (chair)	50.5	21,104.50	4,180.00	4,180.00	29,464.50	Board Member
Rob Taylor	41.5	17,342.50	4,180.00		21,522.50	Board Member
Brad Underwood	32.0	13,371.50	4,180.00		17,551.50	Public Sector Employers' Council Secretariat
Hilary Woodward	14.5	6,061.00	4,180.00		10,241.00	Legislative Assembly of British Columbia
Total		**$131,420.50**	**$41,800.00**	**$6,270.00**	**$179,490.50**	

1 May include December 2018 meetings (per diem $402/meeting)

Trustee activities

During 2019, the board held 10 meetings over 15 days. Trustees also participated in standing and ad hoc committees, and attended a number of conferences, including the annual BC Public Sector Pension Conference. In addition to scheduled training sessions, individual trustees participated in educational opportunities to increase their effectiveness on the board.

Teachers' Pension Board of Trustees committees

Benefits and Communications Committee

This committee provides advice and recommendations to the board on benefit and communication issues, and makes decisions under authority delegated by the board. It meets to address the following:

› Post-retirement group benefits
› Plan rule amendments
› Reciprocal transfer agreements
› Communications products, including *Report to Members*, *Pension Life* for retired members and the annual report

This committee met three times in 2019.

Governance Committee

This committee assists the board in fulfilling its governance responsibilities by considering issues that include the following:

- Board policy development and review
- Risk management review
- Board strategic planning mechanisms
- Development of the board's assessment tools
- Succession planning
- Any other item referred by the board

This committee met three times in 2019.

Interplan committees

Executive Forum

This group of board chairs, vice-chairs and senior administrators from the College, Municipal, Public Service and Teachers' boards meets to discuss areas of common interest; these meetings provide opportunities for all to keep up with the activities of the other boards.

The forum met two times in 2019.

Interplan Audit Committee

This committee meets on behalf of the College, Municipal, Public Service and Teachers' boards to help provide the following:

- A timely and cost-effective system of accounting and reporting
- Financial statements consistent with Canadian accounting standards for pension plans
- An independent audit of the financial statements
- An annual report with audited financial statements

This committee met three times in 2019.

Interplan Executive Committee

This committee, comprising board chairs, vice-chairs and senior administrators from the College, Public Service and Teachers' boards, meet to discuss common interests and keep up to date on board activities.

This committee met five times in 2019.

Interplan Investment Committee

This committee examines investment issues common to the College, Public Service and Teachers' boards; it makes recommendations to each board on generic investment policy and procedure statements, and on investment issues identified by a board, BCI or the committee itself. It considers the following:

- Investment industry trends
- Regulatory and legal developments
- Responsible investing issues
- Asset class reviews
- Updates on capital markets
- New investment products

This committee met four times in 2019.

Interplan Trustee Education Committee

This is a forum for the College, Municipal, Public Service and Teachers' boards to develop trustee knowledge and skills, work together on common educational issues and provide information on trends in a variety of jurisdictions (e.g., benefits, pensions, investments). This group organizes the annual BC Public Sector Pension Conference.

This committee met three times in 2019.

Agents and service providers

British Columbia Investment Management Corporation (BCI), provides investment management services to the plan.

As a global investor supported by industry-leading investment expertise and one of Canada's largest investment managers, BCI offers fund management services for all major asset classes, including real estate and infrastructure investments. It manages almost $150 billion in net assets on behalf of public sector pension plans, the Province of British Columbia, publicly administered trust funds and public bodies.

British Columbia Pension Corporation provides professional pension services to the Teachers' Pension Board of Trustees.

One of Canada's largest pension service providers, the corporation serves the largest public sector pension plans in British Columbia, representing almost 600,000 members and their employers. Services include providing plan information to members and employers, managing contributions and member records, paying pensions, and providing policy, financial and communication services to the board.

Eckler Ltd. is 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. The next valuation will be as at December 31, 2020, and published in 2021.

Green Shield Canada provides retired plan members' access to voluntary group extended health care and dental coverage.

KPMG LLP provides external audit services to the plan.

Lawson Lundell LLP is the plan's legal counsel.

Willis Towers Watson is the plan's benefit advisor.

Plan details

How the plan works

- Plan members and employers contribute to the plan. Their contributions, along with income earned from investing the contributions, make up the plan's financial assets.
- British Columbia Investment Management Corporation, the plan's investment management agent, determines how best to invest the plan's financial assets within guidelines determined by the plan's board of trustees. The board and BCI take environmental, social and governance factors into account when investing the plan's funds.
- Over time, long-term investments form the basis of the plan's financial health, making up the largest portion of the money needed to pay pensions. Around 80 per cent of a member's pension is generated from investments.
- A member's basic pension payment is calculated using their highest average salary, years of pensionable service and age at retirement. The basic pension payment is secure, dependable and paid for as long as the member lives. The pension payment may continue to the member's spouse or beneficiaries after the member dies, depending on the pension option chosen at retirement.
- Over and above basic pensions, the plan may also grant cost-of-living adjustments (COLAs). COLAs are not guaranteed; however, once granted, each year's COLA becomes part of the basic lifetime pension. Retired plan members also have access to unsubsidized extended health care and dental coverage. More information about COLAs and post-retirement group health coverage is available on the plan website.
- An independent actuary (a professional with specialized training in financial modelling, the laws of probability and risk management) regularly monitors the plan's financial health and ensures contributions and investment income are sufficient to pay out the pensions to all plan members. If the actuary finds that contributions and income are insufficient, they must recommend increased contributions.

Why the plan is valuable

- The benefit for members—a lifetime income for themselves, and possibly for their loved ones, after retirement—exceeds the cost. The average retired member receives far more in pension payments than they contributed (plus interest) during their teaching career.
- The plan has substantial value for members and employers. It employs a long-term investment strategy that provides financial security for members and their families. It does this by making use of BCI's strong

in-house financial management capabilities and large cost efficiencies due to its size.
- Employers that offer the promise of secure retirement income to employees are employers of choice; the plan enables employers to offer retirement security without high investment management and administration fees.
- Investments help the plan to secure its long-term sustainability and to offer lifetime retirement income, which could not be achieved by member and employer contributions alone.
- The plan collects and "grows" money in a structured way so all members can have a secure, predictable retirement income.

Did you know?

- The plan is a highly efficient retirement savings option with low fees
- The plan is well funded, which means it is sustainable
- Member lifetime pensions are pre-funded; the plan is designed fairly to ensure each generation pays in advance for its own benefits
- The plan enables more than 100,000 members (active, inactive and retired) to count on a predictable income in retirement
- Approximately 80 per cent of the cost of pensions is paid by plan investments; the remainder comes from member and employer contributions
- Members have two key options for maximizing the value of their pension:
  - transferring service—moving pensionable service from one plan to another
  - buying back periods of service—paying for periods of employment not already counted as service with the plan (e.g., parental or personal leave)

Tables, charts and graphs

Average and median value of pensions in pay[1]
as at December 31, 2019

Number of pensions	39,146
Average value[2]	$31,495
Median value[3]	$31,535

1 Includes bridge benefit for those receiving the pension before age 65
2 The average value reflects the total value of all pensions paid by the plan divided by the total number of recipients in the plan
3 The median value denotes the halfway point: half of the pensions paid by the plan are greater than this amount and half are smaller

Contribution rates as a percentage of salary

	Effective January 1, 2018 Flat rate on all salary	Effective January 1, 2019 Flat rate on all salary
Member	12.92	11.17
Employer	13.23	11.30
Total	**26.15**	**22.47**

Pensions 2010–2019
year ended December 31

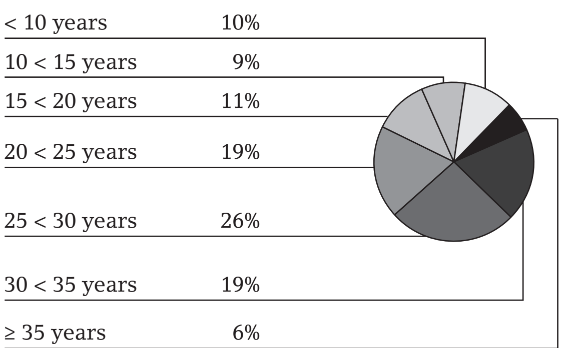
	New pensions during year	Pension terminations	In force at end of year	Basic pensions paid ($ millions)	Inflation supplements paid ($ millions)	Total pensions paid ($ millions)
2019	**1,290**	**609**	**39,146**	**$ 991.9**	**$ 224.6**	**$ 1,216.5**
2018	1,333	438	38,465	969.9	206.0	1,175.9
2017	1,586	526	37,570	938.9	194.9	1,133.8
2016	1,518	607	36,510	906.2	187.8	1,094.0
2015	1,432	488	35,599	877.4	184.2	1,061.6
2014	1,687	482	34,655	846.7	171.4	1,018.1
2013	1,651	363	33,450	810.9	167.4	978.3
2012	1,544	365	32,162	773.6	162.3	935.9
2011	1,574	412	30,983	739.3	140.9	880.2
2010	1,631	331	29,821	700.9	137.9	838.9

Average value of new pensions[1]
year ended December 31, 2019

Service (years)	Total new pensions	Average annual salary base	Average annual pension	Median annual pension	Average present value	Total present value of new pensions ($ millions)
< 10	132	$ 67,000	$ 6,400	$ 5,800	$ 111,000	$ 14.7
10 < 15	114	81,000	18,800	18,400	332,000	37.8
15 < 20	143	84,000	26,100	26,200	490,000	70.1
20 < 25	242	86,000	33,900	33,900	643,000	155.6
25 < 30	338	87,000	43,500	43,500	805,000	272.1
30 < 35	246	90,000	52,200	51,800	1,018,000	250.4
≥ 35	75	91,000	54,800	54,400	1,050,000	78.8
Total	**1,290**	**$84,000**	**$36,100**	**$37,500**	**$ 678,000**	**$879.5**

1 Average value reflects the total value of new pensions granted during the year divided by the total number of recipients—in the case of median pensions, half of retirees receive more than this amount and half receive less; pensions started before age 65 typically include a bridge benefit, which ends at age 65

New pension recipients, by years of service (%)
as at December 31, 2019



New pensions, by age at retirement
year ended December 31, 2019

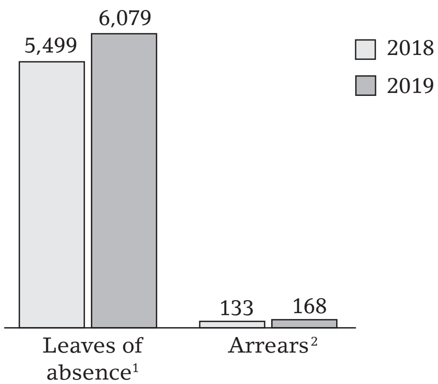
Years of service	< 55	55 < 60	60 < 65	≥ 65	Total
< 10	2	43	48	39	**132**
10 < 15	4	46	42	22	**114**
15 < 20	—	52	54	37	**143**
20 < 25	5	96	101	40	**242**
25 < 30	3	140	149	46	**338**
30 < 35	—	146	77	23	**246**
≥ 35	—	5	38	32	**75**
Total	**14**	**528**	**509**	**239**	**1,290**
Average service	18	24	24	22	**23**
Average age					**61**

New pensions, by type 2010–2019[1]
year ended December 31

	Regular	Limited members[1]	Survivor	Disability	LTD[2] to pension	Deferred	Total
2019	**1,033**	**34**	**13**	—	**82**	**128**	**1,290**
2018	1,080	38	17	—	82	116	1,333
2017	1,317	49	16	—	98	106	1,586
2016	1,256	36	12	—	92	122	1,518
2015	1,148	50	13	1	114	106	1,432
2014	1,421	54	13	—	108	91	1,687
2013	1,334	70	13	—	113	121	1,651
2012	1,278	37	19	1	117	92	1,544
2011	1,389	—	22	1	108	54	1,574
2010	1,428	—	12	—	115	76	1,631

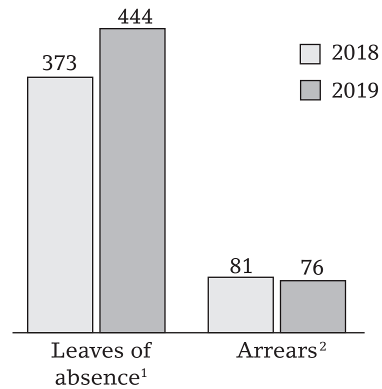
1 Prior to 2012, new limited members were included as part of new regular pensions
2 Long-term disability

Value of purchases of service
($ thousands)
year ended December 31



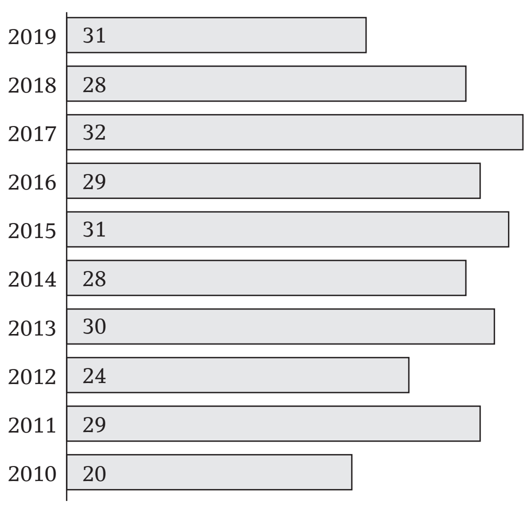
1 A leave of absence is an employer-approved absence from work
2 Arrears occur when contributions should have been made on a member's behalf but were not

Number of purchases of service
year ended December 31



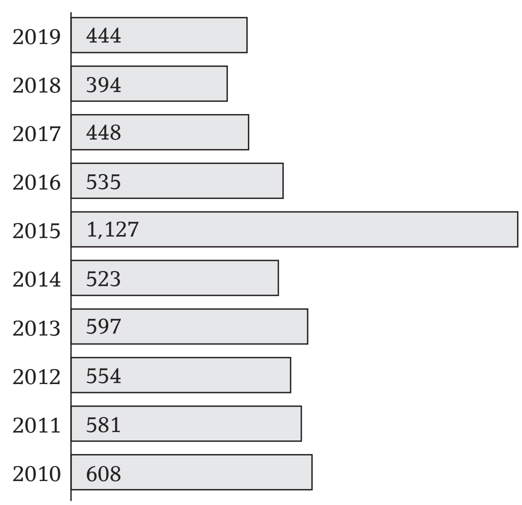
1 A leave of absence is an employer-approved absence from work
2 Arrears occur when contributions should have been made on a member's behalf but were not

Value of termination and refund benefits[1] paid[2] ($ million)
year ended December 31



1 A member who ends their participation in the plan may, if eligible, choose to receive a refund or termination benefit
2 Includes death benefits paid

Number of termination and refund benefits[1] paid[2]
year ended December 31



1 A member who ends their participation in the plan may, if eligible, choose to receive a refund or termination benefit
2 Includes death benefits paid

Plan membership

Plan membership is open to the following:

- Members of:
  - BC Principals' and Vice-Principals' Association
  - BC School Superintendents Association
  - BC Teachers' Federation
- Associated professionals appointed by a board of education in BC's public school system
- Eligible employees of employers approved by the board

New employees are immediately enrolled in the plan and cannot opt out.

Member types

- **Active members** currently contribute to the plan, receive benefits from an approved group disability plan or are on an approved leave of absence. There are 48,537 active members in the plan—a 1.4 per cent increase from 2018.
- **Inactive members** have ended their employment with a plan employer but are entitled to receive a benefit from the plan because they have chosen to leave their contributions in the plan. They may be eligible for a pension in the future. Those who aren't eligible may become eligible if they return to work for a plan employer, make contributions and accrue additional service. There are 12,763 inactive members in the plan—a 2.2 per cent increase from 2018.
- **Retired members** are those who receive a pension, including a survivor pension. For the purposes of this report, members receiving disability benefits from the plan are also counted in this group. There are 39,146 retired plan members—a 1.8 per cent increase from 2018.
- **Limited members** are the former spouses of plan members; they are entitled to a portion of the plan member's pension and have applied to become limited members. These members are included in the retired members total if they are receiving a pension. Note that limited membership requires an application, whereas enrolment in other membership types is automatic (based on a member's stage of employment).

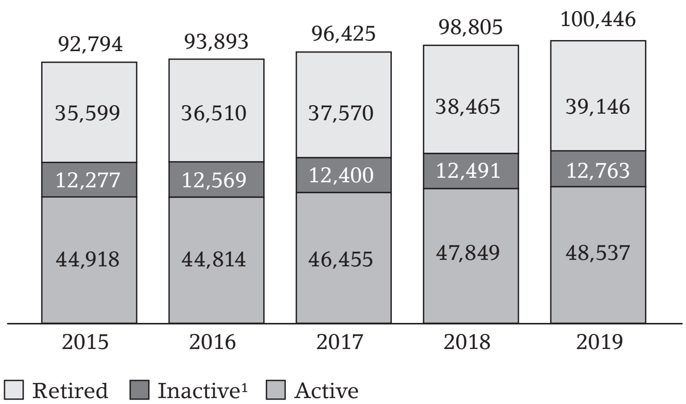
Employers

The following are the plan employers:

- School districts, including the Conseil scolaire francophone de la Colombie-Britannique
- BC Principals' and Vice-Principals' Association
- BC School Superintendents Association
- BC Teachers' Federation
- Teacher Qualification Service (BC)
- BC Public School Employers' Association

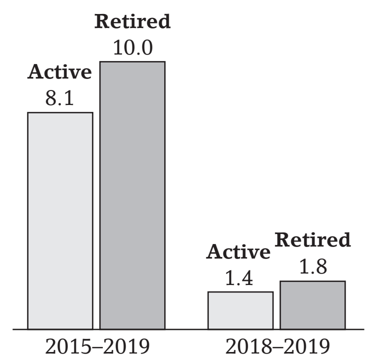
Tables, charts and graphs

Number of members
as at December 31



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

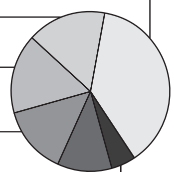
Membership growth, active versus retired (%)



Plan membership

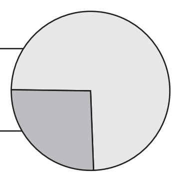
Active members, by age (%)
as at December 31, 2019

< 40 years	18,705	38%
40 < 45 years	7,580	16%
45 < 50 years	7,808	16%
50 < 55 years	6,670	14%
55 < 60 years	5,143	11%
≥ 60 years	2,631	5%



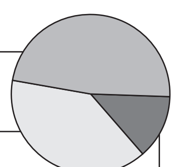
Active members, by gender (%)
as at December 31, 2019

Female	36,045	74%
Male	12,492	26%
Total	**48,537**	



Membership profile
as at December 31, 2019

Active	48,537	48%
Retired	39,146	39%
Inactive[1]	12,763	13%
Total	**100,446**	



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

Plan rule changes

[Effective 2019 and 2020]

Reduced contribution rates

[Effective January 1, 2019]

In October 2018, the board announced that contribution rates would be reduced for both members and employers effective January 1, 2019. This change results from a strong valuation as at December 31, 2017.

How will this affect members?

Member contribution rates as a percentage of salary dropped to 11.17 from 12.92. This means for every $1,000 of salary, members now pay $17.50 less in pension contributions. For more information, read the *2018 Report to Members*, available at tpp.pensionsbc.ca.

Changes to accrual rate and default pension option

[Effective January 1, 2019]

In spring 2018, the board announced significant changes to the plan, including improvements to the accrual rate and default pension option. In addition, the account that funds non-guaranteed cost-of-living adjustments for retired members was strengthened effective January 1, 2019.

How will this affect members?

If a member's pension begins on or after January 1, 2019, it will be higher than it would have been before the improvements were made. For more, read the *2017 Report to Members*, available at tpp.pensionsbc.ca.

In addition to these changes, the board approved the following administrative changes:

- On December 9, 2019, the plan updated its rules to reflect changes to the provincial *Employment Standards Act*. The updates included new types of approved leaves (domestic or sexual violence and caring for a family member with a critical illness or injury). Members taking these leaves may now buy service for the time they are on leave, retroactive to May 30, 2019.
- On June 21, 2019, the plan's post-retirement group benefit rules were updated to address the elimination of provincial Medical Services Plan premiums, effective January 1, 2020.
- Plan rules were also improved for clarity and to ensure alignment of terminology between plan provisions.

Financial statements

June 15, 2020

Re: Teachers' Pension Plan

Administrative agent's responsibility for financial reporting

The financial statements of the Teachers' Pension Plan (Plan) were prepared by British Columbia Pension Corporation (Pension Corporation), the administrative agent for the Teachers' 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 boards of trustees. As part of its 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 *Teachers' 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 auditors' report attached to these financial statements.

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

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

INDEPENDENT AUDITORS' REPORT

To the Members of the Teachers' Pension Plan

Opinion

We have audited the financial statements of the Teachers' 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.

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.

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.

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 15, 2020

TEACHERS' PENSION PLAN

Statement of financial position

($ millions)

Teachers' Pension Plan

As at December 31	Note		2019		2018
Assets					
Investments	3a	$	**31,525**	$	28,085
Directly held derivatives	3b		**73**		3
Receivables					
Employers' contributions			**23**		26
Members' contributions			**22**		26
Due from sale of investments			**7**		484
			52		536
Total assets			**31,650**		28,624
Liabilities					
Payable for purchase of investments			**119**		145
Directly held derivatives	3b		**14**		109
Taxes payable			**14**		-
Accounts payable and accrued expenses			**1**		4
Total liabilities			**148**		258
Net assets available for benefits		**$**	**31,502**	**$**	**28,366**
Accrued pension obligations					
Accrued basic pension obligations	4a	$	**21,516**	$	20,716
Non-guaranteed pension obligations	4b		**5,918**		5,321
Accrued pension obligations			**27,434**		26,037
Surplus					
Funding surplus	5a		**1,274**		631
Measurement differences between funding and accounting positions	5a		**2,794**		1,698
Surplus			**4,068**		2,329
Accrued pension obligations and surplus		**$**	**31,502**	**$**	**28,366**

All accompanying notes are an integral part of the financial statements including:
Commitments (note 14)
Subsequent event (note 16)

Approved by the Teachers' Pension Board of Trustees:

Rob Taylor, Chair
Teachers' Pension Board of Trustees

Ken Tannar, Vice-chair
Teachers' Pension Board of Trustees

Lynda Reeve, Trustee
Teachers' Pension Board of Trustees

TEACHERS' PENSION PLAN

Statement of changes in net assets available for benefits

($ millions)

For the year ended December 31	Note	Basic account	Inflation adjustment account	Supplemental benefits account	Totals 2019	Totals 2018
Increase in assets						
Investment income	8	$ 3,033	$ 679	$ -	**$ 3,712**	$ 720
Contributions						
Member	9	267	98	-	**365**	404
Employer	9	265	102	1	**368**	413
		532	200	1	**733**	817
Transfers from other plans		5	1	-	**6**	6
Total increase in assets		3,570	880	1	**4,451**	1,543
Decrease in assets						
Benefits	10	1,243	4	1	**1,248**	1,203
Transfers to other plans		2	1	-	**3**	9
Investment and administration	11	55	9	-	**64**	81
Total decrease in assets		1,300	14	1	**1,315**	1,293
Increase in net assets before transfers		**2,270**	**866**	-	**3,136**	**250**
Account transfers	12	269	(269)	-	**-**	-
Increase in net assets		**$ 2,539**	**$ 597**	-	**$ 3,136**	**$ 250**
Net assets available for benefits at beginning of year		$ 23,045	$ 5,321	-	**$ 28,366**	$ 28,116
Net assets available for benefits at end of year		**$ 25,584**	**$ 5,918**	-	**$ 31,502**	**$ 28,366**

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

TEACHERS' 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		$ **1,238**	$ 1,192
Benefits accrued		**553**	531
Changes in actuarial assumptions		-	881
Benefits improvements		-	59
Account transfers		**269**	183
Total increase in accrued pension obligations		**2,060**	2,846
Decrease in accrued pension obligations			
Benefits paid		**1,260**	1,222
Experience gains		-	259
Total decrease in accrued pension obligations		**1,260**	1,481
Net increase in accrued pension obligations		**800**	1,365
Accrued basic pension obligations at beginning of year		**20,716**	19,351
Accrued basic pension obligations at end of year	4a	**21,516**	20,716
Increase in non-guaranteed pension obligations	4b	**597**	124
Non-guaranteed pension obligations at beginning of year		**5,321**	5,197
Non-guaranteed pension obligations at end of year	4b	**5,918**	5,321
Total accrued pension obligations		**$ 27,434**	**$ 26,037**

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

TEACHERS' PENSION PLAN

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

($ millions except as otherwise noted)

1. DESCRIPTION OF THE TEACHERS' PENSION PLAN

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

a) General

The Plan is a jointly trusteed pension plan continued under joint trust agreement authorized by the *Public Sector Pension Plans Act*, SBC 1999, c. 44 (Act). The Act enabled the establishment of the Agreement. Joint trusteeship was established effective April 5, 2001. The partners to the Agreement are the Provincial Government and the B.C. Teachers' Federation (Partners). The Agreement describes the composition, appointment, powers, functions and duties of the Teachers' 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 mandatory for all certified teachers (including teachers teaching-on-call), principals, vice-principals, superintendents, assistant superintendents, directors of instruction, associated professionals and certified professionals who are appointed by a board of education in the British Columbia public school system.

b) Roles and responsibilities

Partners

The Partners representing the plan members and employers are responsible for appointing 10 trustees to the Board. 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 the 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.

TEACHERS' PENSION PLAN

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

($ millions except as otherwise noted)

1. DESCRIPTION OF THE TEACHERS' 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 triennial actuarial valuations 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

Basic Account

Members contributed 8.17% (9.97% to December 31, 2018) of salaries and employers contributed 8.17% (10.15% to December 31, 2018) of salaries, less amounts allocated to the Supplemental Benefits Account (SBA).

Inflation Adjustment Account

Members contributed 3.00% (2.95% to December 31, 2018) of salaries to the Inflation Adjustment Account (IAA). Employers contributed 3.13% (3.08% to December 31, 2018) of salaries to the Inflation Adjustment Account (IAA), less amounts allocated to the SBA.

e) Pension benefits

All members are eligible for a pension benefit.

For service on or after January 1, 2018, the Plan provides a defined basic plan benefit of 1.85% of pensionable earnings for each year of pensionable service with no maximum. The defined basic plan benefit increased to 1.90% effective January 1, 2019. From January 1, 2018, onward, the increased rate applies to all service, but only for members who remain active on or after January 1, 2019.

Members are eligible for unreduced pension benefits

- at age 65;
- at age 61, with at least two years contributory service; or
- at age 55 or older, with at least 35 years of contributory service.

The early retirement reduction applicable for service accrued after 2017 is 4.5% for each year where members do not meet the unreduced pension benefit criteria above.

Effective January 1, 2019, the default normal form of the pension changed from single-life no guarantee to single-life 10 year guarantee, but only for members who remain active on or after January 1, 2019.

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 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.

TEACHERS' PENSION PLAN

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

($ millions except as otherwise noted)

1. DESCRIPTION OF THE TEACHERS' PENSION PLAN (CONTINUED)

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 contributory and pensionable service to another pension plan.

g) Other benefits

Disability and survivor benefits are also available under the Plan. A disability benefit is available to a member under age 61 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 61 (since January 1, 2018) or returns to work.

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.

h) Tax registration

The Plan is a Registered Pension Plan (RPP) as defined in the *Income Tax Act* (Canada) (Tax Act) (registration number 0227462), 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.

TEACHERS' PENSION PLAN

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

($ millions except as otherwise noted)

2. SIGNIFICANT ACCOUNTING POLICIES

a) Basis of presentation

These financial statements are prepared on the going-concern basis in accordance with Canadian accounting 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.

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.

TEACHERS' PENSION PLAN

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

($ millions except as otherwise noted)

2. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

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	$ 921	$ 210	$ 1,131	$ 564	$ 129	$ 693
Bonds	3,927	894	4,821	3,511	800	4,311
Canadian equities	1,382	315	1,697	1,083	246	1,329
U.S. equities	967	220	1,187	486	111	597
International equities	8,224	1,874	10,098	8,110	1,847	9,957
Mortgages	828	189	1,017	683	156	839
Real estate	3,848	877	4,725	3,742	853	4,595
Private equity	2,746	626	3,372	2,127	484	2,611
IRR*	2,832	645	3,477	2,568	585	3,153
	$ 25,675	$ 5,850	$ 31,525	$ 22,874	$ 5,211	$ 28,085

* Infrastructure and renewable resources

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.

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TEACHERS' 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)

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 long-term debt or 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. Interim quarterly valuations for private.

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.

TEACHERS' 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	$ 73	$ (14)	$ 3	$ (109)
	$ 73	**$ (14)**	**$ 3**	**$ (109)**
Indirectly held in pooled investment portfolios				
Foreign currency forwards	$ 8	$ (1)	$ -	$ (15)
Futures	1	-	1	-
Options	9	(9)	-	-
Interest rate swaps	6	(7)	-	(9)
Total return swaps	242	(40)	57	(111)
	$ 266	**$ (57)**	**$ 58**	**$ (135)**
Total derivatives	**$ 339**	**$ (71)**	**$ 61**	**$ (244)**
Derivatives by investment asset classification				
Bonds	$ 18	$ (1)	$ 1	$ (21)
Canadian equities	2	(1)	2	(6)
U.S. equities	8	(14)	2	(1)
International equities	251	(42)	52	(113)
Mortgages	9	-	-	(8)
Real estate	18	(10)	-	(42)
Private equity	-	-	-	-
IRR*	33	(3)	4	(53)
Total derivatives	**$ 339**	**$ (71)**	**$ 61**	**$ (244)**

*Infrastructure and renewable resources

Derivative contracts consist of foreign currency forward contracts, 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 held by the Plan to manage exposure to foreign currency risk.

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TEACHERS' 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)

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 better 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 has been provided by counterparties, and collateral approximately equal to the negative fair value of each derivative contract has been 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.

TEACHERS' 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	$ 4,981	$ -	$ 4,981	$ 3,852
Futures	9	-	9	49
Options	470	-	470	2
Interest rate swaps	477	2,553	3,030	1,535
Total return swaps	9,458	-	9,458	4,515
	$ 15,395	$ 2,553	$ 17,948	$ 9,953
Derivatives by investment asset classification				
Bonds	$ 955	$ -	$ 955	$ 825
Canadian equities	500	122	622	269
U.S. equities	487	68	555	152
International equities	9,638	2,363	12,001	5,654
Mortgages	516	-	516	240
Real estate	1,595	-	1,595	1,267
Private equity	2	-	2	-
IRR*	1,702	-	1,702	1,546
	$ 15,395	$ 2,553	$ 17,948	$ 9,953

* Infrastructure and renewable resources

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, 2017, by Eckler Ltd. This valuation calculated the liability for accrued basic pension obligations for financial statement purposes to be $20,032 (2014:$17,526).

TEACHERS' 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, called an extrapolation, has been made to December 31, 2019, using the following long-term actuarial assumptions:

- Annual investment return 6.00%
- Annual salary escalation rate 3.25%

The extrapolation calculated the liability for accrued basic obligations to be $21,516 (2018: $20,716).

In 2018 the extrapolation reflected assumption changes made during the 2017 valuation that resulted in an increase in the 2017 accrued benefit liability of $881, primarily due to changes in economic assumptions. Further, the 2017 valuation accrued pension benefit liabilities were $259 lower than anticipated by the 2018 extrapolation as a result of experience gains, primarily salary increases being lower than the actuarial assumption. The 2017 accrued benefit liability also increased by $59 due to benefit improvements.

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 assumptions may be required.

The next full actuarial valuation will be carried out as at December 31, 2020 with the results included in the December 31, 2021 financial statements.

Actuarial liabilities are also affected by changes in the assumed investment return. Based on the actuarial valuation completed as at December 31, 2017, a reduction in the investment return assumption from 6.00% to 5.75% would have increased the December 31, 2019 liability for accrued basic obligations of $21,516 by $641 or 2.98%. 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 obligations is therefore equal to the net assets available for benefits in the IAA, 2019: $5,918 (2018: $5,321). The net increase of $597 (2018: $124) in the IAA balance consists of employee and employer contributions, investment income and net transfers reduced by payments out of the account. (See note 12 for details on amounts transferred.)

TEACHERS' 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. Future contribution rate determinations will exclude consideration of the assets in the rate stabilization account (RSA); if contribution rate increases are considered, funds will be transferred from the RSA 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, 2017, by the independent actuary. The 2017 valuation showed there was sufficient surplus to improve the benefit and reduce the basic contribution rate pursuant to the Agreement's funding arrangement for the transition period. Accordingly, the benefits were improved as described in Note 1 and the employer basic contribution rate decreased by 1.98% effective January 1, 2019 with a concurrent increase in the employer IAA contribution rate of 0.05%. Further, effective January 1, 2019, the member basic contribution rate decreased by 1.80% with a concurrent increase in the member IAA contribution rate of 0.05%

After these adjustments, the valuation indicated a basic account actuarial surplus of $644 on the entry-age method. As permitted by the Agreement, the Board agreed to transfer this surplus to an RSA effective January 1, 2018. Interest is added to the RSA at the smoothed investment return rate.

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 6.00%
- Annual salary escalation rate 3.25%

TEACHERS' 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)

This estimate, called an extrapolation, produced an estimated funding surplus of $1,274 as at December 31, 2019 (2018: $631 surplus), as follows:

Funding extrapolation	2019	2018
Net assets available for basic pension benefits	$ 25,584	$ 23,045
Actuarial asset value adjustment	(1,473)	(447)
Smoothed assets for basic pension benefits	24,111	22,598
Rate stabilization account	(760)	(699)
Smoothed assets excluding rate stabilization account	23,351	21,899
Present value of future contributions (entry-age method)	6,297	6,046
Net actuarial assets for basic pension benefits	29,648	27,945
Actuarial liability for accrued and future basic pension benefits	(28,374)	(27,314)
Entry-age method actuarial surplus	$ 1,274	$ 631

Changes in the extrapolated entry-age method funded status	2019	2018
Extrapolated entry-age method actuarial surplus, beginning of year	$ 631	$ 2,334
Adjustment to reflect triennial actuarial valuation and plan amendments	-	(1,690)
Transfer to the rate stabilization account	-	(644)
Extrapolated change in actuarial liability for accrued and future basic pension benefits	(1,060)	(1,110)
Extrapolated change in actuarial assets for basic pension benefits	1,703	1,741
Entry-age method actuarial surplus, end of year	$ 1,274	$ 631

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 difference 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 actuarial surplus	$ 1,274	$ 631
Actuarial asset value adjustment	1,473	447
Rate stabilization account	760	699
Difference in actuarial methods – present value of future contributions	(6,297)	(6,046)
Difference in actuarial methods – present value of future liabilities	6,858	6,598
Measurement differences between funding and accounting positions	2,794	1,698
Surplus for financial statement purposes	$ 4,068	$ 2,329

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

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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 2017 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 94.2% of the market value of the assets (2018: 98.1%).

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	$ -	313
2020	492	157
2021	455	120
2022	191	(143)
2023	335	-
Total adjustment	**$ 1,473**	**$ 447**

Rate stabilization account

The Agreement allows a contribution rate stabilization account to be established. If an actuarial funding valuation identifies a surplus and the transitional funding arrangements of the Agreement have been satisfied, any surplus assets can be transferred to the RSA.

As a result of the December 31, 2017 actuarial funding valuation, $644 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, $61 (2018: $55) of interest was transferred from the Basic Account to the RSA based on the 2019 smoothed rate of return of 8.71% (2018: 8.49%).

Rate stabilization account	**2019**	**2018**
Opening balance	$ **699**	$ 644
Interest applied to balance	**61**	55
Ending balance	**$ 760**	**$ 699**

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

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

a) Basic Account (continued)

Difference in actuarial methods

While the accrued pension obligations benefit 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.

If an actuarial valuation indicates that increased basic contribution rates are required, the increase must be shared equally by members and employers. The Agreement also describes the manner in which the Board can elect to apply surplus assets.

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 the granted cost-of-living adjustments, 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 for 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.

As a result of the 2017 actuarial valuation of the Basic Account, and pursuant to the Agreement's funding arrangement for the transition period, the Board increased the member and employer IAA contribution rate by 0.05% each effective January 1, 2019

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 risk, interest rate risk, other price risk and credit 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)

a) Liquidity risk

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.

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 $1 (2018: $4) and payable for purchase of investments of $119 (2018: $145) are generally due within one month. Derivatives payable of $14 (2018: $109) 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	$ 30,862	97.9	$ 27,487	97.9
Directly held equity	477	1.5	501	1.8
Directly held debt	186	0.6	97	0.3
Investments	**$ 31,525**	**100.0**	**$ 28,085**	**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, interest rate and other price risks.

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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	$ 637	2.0	$ 565	2.0
Australia	81	0.3	86	0.3
	$ 718	2.3	$ 651	2.3

As at December 31, 2019, if the Canadian dollar strengthened or weakened by 10 per cent in relation to all foreign currencies, with all other factors remaining constant, net assets available for benefits would have decreased or increased by approximately $72 (2018: $65).

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 risk 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 $3,134 (2018: $2,799).

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 $45 (2018: $52), for the derivatives $73 (2018: $3) and for the due from sale of investments of $7 (2018: $484).

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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)

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 currency exposure, the impact of economic hedging 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	**$ 9,387**	**$ 3,653**	**$ 5,734**	**53%**
Asia-Pacific, excluding Japan	**2,309**	**331**	**1,978**	**18%**
Euro countries	**1,977**	**381**	**1,596**	**15%**
Other	**937**	**-**	**937**	**9%**
Japan	**430**	**265**	**165**	**2%**
Other Europe	**299**	**-**	**299**	**3%**
United Kingdom	**455**	**351**	**104**	**1%**
	$ 15,794	**$ 4,981**	**$ 10,813**	**100%**
		2018		
United States	$ 8,219	$ 2,979	$ 5,240	49%
Asia-Pacific, excluding Japan	2,181	296	1,885	18%
Euro countries	1,736	249	1,487	14%
Other	893	-	893	8%
Japan	599	10	589	6%
Other Europe	466	-	466	4%
United Kingdom	448	318	130	1%
	$ 14,542	**$ 3,852**	**$ 10,690**	**100%**

The net foreign currency exposure of its underlying investments represents 34% (2018: 38%) of the Plan's total investments.

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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)

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.

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	$ 899	$ 232	$ -	$ -	$ 1,131	1.87%
Bonds	445	1,349	1,760	1,267	4,821	1.98%
Mortgages	379	506	132	-	1,017	3.45%
Debt	1	-	185	-	186	5.70%
	$ 1,724	$ 2,087	$ 2,077	$ 1,267	$ 7,155	
			2018			
Short-term	$ 475	$ 218	$ -	$ -	$ 693	2.32%
Bonds	195	1,527	1,404	1,175	4,301	3.17%
Real return bonds*	-	-	-	10	10	1.52%
Mortgages	314	424	101	-	839	3.16%
Debt	-	-	86	-	86	6.41%
	$ 984	$ 2,169	$ 1,591	$ 1,185	$ 5,929	

*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 $364 (2018: $320).

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

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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	**$ 3,010**	**42%**	$ 2,484	42%
A	**1,602**	**22%**	1,316	22%
BBB	**434**	**6%**	552	9%
Non-investment grade	**406**	**6%**	462	8%
	5,452	**76%**	4,814	81%
Unrated	**1,703**	**24%**	1,115	19%
	$ 7,155	**100%**	**$ 5,929**	**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 that 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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Notes to the financial statements for the year ended December 31, 2019

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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	$ 895	$ 20,935	$ 9,032	$ 30,862
Directly held equity	-	-	477	477
Directly held debt	-	-	186	186
Investments	$ 895	$ 20,935	$ 9,695	$ 31,525
Derivatives	$ -	$ 59	$ -	$ 59
		2018		
Pooled fund units	$ 466	$ 19,760	$ 7,261	$ 27,487
Directly held equity	-	-	501	501
Directly held bond and debt	-	11	86	97
Investments	$ 466	$ 19,771	$ 7,848	$ 28,085
Derivatives	$ -	$ (106)	$ -	$ (106)

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	$ 7,261	$ 501	$ 86	$ 7,848
Net gains (loss) included in investment income	547	(19)	-	528
Purchases	2,333	269	102	2,704
Sales	(1,109)	(274)	(2)	(1,385)
Balance, end of year	$ 9,032	$ 477	$ 186	$ 9,695
Total unrealized gain (loss) included in investment income	$ 220	$ (19)	$ -	$ 201
		2018		
Balance, beginning of year	$ 5,177	$ 413	$ 91	$ 5,681
Net gains (loss) included in investment income	656	83	(2)	737
Purchases	2,194	30	4	2,228
Sales	(766)	(25)	(7)	(798)
Balance, end of year	$ 7,261	$ 501	$ 86	$ 7,848
Total unrealized gain (loss) included in investment income	$ 345	$ 75	$ (1)	$ 419

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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.

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

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 the fair value has been determined when a number of quotes for 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	**$ 9,032**	**Net asset value**	**Net asset value**	**$ 9,032**	**The net asset value increased**
Direct private equity	**$ 345**	**Discounted cash flows**	**Discount rate**	**7.2%**	**The discount rate decreased**
Direct private agriculture investments	**$ 132**	**Net asset value**	**Net asset value**	**$ 132**	**The net asset value increased**
Direct debt	**$ 186**	**Discounted cash flows**	**Discount rate**	**4.8% - 17.0%**	**The discount rate decreased**
			2018		
					The estimated fair value would increase if:
Pooled fund units	$ 7,261	Net asset value	Net asset value	$ 7,261	The net asset value increased
Direct private equity	$ 366	Market approach	Multiple of EBITDA	11.5x	The multiple of EBITDA increased
Direct private agriculture investments	$ 135	Net asset value	Net asset value	$ 135	The net asset value increased
Direct debt	$ 86	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 the 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 to be 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 the 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 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 favorable and unfavorable 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	$ 903	$ (903)	$ 726	$ (726)
Direct private equity	24	(24)	23	(23)
Direct private agriculture investments	13	(13)	14	(14)
Direct debt	19	(19)	9	(9)
	$ 959	$ (959)	$ 772	$ (772)

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

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7. FAIR VALUE OF FINANCIAL INSTRUMENTS (CONTINUED)

e) Effects of unobservable input on fair value measurement (continued)

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 favorable and unfavorable 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.

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	$ 18	$ (2)	$ 16	$ 14	$ 3	$ 17
Bonds	107	212	319	129	(49)	80
Canadian equities	59	224	283	34	(184)	(150)
U.S. equities	13	175	188	12	44	56
International equities	227	1,538	1,765	244	(450)	(206)
Mortgages	33	18	51	30	28	58
Real estate	304	16	320	89	342	431
Private equity	203	265	468	204	119	323
IRR*	171	(36)	135	161	127	288
	1,135	2,410	3,545	917	(20)	897
Directly held derivatives	-	167	167	-	(177)	(177)
	$ 1,135	$ 2,577	$ 3,712	$ 917	$ (197)	$ 720

* Infrastructure and renewable resources

Investment income represents realized and unrealized pooled investment portfolio income attributable to the Plan, as a unit holder, 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.

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9. CONTRIBUTIONS

	Basic account	Inflation adjustment account	Supplemental benefits account	Total
		2019		
Member contributions				
Regular	$ 264	$ 97	$ -	$ 361
Past service purchases	3	1	-	4
	267	98	-	365
Employer contributions				
Regular	264	101	1	366
Past service purchases	1	1	-	2
	265	102	1	368
	$ 532	$ 200	$ 1	$ 733
		2018		
Member contributions				
Regular	$ 309	$ 91	$ -	$ 400
Past service purchases	3	1	-	4
	312	92	-	404
Employer contributions				
Regular	314	95	1	410
Past service purchases	2	1	-	3
	316	96	1	413
	$ 628	$ 188	$ 1	$ 817

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

10. BENEFITS

	Basic account	Inflation adjustment account	Total
		2019	
Regular pension benefits	$ 993	$ -	$ 993
Indexing – regular pension benefits	225	-	225
Termination and refund benefits	16	2	18
Death benefit payments	11	2	13
	$ 1,244	$ 4	$ 1,248
		2018	
Regular pension benefits	$ 970	$ -	$ 970
Indexing – regular pension benefits	206	-	206
Termination and refund benefits	14	3	17
Death benefit payments	9	1	10
	$ 1,199	$ 4	$ 1,203

TEACHERS' PENSION PLAN

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

($ millions except as otherwise noted)

11. INVESTMENT AND ADMINISTRATION COSTS

	2019	2018
Investment management	$ **49.7**	$ 66.8
Benefit administration	**12.9**	13.6
Board secretariat costs	**0.3**	0.4
Other professional services	**0.4**	0.2
Board remuneration and expenses	**0.3**	0.2
Actuarial and audit	**0.1**	0.2
	$ **63.7**	$ **81.4**

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 $38.6 (2018: $19.2) 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.

12. ACCOUNT TRANSFERS

	2019		2018	
	Basic account	Inflation adjustment account	Basic account	Inflation adjustment account
Indexing supplements	$ 267	$ (267)	$ 181	$ (181)
Indexing deferred pensions	2	(2)	2	(2)
	$ 269	$ (269)	$ 183	$ (183)

The IAA is a separate account 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.

TEACHERS' PENSION PLAN

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

($ millions except as otherwise noted)

12. ACCOUNT TRANSFERS (CONTINUED)

Cost-of-living adjusted 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 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 1, 2019, retired members received a cost-of-living adjustment of 2.2% (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 $28 (2018: $26) of the current IAA balance is for cost-of-living adjustments already granted for deferred pensions but not yet transferred to the Basic Account.

Prior to December 31, 2017, when investment earnings in the Basic Account were in excess of the actuarial assumption regarding investment rates of return, the excess investment return was transferred from the Basic Account to the IAA. In March 2018, the Board revised the Plan rules to allow the positive excess investment return transfer to occur at the discretion of the Board, effective January 1, 2017.

Excess investment return is based on investment income earned on those assets in the Basic Account required for pensions currently being paid, approximately $12.8 billion of assets for 2019 (2018: $12.5 billion). The excess investment return rate is determined by taking the difference between the actual five-year annualized market rate of return (8.4%) and the rate of return used by the Plan actuary (6.0%) in valuing the Plan's liabilities. The calculated excess investment return rate for 2019 was 2.4% (2018: 2.2%), resulting in a positive excess investment return amount of $307 (2018: $274).

Should the excess investment return in any year not be transferred to the IAA, it will be carried forward cumulatively with interest and be available for transfer to the IAA at the discretion of the Board, in the future. If the balance is ever negative, it will be offset against future positive excess investment returns before transfers to the IAA will recommence. The excess investment interest is an amount determined by applying the five-year annualized market rate of return to the fiscal year opening balance.

Excess investment return	2019	2018
Cumulative excess investment return, beginning of year	$ 788	$ 475
Interest applied to beginning of year amount	66	39
Excess investment return	307	274
Cumulative excess investment return, end of year	**$ 1,161**	**$ 788**

13. SUPPLEMENTAL BENEFITS ACCOUNT

The Supplemental Benefits Account funds certain supplemental benefits. For example, pension benefits that exceed Income Tax Act limits for registered pension plans are paid through this account.

TEACHERS' PENSION PLAN

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

($ millions except as otherwise noted)

14. COMMITMENTS

The Plan participates in private equity, international real estate, mortgages 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 $4,844 (2018: $4,372).

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, 2017, and has two components: the basic account non-indexed benefits and, by considering the valuation of the entire Plan, the non-guaranteed IAA. The next full actuarial valuation will be carried out as at December 31, 2020.

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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MISSION STATEMENT
To fulfill the trust the partners have placed on us by effectively and efficiently meeting the pension promise to provide retirement income to plan members

1998-067 TPP AR 2020.09.01