2018 Annual Report

Doing it right

Myles Tycholis
Member
Municipal Pension Plan

Municipal Pension Plan

Contents

2.1%

Annual return on investments beat 0.2% benchmark for 2018

Get the details on plan investments on pages 4 to 12

Trustees’ message

Doing right by you

The Municipal Pension Plan remains sustainable despite a volatile investment environment over the past year. As at December 31, 2018, net assets were $52.8 billion. While a market correction in the last quarter of 2018 dragged down the year's investment returns, over the last 10 years, plan investments have earned 8.8 per cent on an annualized basis. The plan prospers for two primary reasons. First, members can count on a secure retirement income because each generation pays in advance for their own pensions. Second, because the plan operates under joint trusteeship, representatives of both plan members and plan employers share its management. We will continue to keep our focus on long-term sustainability.

A long-term view

In 2015, we announced that a portion of contributions would be reallocated to improve the long-term sustainability of the inflation adjustment account (IAA), which funds cost-of-living adjustments (COLAs). We could do this because the basic account is healthy and basic pensions are secure. The change became effective January 1, 2019. It provides additional funding to the IAA to support the long-term sustainability of COLAs, and it will benefit working members. It is important that future retired members have access to COLAs, as current retired members do now. This change is the most recent incremental adjustment to the plan in response to evolving member demographics and economic forces.

In fall 2019, we'll announce the results of the plan's independent actuarial valuation as at December 31, 2018. The valuation is one of the tools the Municipal Pension Board of Trustees uses to ensure the basic account is fully funded on the basis that current contributions continue.

Responsible investment

The board believes in responsible investing. The board and British Columbia Investment Management Corporation (BCI) are signatories to the Principles for Responsible Investment, an international network of investors, coordinated by the UN, that share the goal of incorporating environmental, social and governance (ESG) elements into the processes and activities of institutional investors. We are also signatories of Climate Action 100+, a five-year program calling on companies to curb emissions. The purpose of Climate Action 100+ is to improve governance on climate change, curb emissions and strengthen climate-related financial disclosures.

Brenna Jonasson
Member,
Municipal
Pension Plan

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With BCI's climate action plan, released in September 2018, we're gaining a comprehensive understanding of risks and opportunities climate change presents for investments. Since the mid-2000s, BCI has been interacting with companies and advocating for reforms to address climate-related issues on behalf of the board. BCI's climate action plan is an extension of that work. It aligns with both our objectives and industry best practices. Through partnership between BCI and the board, we're also gaining insight into the fund's exposure to climate change risks and opportunities.

Focus on our members

Any long-term view must have all members as its focal point. In 2018, we engaged professional consultants to assist with our post-retirement group benefit review and began planning for member engagement about group benefits. This included pre-consultation with members through an online bulletin board application. We also negotiated to reduce dental plan premium rates for retired members. We welcomed more than 1,000 members as part of the plan's first-ever bulk asset and liability transfer from the Non-Teaching Pension Plan of School District No. 43 (Coquitlam).

As you read this, the plan is celebrating 80 years of health and longevity, doing it right for members since 1939. We invite you to explore anniversary milestones on the plan website to gain your own long-term view. This summer is also the 20th anniversary of the *Public Sector Pension Plans Act,* which created the board, BC Pension Corporation and BCI.

These anniversaries showcase the plan's benefits to members, their families, employers, communities and the province as a whole. They are also a reminder of our ongoing responsibility to secure the basic pension for every member, from career-long contributors to employees entering the workforce for the first time. Milestones such as these reflect our commitment to keeping your lifetime pension secure, so you can trust it will be there for you when you retire.

Brigitte Dykema
Retired member, Municipal Pension Plan

The 2019 AGM will take place on October 17, 2019, at the Anvil Centre in New Westminster

Plan investments

Plan portfolio overview

The Municipal Pension Board of Trustees (board) is responsible for overseeing an investment portfolio of $53.0 billion for the benefit of Municipal Pension Plan (plan) members. The board's primary financial objective is to ensure the long-term sustainability of the plan, which depends on several factors, including generating sufficient returns over a long-term horizon. The board's Statement of Investment Policies and Procedures outlines the board's investment strategy and overall framework for managing plan assets. The board approves the long-term asset mix policy, recognizing diversification of investments as a key principle in managing risk. The board monitors and manages short-term volatility in part through longer-term investment objectives.

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

	2018	2017	2016	2015	2014
Increase in assets					
Investment income	**$ 1,210**	$ 5,205	$ 2,659	$ 3,592	$ 4,131
Contributions					
Members	**971**	923	884	863	797
Employers	**1,117**	1,067	1,022	993	916
Transfers from other plans	**97**	11	16	14	44
Total increase in assets	**3,395**	7,206	4,581	5,462	5,888
Decrease in assets					
Benefit payments	**1,928**	1,808	1,690	1,601	1,460
Transfers to other plans	**11**	15	15	12	14
Retired member group benefits	**51**	69	105	86	74
Investment and administration costs [1,2]	**170**	127	135	124	102
Total decrease in assets	**2,160**	2,019	1,945	1,823	1,650
Increase in net assets	**1,235**	5,187	2,636	3,639	4,238
Net assets at beginning of year	**51,549**	46,362	43,726	40,087	35,849
Net assets at end of year	**$ 52,784**	$ 51,549	$ 46,362	$ 43,726	$ 40,087
Investment and administration costs as a percentage of net assets[1] (%)					
Investment management[1,2]	**0.35**	0.28	0.28	0.24	0.21
Benefit administration	**0.09**	0.09	0.10	0.09	0.09

1 Investment and administration costs as a percentage of net assets include external investment management costs netted against investment income of $61.8 million (2017—$52.4 million; 2016—$33.5million; 2015—$18.5 million; 2014—$18.4 million) they are not included in investment and administration costs in the financial statements

2 Investment and administration costs as a percentage of net assets exclude external indirect investment management costs netted against investment income. This is consistent with current industry practice; including these costs using the budgeted amount would have increased investment management costs as a percentage of net assets by an estimated 27 basis points in 2018. External indirect investment management costs include limited partnership costs incurred within investments held in the private equity, infrastructure and global real estate asset classes.

The plan holds investments across a range of asset classes (fixed income, mortgages, public and private equity, real estate, infrastructure and renewable resources), industry sectors and global markets. The board oversees the management of plan assets through its investment management agent, BCI.

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

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

Investment highlights

The plan's investment portfolio earned 2.1 per cent net of fees for 2018, outperforming the market benchmark of 0.2 per cent. In 2018, the market value of the plan's investments increased from $51.4 billion to $53.0 billion. Over a 10-year period, the investment portfolio earned 8.8 per cent on an annualized basis, exceeding the market benchmark of 7.7 per cent.

Investment returns were affected by a significant market correction that occurred in the fourth quarter of 2018. While there was no one clear catalyst for the market correction, headline risks of a potential global trade war, falling energy prices and the deterioration of global economic data were key drivers. While the annual return was disappointing, the plan invests with a long-term focus. Over longer periods, the plan has exceeded its return objective of 6.5 per cent over five-, ten- and fifteen-year periods.

The combined fixed income portfolio, which includes money market, bonds, private debt and mortgages, outperformed. This portfolio returned 1.8 per cent compared to a benchmark return of 1.2 per cent. The asset class performed positively in 2018, as investors sought safe-haven assets when volatility and trade tensions increased. During the year, the Bank of Canada raised the policy interest rate three times to 1.75 per cent.

Weakness in Canadian equities and emerging market equity detracted from performance; each of these asset classes returned -8.8 per cent, while global equity returned 0.1 per cent. In Canada, the downturn in the energy sector weighed heavily on overall economic sentiment; the fall in commodity prices coincided with slower Canadian consumer spending. Emerging market equity was negatively impacted by signals of a slowing Chinese economy and by U.S.–China trade tensions.

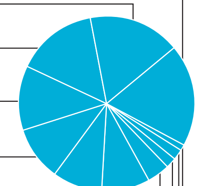
While equity markets lagged, all private market asset classes had positive returns during the year. Private market assets include private equity, real estate, and infrastructure and renewable resources. Private market assets play an important role in the plan's strategy since they are a good match for the plan's long-term pension liabilities and provide stable cash flows with capital appreciation. Canadian real estate returned 6.7 per cent for the year. Vancouver and Toronto continued to experience extremely low vacancies and strong rents in the industrial market and downtown office market. Private equity returned 15.9 per cent for the year, and infrastructure and renewable resources returned 8.8 per cent.

8.8%

The plan's 10 year investment portfolio earnings of 8.8% beat the benchmark of 7.7%

INVESTMENT HOLDINGS (%)
as at December 31, 2018

Global equities	19
Real estate	17
Bonds	15
Infrastructure and renewable resources	12
Emerging market equities	10
Canadian equities	9
Private equity	9
Mortgages	4
Short term	2
Real return bonds	2
Other	1



Investment portfolio[1]

investments held as at December 31, 2018

	Market value ($ millions)	Asset mix (% market value)
Short-term		
Money market	$ 934	1.8
Bonds (1–5 years)	255	0.5
	1,189	2.3
Mortgages	1,861	3.5
Bonds		
Corporate bonds	1,177	2.2
Universe	6,775	12.8
	7,952	15.0
Real return bonds	1,136	2.1
Private debt	659	1.2
Canadian equities		
Indexed	1,015	1.9
Actively managed	3,869	7.3
	4,884	9.2
Global equities		
US indexed	986	1.9
US actively managed	320	0.6
Global indexed	5,102	9.6
Global active	1,683	3.2
Thematic investments	427	0.8
Europe active	452	0.9
Indexed global ESG	668	1.3
Asian active	362	0.7
	10,000	19.0
Emerging markets	5,261	9.9
Real estate		
Domestic	6,426	12.1
Global	2,617	4.9
	9,043	17.1
Private equity	4,885	9.2
Infrastructure and renewable resources		
Infrastructure	4,872	9.2
Renewable resources	1,224	2.3
	6,096	11.5
Total investments	**$ 52,966**	**100.0**
2017 comparison	**$ 51,447**	

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

Read plan-related investment documents on the plan website at mpp.pensionsbc.ca. Click About us > Investments

Market value asset mix and rates of return (%)

as at December 31, 2018

	Approved range	Target asset mix market value	Actual asset mix market value	Rate of Performance	
				Return	Benchmark
Short-term	0–10	2.0	2.3	2.1	1.4
Mortgages	0–10	3.0	3.5	5.4	3.4
Bonds	5–30	16.0	17.1	1.0	1.0
Private debt[1]	0–10	1.0	1.2	4.5	(2.8)
Fixed income	15–50	22.0	24.1	1.8	1.2
Canadian equities	0–15	12.0	9.2	(8.8)	(8.9)
Global developed equities	10–35	21.0	19.0	0.1	(0.1)
Emerging markets	3–15	10.0	9.9	(8.8)	(6.9)
Equity	30–60	43.0	38.1	(4.5)	(4.5)
Real estate					
Domestic real estate			12.1	6.7	6.0
Global real estate			4.9	12.6	7.0
	10–25	16.0	17.1	8.4	6.0
Private equity	3–15	8.0	9.2	15.9	0.7
Infrastructure and renewable resources	5–16	11.0	11.5	8.8	7.0
Total portfolio		**100.0**	**100.0**	**2.1**	**0.2**
Annual rates					
2018				**2.1**	**0.2**
2017				11.0	9.9
2016				5.9	6.6
2015				8.7	7.0
2014				11.3	9.8
Five-year annualized rates					
2018				**7.8**	**6.6**
2017				10.4	9.2
Ten-year annualized rates					
2018				**8.8**	**7.7**
2017				7.1	6.6

1 Returns are from April 13, 2018 to December 31, 2018

Analysis—understanding the plan's investment portfolio

Recognizing the importance of taking a long-term investment perspective, the board approves the plan's strategic asset allocation policy. The plan's long-term asset mix policy reflects an increased focus on 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 appreciate, produce income and provide 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.

Find more information about BCI's investments at BCI.ca. Click on Investments.

Investment profiles

Lumin Forest Products

Lumin Forest Products LLC is a forestry business that owns and manages productive timberland and processing assets. With 130,000 gross hectares of pine and eucalyptus, Lumin is the fourth largest timberland owner in Uruguay. The company's integrated assets include the only large-scale plywood mill in the country, a seedling nursery and an 11 megawatt power facility that produces power for the mill. BCI participated in a consortium to acquire Lumin in September 2017. This investment is held within BCI's renewable resources program.

Cleco Corporation

Cleco Corporation is a utility holding company that owns Cleco Power LLC, a regulated electric utility company located in Louisiana. Cleco Power provides power generation, transmission, and distribution to approximately 287,000 customers in Louisiana, and supplies wholesale power in Louisiana and Mississippi. The company operates 10 generating units with a total nameplate capacity of about 3,340 megawatts, 1,300 miles of transmission lines, and 11,830 miles of distribution lines. BCI partnered with a consortium of North American investors to acquire Cleco Corporation in 2016. They hold three seats on their board.

Responsible investing

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

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

Collaborating with like-minded investors and organizations to enhance governance practices and standards is important to the board. The board and BCI are signatories to the Principles for Responsible Investment, an international network of investors, coordinated by the UN, that share the goal of incorporating ESG elements into the processes and activities of institutional investors. BCI and the board's approach to responsible investing is aligned with the 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.

BCI collaborates with several organizations, including the International Corporate Governance Network, CDP (formerly Carbon Disclosure Project) and Investor Network on Climate Risk.

In addition, the board supports BCI as 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 responsible investing activities on the BCI website at **BCI.ca**.

PRI | Principles for Responsible Investment

Karen Funk
Member, Municipal Pension Plan

Managing investment costs

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

Top 25 company holdings

Company	Total public equity exposure—worldwide Percentage of portfolio (%)	Percentage of public equity (%)	Total exposure ($ millions)
Chinese State–Controlled Companies[1]	0.9	2.3	$ 467
Royal Bank of Canada	0.6	1.7	341
The Toronto-Dominion Bank	0.6	1.7	334
Tencent Holdings Ltd.	0.5	1.1	232
Microsoft Corp.	0.4	1.0	203
Enbridge Inc.	0.4	1.0	196
Taiwan Semiconductor Manufacturing	0.3	0.9	182
Alphabet Inc.	0.3	0.9	179
Apple Inc.	0.3	0.9	177
Samsung Electronics Co. Ltd.	0.3	0.9	176
Alibaba Group Holding Ltd.	0.3	0.9	174
Suncor Energy Inc.	0.3	0.8	171
Brookfield Asset Management Inc.	0.3	0.8	167
Bank of Nova Scotia	0.3	0.8	159
Canadian National Railway Co.	0.3	0.8	154
Amazon.com Inc.	0.3	0.7	152
Canadian Natural Resources Ltd.	0.2	0.5	106
Alimentation Couche Tard Inc.	0.2	0.5	105
Canadian Pacific Railway Ltd.	0.2	0.5	104
CGI Group Inc.	0.2	0.5	99
Housing Development Finance Corp. Ltd.	0.2	0.5	96
Rogers Communications Inc.	0.2	0.5	96
Johnson & Johnson	0.2	0.5	95
Nutrien Ltd.	0.2	0.4	84
Exxon Mobil Corp.	0.2	0.4	80
Total top 25	**8.2**	**21.5**	**4,329**
Total public equity			**20,145**
Total portfolio			**$ 52,966**

1 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 State–Controlled Companies as one of the top exposures because the ultimate parent company for many companies in China is the Chinese government

Asset reallocation

In 2018, the board decided to reshape the plan's long-term policy asset mix to increase the likelihood of meeting key investment objectives. Decisions were driven through several types of analysis, including economic and climate change scenarios, and a review of the types of investment risk taken by the plan. As a result, the long-term policy asset mix underwent the following high-level changes intended to support the best financial interests and the overall investment risk profile of the plan:

A continued increase in real assets

- Tangible, physical investments in private markets, such as land, buildings, regulated utilities and renewable resources, are ideally suited for the long-term financial objectives of pension plans. These investments typically provide reliable cash flows that have the potential to appreciate in value and protect against inflation. BCI focuses on majority or co-controlling equity positions, allowing it to use an active governance approach.

A shift to more fixed income assets

- This shift involves lending money to governments and companies in return for interest payments. Similar to real assets, these investments typically provide stable and reliable cash flows, which are well suited for the plan's predictable benefit payments. Within fixed income assets, credit strategies such as corporate bonds and private debt were also approved. These strategies involve lending to companies and provide higher return potential than government bonds.

An overall decrease in equities

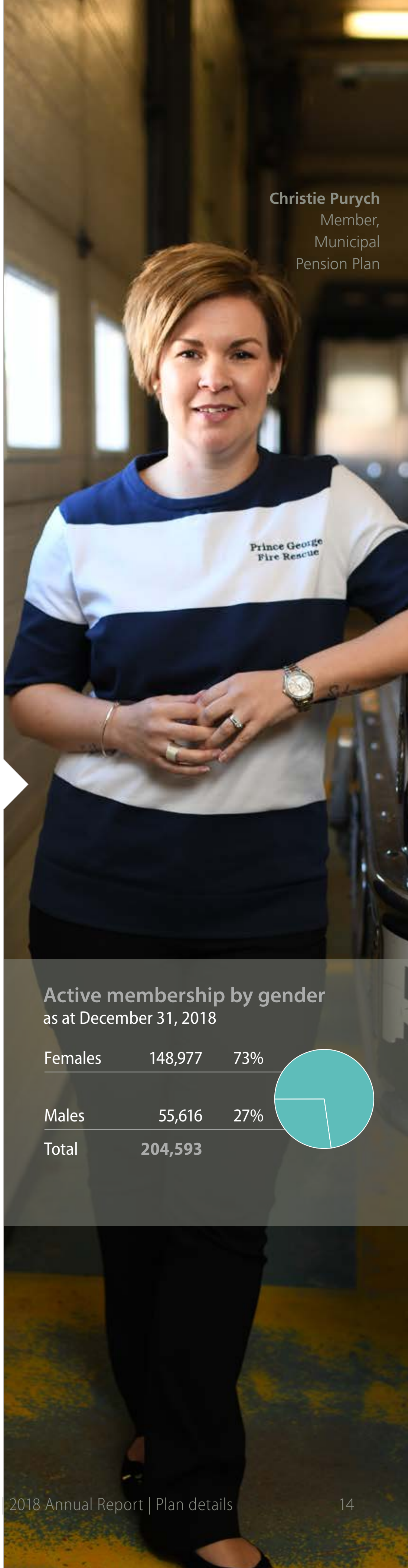
- Although equities have the potential for high growth, they are also expected to experience more variable returns. Decreasing investment in equities overall effectively reduces the plan's reliance on assets with higher volatility in favour of assets (such as real assets) that are expected to create value over the long term.

The board approved another change to the long-term policy asset mix in 2018: the use of leverage at the plan level. Using leverage is an investment strategy commonly employed by other large Canadian public sector pension plans. It allows the plan to take advantage of favourable borrowing costs and invest in assets that diversify the portfolio and provide downside protection.

Many of the plan's investments already include leverage within individual investments. For example, real estate assets like commercial buildings are typically purchased using leverage commonly referred to as a mortgage.

The board decided to reshape the plan's long-term policy asset mix to increase the likelihood of meeting key investment objectives

Plan details



Christie Purych
Member,
Municipal
Pension Plan

A look at our membership

The plan had 204,593 active members who worked for 933 employers as at December 31, 2018. The total membership was 348,690.

There are four types of members.

Active — Currently contributing, on a leave of absence or receiving benefits from an approved long-term disability plan. There were 204,593 active plan members, an increase of 3.7 per cent from 2017.

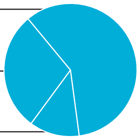
Inactive — Not currently contributing; has ended employment with a plan employer and left contributions in the plan. Inactive members may be eligible for a pension in the future, or may become eligible if they return to work for a plan employer, contribute to the plan and accrue additional service. There were 43,126 inactive plan members, a 6.7 per cent increase from 2017.

Retired — Currently receiving a pension, including a survivor or disability pension. There were 100,971 retired plan members, a 5.9 per cent increase from 2017.

Limited — A plan member's former spouse who has the right to a portion of the plan member's pension; applies to become a limited member after a separation or divorce. These members are included in the retired total if they are receiving a pension.

Membership profile
as at December 31, 2018

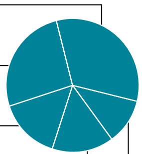
Active	204,593	59%
Retired	100,971	29%
Inactive[1]	43,126	12%
Total	**348,690**	



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

Active members, by age
as at December 31, 2018

<40 years	68,748	33%
40 < 50 years	54,205	26%
50 < 55 years	29,920	15%
55 < 60 years	29,910	15%
≥ 60 years	21,810	11%
Total	**204,593**	



Active membership by gender
as at December 31, 2018

Females	148,977	73%
Males	55,616	27%
Total	**204,593**	

Plan contributions

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

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

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

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

Explore the details of how pension contributions work and sign up for a member workshop on the plan website at mpp.pensionsbc.ca. Click on Your pension > Pension basics.

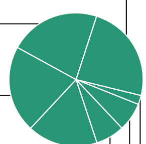
Michelle Cooper
Member,
Municipal
Pension Plan

A look at our employers

As at December 31, 2018, there were 933 Municipal Pension Plan employers.

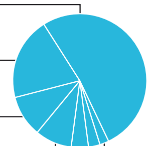
Employers
as at December 31, 2018

Health sector	224	24%
Community social services	205	22%
Municipal[1]	195	21%
Other	159	17%
Group 5[2]	69	7%
School districts	60	7%
Colleges	21	2%
Total	**933**	



Total regular employer contributions, by sector ($ millions)
for the year ended December 31, 2018

Health sector	$545	52%
Municipal[1]	$205	19%
Group 5[2]	$106	10%
School districts	$90	9%
Community social services	$45	4%
Other	$37	4%
Colleges	$24	2%



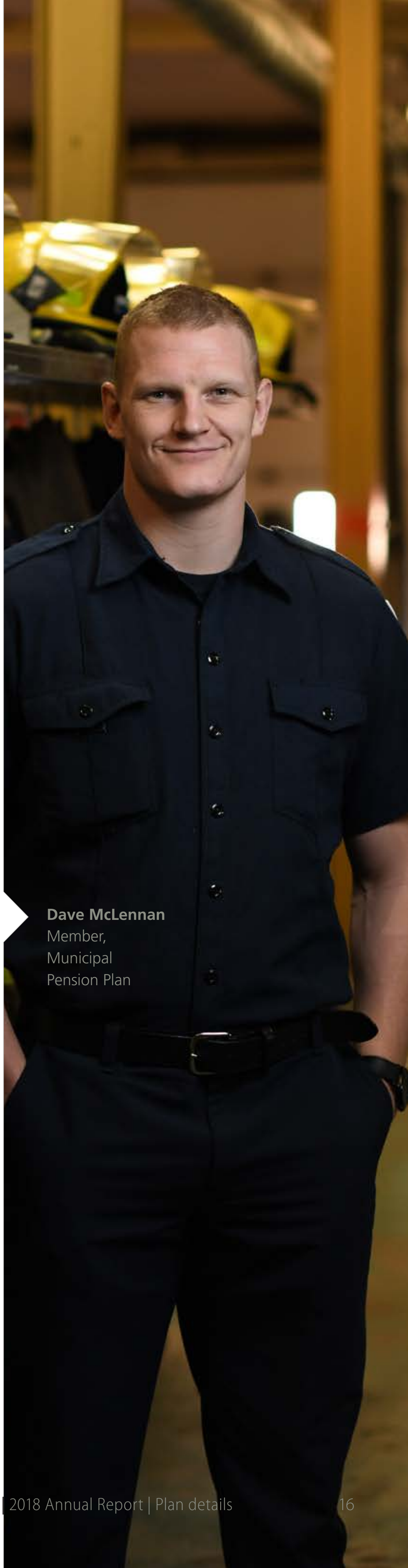
1 Cities, districts, towns, villages and regional districts
2 A member group established to provide an enhanced pension for members employed as police officers and firefighters

Contribution rates

Members (including police officers and firefighters who are not members of Group 5) contribute 8.5 per cent of salary up to and including the year's maximum pensionable earnings (YMPE), which was $55,900 in 2018. They contribute 10 per cent of salary above that amount. YMPE is set annually by the federal government and determines the maximum salary on which Canada Pension Plan contributions must be made.

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

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

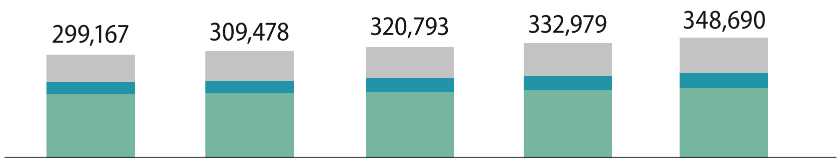


Dave McLennan
Member,
Municipal
Pension Plan

Member demographics

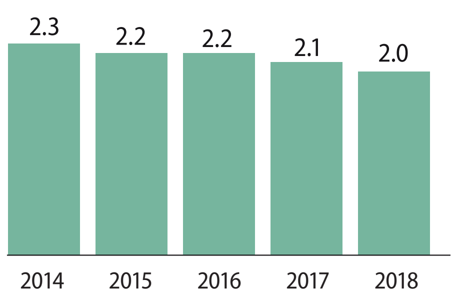
An aging membership and increased lifespans mean that the plan's retired member population is growing faster than its active member population. In other words, the plan's ratio of active to retired members is getting smaller. This affects the plan because the funding source for non-guaranteed group benefits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

Number of members
as at December 31



	2014	2015	2016	2017	2018
Active	184,943	188,651	192,791	197,279	204,593
Inactive	34,442	36,050	38,454	40,410	43,126
Retired	79,782	84,777	89,548	95,290	100,971

Ratio of active to retired members
as at December 31



Basic lifetime pension

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

Jean Cheng
Retired member,
Municipal
Pension Plan

Pensions in pay

As at December 31, 2018, the average annual pension in pay was $18,095, and the median annual pension in pay was $12,837.

Thinking about retirement? There's a planning guide on the plan website at mpp.pensionsbc.ca. Click on Your pension > Planning for retirement.

New pension profile

for the year ended December 31, 2018

Years of service	All new pensions by age of retirement					Average salary	Average annual pension[1]	Median annual pension[1]	Average present value of pensions	Total present value of all new pensions ($millions)
	< 55	55 < 60	60 < 65	≥ 65	Total					
< 10 years	30	588	763	636	2,017	$ 56,700	$ 6,300	$ 4,900	$ 92,000	$ 185.6
10 < 15	10	325	547	466	1,348	59,600	13,100	11,800	200,000	269.6
15 < 20	10	281	482	275	1,048	63,900	19,800	18,400	312,000	327.0
20 < 25	11	244	392	209	856	68,300	27,200	24,900	443,000	379.2
25 < 30	69	309	398	197	973	76,000	38,000	33,800	629,000	612.0
30 < 35	18	275	162	79	534	76,200	45,200	41,100	773,000	412.8
≥ 35 years	2	91	101	66	260	77,400	47,700	41,900	786,000	204.4
Total	**150**	**2,113**	**2,845**	**1,928**	**7,036**	**$ 64,600**	**$ 21,000**	**$ 15,600**	**$336,000**	**$ 2,390.6**

	Average years of service				
NRA[2] 60	26	27	27	28	27
NRA[2] 65	16	18	17	16	17
All	**20**	**18**	**17**	**16**	**17**
	Average age				
NRA 60					59
NRA 65					62
All					**62**

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

2 Normal retirement age

New pensions by type 2014 to 2018

for the year ended December 31

	Regular	Post-retirement limited member	Pre-retirement limited member	Disability	Survivor	Deferred	LTD[1] to pension	Total
2018	5,370	29	86	2	78	963	508	**7,036**
2017	5,555	31	111	5	117	854	508	**7,181**
2016	4,995	30	72	2	86	744	523	**6,452**
2015	4,891	23	92	4	98	663	422	**6,193**
2014	4,468	21	93	1	65	647	572	**5,867**

1 Long-term disability

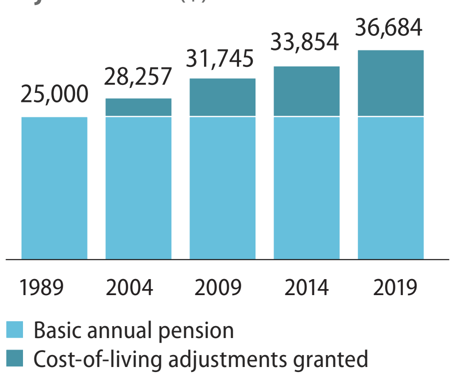
Cost-of-living adjustments

Each year, the board considers all relevant factors to determine if a cost-of-living adjustment will be granted. Effective January 1, 2018, retired members received a COLA of 1.6 per cent.

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

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

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



1 This is an illustration of the historical value of COLA

Health care coverage for retirees

Retired members and beneficiaries who receive a pension have access to subsidized Medical Services Plan premiums and group coverage for extended health care. Non-subsidized group dental plans are also available. These group benefit subsidies are not funded by member contributions and are not guaranteed.

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

Laurie Russell
Member,
Municipal
Pension Plan

Actuarial valuation results

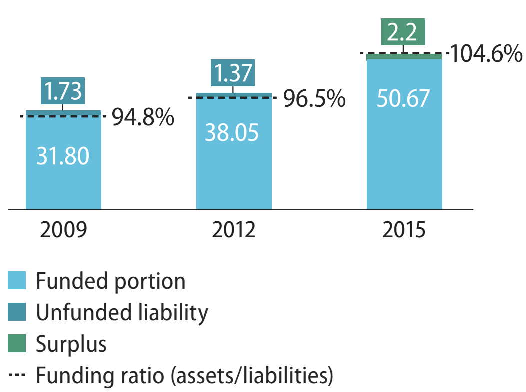
Under the rules of BC's Pension Benefits Standards Act (PBSA) and the JTA, the board must appoint an independent actuary to conduct a valuation of the plan's funded position every three years. The actuary examines the plan's finances, membership and relevant economic and demographic factors. Specifically,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

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

Completed in 2016, the 2015 valuation report determined the plan had a 104.6 per cent funding ratio and a surplus of $2.2 billion. The board decided member and employer contribution rates would not change because of this valuation and the 2017–2019 sustainable COLA funding limit (COLA cap) would be 2.1 per cent.

Based on this valuation, $1.9 billion of the plan's funding surplus was put in a rate stabilization account to help offset possible future contribution rate increases. The remaining surplus is needed to maintain the PBSA-required contribution rate. The results of the next valuation, as at December 31, 2018, will be announced in fall 2019.

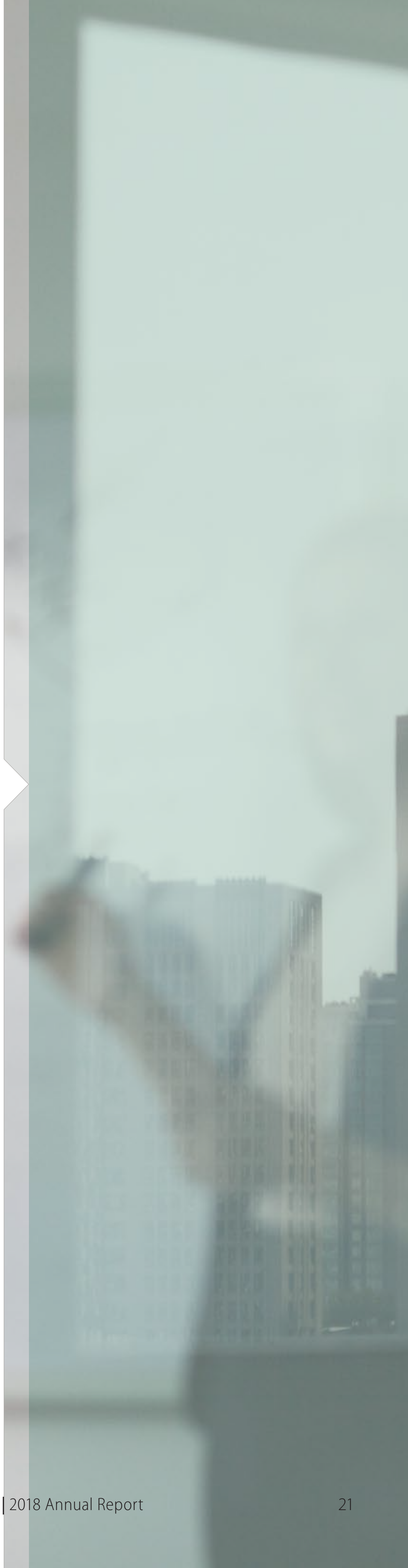
Actuarial valuation results[1] ($ billions)
as at December 31



1 Assuming the contribution rates in effect at the valaution date

Based on the 2015 valuation showing a plan surplus of $2.2 billion—$1.9 billion of this surplus was put in a rate stabilization account to help offset future contribution rate increases

Plan rules + policy changes



Effective May 2018

Plan rule amendment no. 46 includes the two new leaves of absence added to the *Employment Standards Act* on May 17, 2018.

Effective November 2018

Plan rule amendment no. 45, an administrative amendment, ensures terminology used in the plan rules matches the terminology established in the *Pension Benefits Standards Act.*

Effective January 2019

Plan rule amendment no. 44 implements phase three of employer contribution rate simplification, reduces member and employer contributions to the basic account by a certain percentage and increases contributions to the inflation adjustment account by the same percentage.

Governance

Who we are

Your 2018 trustees

Board membership includes trustees who served during 2018; committee appointments are as at December 31, 2018.

For an up-to-date list of 2019 trustees, visit the plan website at mpp.pensionsbc.ca.

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

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

Wayne Baldwin
Appointed by: Union of British Columbia Municipalities
Committee: Valuation
Board term: 2016–current

Donisa Bernardo
Appointed by: Municipal Employees' Pension Committee
Committee(s): Appeals panel, benefits (chair), governance
Board term: 2001–current

Dennis Blatchford
Appointed by: Health Sciences Association of British Columbia
Committee(s): Benefits
Additional board appointment(s): BCI Board of Directors
Board term: 2001–current

Lucas Corwin
Appointed by: Government of British Columbia
Committee(s): Investment
Board term: 2008–current

Debra Ducharme
Appointed by: British Columbia Nurses' Union
Committee(s): Benefits, communications and advocacy
Board term: 2010–current

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

Trustees

Lyn Kocher
Appointed by: Health Employers Association of British Columbia
Committee(s): Benefits, governance (alternate chair), valuation
Board term: 2001–current

Diana Lokken
Appointed by: Government of British Columbia and Union of British Columbia Municipalities
Committee(s): Communications and advocacy, investment
Board term: 2013–current

Donna Lommer
Appointed by: Health Employers Association of British Columbia, formerly Government of British Columbia and Union of British Columbia Municipalities
Committee(s): Benefits
Board term: 2017–current

Bonnie Pearson
Appointed by: Municipal Employees' Pension Committee
Committee(s): Valuation
Board term: 2016–current

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

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

Brian Schramm
Appointed by: Council of Joint Organizations and Unions
Committee(s): Benefits, governance, investment (chair)
Board term: 2014–current

Angie Sorrell
Appointed by: Government of British Columbia
Committee(s): Appeals panel, governance (chair), interplan trustee education
Board term: 2008–current

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

Alternate trustees

Alternate trustees

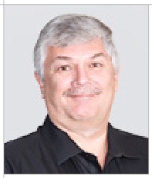
Gary MacIsaac
Appointed by: Union of British Columbia Municipalities
Committee(s): Benefits
Board term: 2014–current

Brian Northam
Appointed by: Council of Joint Organizations and Unions
Committee(s): Investment, valuation
Board term: 2001–current

Mary Procter
Appointed by: Government of British Columbia and Union of British Columbia Municipalities, formerly Health Employers Association of British Columbia
Committee(s): Valuation
Additional board appointment(s): BC Pension Corporation Board of Directors
Board term: 2009–current

Josef Rieder
Appointed by: Health Sciences Association of British Columbia
Committee(s): Communications and advocacy
Board term: 2016–current

Tom Stamatakis
Appointed by: British Columbia Professional Fire Fighters Association and British Columbia Police Association
Committee(s): Governance
Board term: 2018–current



Don Sutton
Appointed by: Municipal Employees' Pension Committee
Committee(s):
Board term: 2018–current

Richard Taylor
Appointed by: Union of British Columbia Municipalities
Committee(s): Investment
Board term: 2001–current

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

Hilary Woodward
Appointed by: Government of British Columbia
Committee(s): Benefits (alternate chair), communications and advocacy, interplan audit (chair)
Board term: 2002–2004, 2011–2018

Trustee remuneration

For the year ended December 31, 2018

Trustee name[1]	Meetings Attended/ Scheduled[2]	Meetings Additional Attended	Total renumeration paid[3]	Renumeration by payee	Renumeration payee
Brown, Hilary–Chair[4]	14/14	10	$ 29,209.50	$ 29,209.50	BC Public School Employers' Association
Yee, Gary–Vice Chair[4]	14/14	11	35,846.25	35,846.25	CUPE BC Regional Office
Amos, Ron	11/14		8,331.00	2,535.00	Ron Amos
				5,796.00	School District #69 - Qualicum
Baldwin, Wayne	7/8		9,448.89	9,448.89	Wayne Baldwin
Bernardo, Donisa	7/13	1	7,688.34	7,688.34	Hospital Employees' Union
Blatchford, Dennis	7/9		5,172.75	1,361.25	Dennis Blatchford
				3,811.50	Health Sciences Association of BC
Burkart, Lorne	5/5		8,490.57	8,490.57	BC Nurses Union
Calvin, Jim	3/7		4,719.00	4,719.00	Hospital Employees' Union
Collins, Tony	5/6		2,541.00	1,089.00	Tony Collins
				1,452.00	Health Employers Association of BC
Corwin, Lucas	9/10		4,168.50	4,168.50	Ministry of Finance
Davies, Trevor	9/11		5,808.00	1,815.00	Trevor Davies
				3,993.00	CUPE BC Division
Ducharme, Debra	12/12	1	16,788.75	16,788.75	BC Nurses' Union
Finding, Chris	14/14	1	16,135.50	7,078.50	Chris Finding
				9,057.00	Hospital Employees' Union
Johnston, John	10/11		16,879.50	16,879.50	John Johnston
Kocher, Lyn	10/13		3,267.00	3,267.00	Health Employers Association of BC
Lokken, Diana	13/13		15,092.01	15,092.01	Diana Lokken
Lommer, Donna	7/9		9,891.75	1,815.00	Donna Lommer
				8,076.75	Interior Health Authority
MacIsaac, Gary	7/9		7,260.00	7,260.00	Union of BC Municipalities
Northam, Brian	11/13		14,949.75	14,949.75	Brian Northam
Pearson, Bonnie	8/8		8,091.27	8,091.27	Bonnie Pearson
Price, Patti	12/12		10,345.50	3,993.00	Patti Price
				6,352.50	CUPE BC Division
Procter, Mary	7/8		4,719.00	4,719.00	First Nations Health Authority
Richmond, Al	8/8		13,056.00	13,056.00	Al Richmond
Rieder, Josef	9/9		4,991.25	4,991.25	Health Sciences Association of BC
Schramm, Brian	17/17	1	19,764.00	19,764.00	BCGEU
Sorrell, Angie	12/16	1	8,334.00	8,334.00	Public Sector Employers' Council Secretariat
Stamatakis, Tom	3/5		4,356.00	4,356.00	Vancouver Police Union
Sutton, Don	5/5		7,260.00	7,260.00	Don Sutton
Taylor, Richard	9/10		7,881.75	7,881.75	Richard Taylor
Twyford, Philip	13/17	1	5,626.50	5,626.50	Minister of Finance
Weeks, Robert	8/11		8,040.45	2,236.08	Rob Weeks
				5,804.37	BC Professional Fire Fighters' Association
Woodward, Hilary	10/15	1	6,534.00	6,534.00	Legislative Assembly of British Columbia
Total renumeration paid[2]			**$ 330,687.78**		
Average meeting attendance	**85%**				

1 Additional information on trustees is available on pages 24–27

2 Comparison of the number of meetings attended vs. the number of meetings scheduled. The number of meetings scheduled varies by trustee

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

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

Agents and service providers

Aon Hewitt

Aon Hewitt is the board's independent investment advisor.

British Columbia Investment Management Corporation

A leading provider of investment management services to BC's public sector, BCI manages $145.6 billion in assets, generating the investment returns that help its institutional clients build a financially secure future. With its global outlook, BCI seeks investment opportunities that convert savings into productive capital that will meet clients' risk and return requirements over time. It offers investment options across a range of asset classes: fixed income, mortgages, public and private equity, real estate, and infrastructure and renewable resources.

Learn more about BCI's investing management services at BCI.ca.

British Columbia Pension Corporation

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

Eckler Ltd.

Serving as the plan's independent actuary, Eckler Ltd. 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 presented to the board in fall 2019.

Hatch Law

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

KPMG LLP

KPMG provides external audit services for the plan.

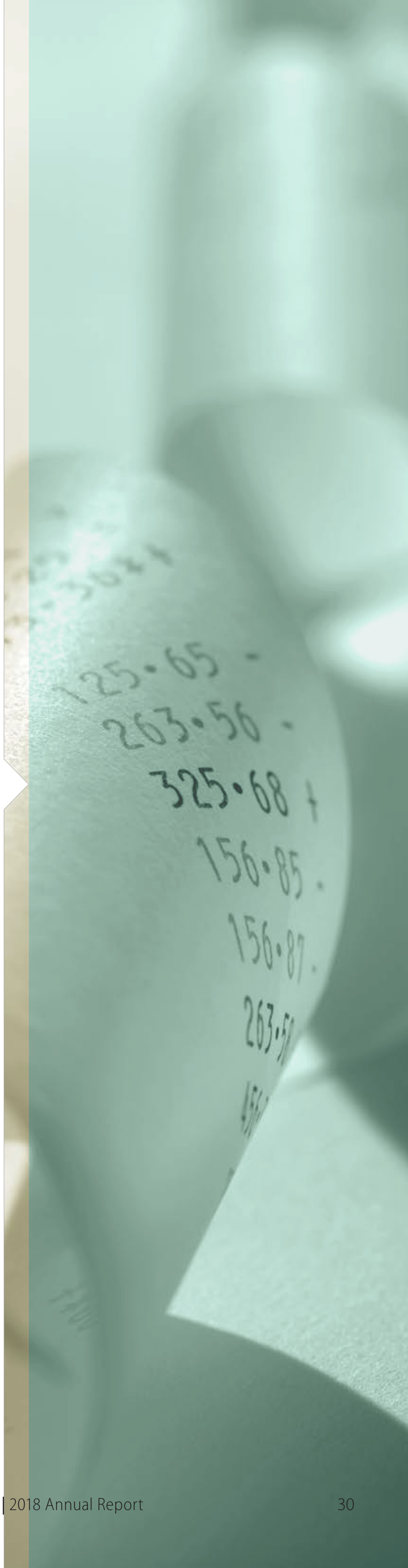
Pacific Blue Cross

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

ZLC and Cubic Health

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

Financial statements



BC PENSION CORPORATION

June 25, 2019

Re: Municipal Pension Plan
Administrative Agent's Responsibility for Financial Reporting

The financial statements of the Municipal Pension Plan (Plan) were prepared by the British Columbia Pension Corporation (Pension Corporation), the administrative agent for the Municipal Pension Board of Trustees (Board), in accordance with Canadian accounting standards for pension plans. The Board is responsible for approving the financial statements of the Plan. The Board is assisted by the Interplan Audit Committee (Committee) which is made up of representatives from the Board, the Teachers' Pension Board of Trustees, Public Service Pension Board of Trustees, and College Pension Board of Trustees. As part of their responsibility, the committee reviews the financial statements, and performs such steps and procedures 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 transactions are properly authorized, reliable financial records are maintained, and assets are adequately safeguarded ensuring the fair presentation of the financial statements. Pension Corporation has assessed that the Plan will continue as a going concern, and ensured that other financial information contained in the *Municipal Pension Plan Annual Report* is consistent with these financial statements.

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

Trevor Fedyna, CPA, CGA, C. Dir.	**Kevin Craig, CPA, CA**
Vice President, Corporate Services and Chief Financial Officer British Columbia Pension Corporation	Director, Financial Services British Columbia Pension Corporation

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

KPMG

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

INDEPENDENT AUDITORS' REPORT

To the Members of Municipal Pension Plan

Opinion

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

- the statement of financial position as at December 31, 2018
- the statement of changes in net assets available for benefits for the year then ended
- the statement of changes in accrued pension benefits for the year then ended
- and notes to the financial statements, including a summary of significant accounting policies and other explanatory information.

(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, 2018, and the changes in its net assets available for benefits and the changes in its accrued pension benefits 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.

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 25, 2019

MUNICIPAL PENSION PLAN
STATEMENT OF FINANCIAL POSITION
($ millions)

As at December 31	Note	2018	2017
Assets			
Investments	3a	$ 52,966	$ 51,447
Directly held derivatives	3b	10	98
Receivables			
Due from sale of investments		636	4
Members' contributions		38	37
Employers' contributions		42	41
		716	82
Prepaid expenses		1	-
Total assets		53,693	51,627
Liabilities			
Payable for purchase of investments		697	40
Directly held derivatives	3b	190	17
Accounts payable and accrued expenses		22	20
Taxes payable		-	1
Total liabilities		909	78
Net assets available for benefits		**$ 52,784**	**$ 51,549**
Accrued pension obligations			
Accrued basic pension obligations	4a	$ 39,875	$ 37,476
Non-gauranteed pension obligations	4b	8,297	7,990
Retirement annuity account	4c	411	414
Accrued pension obligations		48,583	45,880
Surplus			
Funding surplus	5a	2,026	1,132
Measurement differences between funding and accounting positions	5a	2,175	4,537
Surplus		4,201	5,669
Accrued pension obligations and surplus		**$ 52,784**	**$ 51,549**

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

Commitments (note 14)

Approved by the Municipal Pension Board of Trustees:

Diana Lokken, CPA, CMA, Trustee
Municipal Pension Board of Trustees

Philip Twyford, Trustee
Municipal Pension Board of Trustees

MUNICIPAL PENSION PLAN
STATEMENT OF CHANGES IN NET ASSETS AVAILABLE FOR BENEFITS
($ millions)

For the year ended December 31	Note	Basic account	Inflation adjustment account	Retirement annuity account	Supplemental benefits account	Totals 2018	Totals 2017
Increase in assets							
Investment income	8	$ 994	$ 180	$ 36	$ -	$ 1,210	$ 5,205
Contributions							
Members	9	853	112	1	5	971	923
Employers	9	975	84	2	56	1,117	1,067
		1,828	196	3	61	2,088	1,990
Transfers from other plans		85	12	-	-	97	11
Total increase in assets		2,907	388	39	61	3,395	7,206
Decrease in assets							
Benefits	10	1,827	75	16	10	1,928	1,808
Transfers to other plans		7	4	-	-	11	15
Retired member group benefits	11	-	-	-	51	51	69
Investment and administration costs	12	151	19	-	-	170	127
Total decrease in assets		1,985	98	16	61	2,160	2,019
Increase in net assets before transfers		922	290	23	-	1,235	5,187
Account transfers	13	9	17	(26)	-	-	-
Increase (decrease) in net assets		**931**	**307**	**(3)**	**-**	**1,235**	**5,187**
Net assets available for benefits beginning of year		43,145	7,990	414	-	51,549	46,362
Net assets available for benefits end of year		**$ 44,076**	**$ 8,297**	**$ 411**	**$ -**	**$ 52,784**	**$ 51,549**

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

Municipal Pension Plan

MUNICIPAL PENSION PLAN

STATEMENT OF CHANGES IN ACCRUED PENSION OBLIGATIONS

($ millions)

For the year ended December 31	Note	**2018**	**2017**
Increase in accrued pension obligations			
Interest on accrued pension obligations		$ 2,352	$ 2,212
Benefits accrued		1,676	1,521
Account transfers		287	231
Increase in accrued pension obligations		4,315	3,964
Decrease in accrued pension obligations			
Benefits paid		1,916	1,803
Decrease in accrued pension obligations		1,916	1,803
Net increase in accrued pension obligations		**2,399**	**2,161**
Accrued basic pension obligations, beginning of year		37,476	35,315
Accrued basic pension obligations, end of year	4a	39,875	37,476
Non-guaranteed pension obligations			
Increase in non-guaranteed pension obligations	4b	307	1,388
Non-guaranteed pension obligations, beginning of year		7,990	6,602
Non-guaranteed pension obligations, end of year	4b	8,297	7,990
Retirement annuity account			
Decrease in retirement annuity account	4c	(3)	(9)
Retirement annuity account, beginning of year		414	423
Retirement annuity account, end of year	4c	411	414
Total accrued pension obligations		**$ 48,583**	**$ 45,880**

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

$ millions except as otherwise noted

1. DESCRIPTION OF THE MUNICIPAL PENSION PLAN

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

a) General

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

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

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

b) Roles and responsibilities

<u>Partners</u>

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

<u>Board</u>

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

<u>British Columbia Pension Corporation (Pension Corporation)</u>

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.

<u>British Columbia Investment Management Corporation (BCI)</u>

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.

$ millions except as otherwise noted

1. DESCRIPTION OF THE MUNICIPAL PENSION PLAN (continued)

c) Funding

Contributions and investment earnings fund plan benefits. Contributions are made by active members and employers of the Plan. The determination of the value of the benefits and required contributions is based on periodic 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

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

Basic Account

Members contributed to the Basic Account 7.50% (6.97% effective January 1, 2019) of salaries up to and including the Canada Pension Plan Year's Maximum Pensionable Earnings (YMPE) (2018: $55,900; 2017: $55,300) and 9.00% (8.47% effective January 1, 2019) of salaries over YMPE, less amounts allocated to the Supplemental Benefits Account.

The limited group of members contributed to the Basic Account 9.02% (8.49% effective January 1, 2019) of salaries up to and including the Canada Pension Plan YMPE and 10.52% (9.99% effective January 1, 2019) of salaries over YMPE, less amounts allocated to the Supplemental Benefits Account.

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

Inflation Adjustment Account and Supplemental Benefits Account

Members contributed 1% (1.53% effective January 1, 2019) (1.42% for limited group; 1.95% effective January 1, 2019) of salaries to the Inflation Adjustment Account (IAA). Employers contributed 1% (1.53% effective January 1, 2019) (1.42% for limited group; 1.95% effective January 1, 2019) of salaries to the IAA, less amounts allocated to the Supplemental Benefits Account.

Retirement Annuity Account

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

$ millions except as otherwise noted

1. DESCRIPTION OF THE MUNICIPAL PENSION PLAN (continued)

e) Pension benefits

All members are eligible for a pension benefit.

Members are eligible for unreduced pension benefits

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

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

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

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

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

f) Termination and portability benefits

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

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

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

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

$ millions except as otherwise noted

1. DESCRIPTION OF THE MUNICIPAL PENSION PLAN (continued)

g) Other benefits

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

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

Supplemental benefits are funded from the Supplemental Benefits Account.

h) Tax registration

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

2. SIGNIFICANT ACCOUNTING POLICIES

a) Basis of presentation

These financial statements are prepared on the going-concern basis in accordance with Canadian generally accepted accounting principles (GAAP) 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).

$ millions except as otherwise noted

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

c) Accrued pension obligations

Accrued pension obligations are determined based on an actuarial valuation prepared by an independent actuarial consulting firm. 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 Board's estimate of various economic and non-economic 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.

f) Use of estimates

The preparation of financial statements, in conformity with Canadian GAAP 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.

$ millions except as otherwise noted

3. INVESTMENTS

a) Investments

Fair value of investment holdings	2018			2017		
	Basic account	Inflation adjustment account	Total	Basic account	Inflation adjustment account	Total
Short-term	$ 1,003	$ 186	$ 1,189	$ 1,947	$ 356	$ 2,303
Bonds	8,221	1,526	9,747	7,056	1,288	8,344
Canadian equities	4,120	765	4,885	6,011	1,098	7,109
U.S. equities	1,101	204	1,305	2,629	480	3,109
International equities	11,770	2,185	13,955	10,884	1,987	12,871
Mortgages	1,570	291	1,861	1,083	197	1,280
Real estate	7,627	1,416	9,043	6,427	1,174	7,601
Private equity	4,120	765	4,885	2,934	536	3,470
IRR*	5,141	955	6,096	4,533	827	5,360
	$ 44,673	**$ 8,293**	**$ 52,966**	**$ 43,504**	**$ 7,943**	**$ 51,447**

* 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.

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.

$ millions except as otherwise noted

3. INVESTMENTS (continued)

a) Investments (continued)

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 equity investments are based on the annual valuations and adjusted for subsequent cash flows and changes in foreign exchange rates for investments outside Canada.

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, and adjusted quarterly for subsequent cash flows and changes in foreign exchange rates for investments outside Canada.

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	**2018**		**2017**	
	Positive fair value	**Negative fair value**	**Positive fair value**	**Negative fair value**
Directly held				
Foreign currency forwards	$ 10	$ (190)	$ 98	$ (17)
	$ 10	**$ (190)**	**$ 98**	**$ (17)**
Indirectly held in pooled investment portfolios				
Foreign currency forwards	$ -	$ (32)	$ 8	$ (1)
Options	-	-	-	-
Futures	3	-	2	-
Interest rate swaps	-	(13)	-	-
Total return swaps	95	(139)	34	(11)
	$ 98	**$ (184)**	**$ 44**	**$ (12)**
Total derivatives	**$ 108**	**$ (374)**	**$ 142**	**$ (29)**
Derivatives by investment asset classification				
Bonds	$ 3	$ (44)	$ 13	$ (2)
Canadian equities	4	(11)	12	(2)
U.S. equities	5	(2)	1	-
International equities	86	(139)	24	(9)
Mortgages	-	(18)	3	-
Real estate	-	(76)	32	(3)
IRR*	10	(84)	57	(13)
Total derivatives	**$ 108**	**$ (374)**	**$ 142**	**$ (29)**

*Infrastructure and renewable resources

$ millions except as otherwise noted

3. INVESTMENTS (continued)

b) Derivatives (continued)

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.

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

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

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

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

$ millions except as otherwise noted

3. INVESTMENTS (continued)

b) Derivatives (continued)

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.

Notional value of derivatives			**2018**	**2017**
Term to maturity	**Within 1 year**	**1 to 5 years**	**Total**	**Total**
Derivatives by type of contract				
Foreign currency forwards	$ 7,055	$ -	$ 7,055	$ 4,202
Options	104	-	104	-
Futures	11	-	11	134
Interest rate swaps	766	1,409	2,175	24
Total return swaps	6,350	-	6,350	2,094
	$ 14,286	**$ 1,409**	**$ 15,695**	**$ 6,454**
Derivatives by investment asset classification				
Bonds	$ 1,670	$ -	$ 1,670	$ 666
Canadian equities	409	85	494	709
U.S. equities	286	69	355	19
International equities	6,484	1,255	7,739	1,418
Mortgages	515	-	515	132
Real estate	2,300	-	2,300	1,576
Private equity	1	-	1	3
IRR*	2,621	-	2,621	1,931
	$ 14,286	**$ 1,409**	**$ 15,695**	**$ 6,454**

* 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 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.

$ millions except as otherwise noted

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

a) Basic Account (continued)

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

Between valuations, an estimate of the actuarial position is required. This estimate, an extrapolation, has been made to December 31, 2018, using the following long-term actuarial assumptions:

- Annual investment return 6.25%
- Annual salary escalation rate 3.50%

The extrapolation calculated the liability for accrued basic pension obligations to be $39,875 (2017: $37,476).

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

The next full actuarial valuation will be carried out as at December 31, 2018, and the results will be included in the December 31, 2019, financial statements.

Actuarial liabilities are also affected by changes in the assumed investment return. Based on the actuarial valuation completed as at December 31, 2015, a reduction in the investment return assumption from 6.25% to 6.00% would have increased the December 31, 2018, liability for accrued basic obligations of $39,875 by $1,251 or 3.14%. 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 $8,297 (2017: $7,990). The net increase of $307 (2017: $1,388) in the IAA balance consists of employee and employer contributions, investment income and net transfers reduced by payments out of the account (see note 13 for details on amounts transferred).

c) Retirement Annuity Account (RAA)

The RAA is comprised of additional contributions by employers and members under special agreements. If a member is entitled to, and chooses to, purchase additional pension benefits at retirement, monies are transferred from the RAA to the Basic Account and the IAA to fund the additional benefits. No unfunded liability exists as the obligation to purchase a pension is limited to the amount of the available assets in the account. The pension benefit for the RAA is therefore equal to the net assets available in the RAA, $411 (2017: $414).

The net asset decrease of $3 (2017: $9 decrease) in the RAA balance consisted of payments out of the account reduced by employee and employer contributions and earnings on investments.

$ millions except as otherwise noted

5. ACTUARIAL VALUATION OF THE BASIC ACCOUNT FOR FUNDING PURPOSES

a) Basic Account

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

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

The Basic Account is also the account from which any cost-of-living adjustments that have been 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.

<u>Actuarial valuation</u>

The latest full actuarial valuation for funding purposes was prepared as at December 31, 2015, by the independent actuary based on the entry-age method; the valuation indicated an actuarial surplus of $2,224. As a result of the 2015 actuarial valuation surplus in the Basic Account and pursuant to the trustee agreement, $1,927 was transferred to the rate stabilization account and $297 of the surplus was needed to ensure the required contribution rates remained unchanged. Interest is added to the rate stabilization account at the smoothed investment return rate, subject to a maximum rate stabilization account balance of $2,500.

An estimate of the actuarial position of the Plan for funding purposes has been made to December 31, 2018, using the following long-term actuarial assumptions:

- Annual investment return 6.25%
- Annual salary escalation rate 3.50%

$ millions except as otherwise noted

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

a) Basic Account (continued)

Actuarial valuation (continued)

This estimate, called an extrapolation, produced an estimated funding surplus of $2,026 as at December 31, 2018 (2017: $1,132), as follows:

Funding extrapolation	**2018**	**2017**
Net assets available for basic pension benefits	$ 44,076	$ 43,145
Actuarial asset value adjustment	(511)	(2,809)
Smoothed assets for basic pension benefits	43,565	40,336
Rate stabilization account	(2,485)	(2,302)
Smoothed assets excluding rate stabilization account	41,080	38,034
Present value of future contributions (entry-age method)	14,996	13,979
Present value of future amortization	2,060	2,320
Net actuarial assets for basic pension benefits	58,136	54,333
Actuarial liability for accrued and future basic pension benefits	(56,110)	(53,201)
Entry-age method actuarial surplus	**$ 2,026**	**$ 1,132**

Changes in the extrapolated entry-age method funded status	**2018**	**2017**
Extrapolated entry-age method actuarial surplus, beginning of year	$ 1,132	$ 315
Extrapolated change in actuarial liability for accrued and future basic pension benefits	(2,909)	(2,679)
Extrapolated change in actuarial assets for basic pension benefits	3,803	3,496
Extrapolated entry-age method actuarial surplus, end of year	**$ 2,026**	**$ 1,132**

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.

$ millions except as otherwise noted

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

a) Basic Account (continued)

Measurement differences between funding and accounting positions

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

Measurement difference between funding and accounting position	2018	2017
Entry-age method funding surplus	$ 2,026	$ 1,132
Actuarial asset value adjustment	511	2,809
Rate stabilization account adjustment	2,485	2,302
Difference in actuarial methods–present value of future contributions	(14,996)	(13,979)
Difference in actuarial methods–present value of future amortization	(2,060)	(2,320)
Difference in actuarial methods–present value of future liabilities	16,235	15,725
Measurement differences between funding and accounting positions	2,175	4,537
Surplus for financial statement purposes	**$ 4,201**	**$ 5,669**

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 that the value of the assets be smoothed within a certain corridor. In the 2015 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, 2018, was 98.8% of the market value of the assets (2017: 93.5%).

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	2018	2017
2018	$ -	$ 1,125
2019	451	745
2020	208	501
2021	144	438
2022	(292)	-
Total adjustment	**$ 511**	**$ 2,809**

$ millions except as otherwise noted

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

a) Basic Account (continued)

Rate stabilization account adjustment

As a result of the December 31, 2015 actuarial funding valuation, $1.9 billion of assets was transferred to the RSA that is held notionally within the Basic Account. Interest on the RSA is determined by applying the smoothed rate of return to the fiscal year-end balance. For 2018, $183 (2017: $215) of interest was transferred from the Basic Account to the RSA based on the 2018 smoothed rate of return of 7.94% (2017: 10.29%). Interest is added to the rate stabilization account subject to a maximum rate stabilization account balance of $2,500.

Rate stabilization account	**2018**	**2017**
Opening balance	$ 2,302	$ 2,087
Plus: interest	183	215
Ending balance	**$ 2,485**	**$ 2,302**

Difference in actuarial methods

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

Transitional period

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

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

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

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

$ millions except as otherwise noted

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

b) Inflation Adjustment Account (IAA)

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

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

The Board established a cap for cost-of-living adjustments for retired members on January 1, 2014. As a result of the 2015 actuarial valuation, the cap effective January 1, 2017 until January 1, 2019, has been set at 2.10%. The cap for sustainable cost-of-living adjustments will be reviewed following each subsequent triennial actuarial valuation.

c) Retirement Annuity Account (RAA)

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

6. FINANCIAL RISK MANAGMENT

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

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

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

$ millions except as otherwise noted

6. FINANCIAL RISK MANAGEMENT (continued)

a) Liquidity risk

Liquidity risk is the risk of not being able to meet the Plan's cash requirements in a timely and cost-effective manner. Expenditures relate primarily to pensions, termination and refund benefits, and investment and administration costs. The Plan's approach to mitigating liquidity risk is to forecast its cash requirements over the near and long term to determine whether sufficient funds are available. The Plan's primary source of liquidity is income generated from the Plan's investments, and employer and employee contributions. Investments are primarily held in pooled funds, and the securities held are traded in active markets and can be readily sold, and where the pooled fund units can thereby be redeemed to fund cash requirements. Accounts payable and taxes payable of $22 (2017: $21) and payable for purchase of investments of $697 (2017: $40) are generally due within one month. Derivatives payable of $190 (2017: $17) 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	**2018**	**%**	**2017**	**%**
Pooled investment fund units	$ 52,115	98.4	$ 50,717	98.6
Directly held equity	726	1.4	599	1.2
Directly held debt	125	0.2	131	0.2
Investments	**$ 52,966**	**100.0**	**$ 51,447**	**100.0**

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

<u>Currency risk</u>

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

	2018	**%**	**2017**	**%**
United States	$ 887	1.7	$ 532	1.0
Australia	125	0.2	131	0.2
	$ 1,012	**1.9**	**$ 663**	**1.2**

As at December 31, 2018, if the Canadian dollar had strengthened/weakened by 10% in relation to all foreign currencies, with all other factors remaining constant, net assets available for benefits would have decreased or increased by approximately $101 (2017: $66).

$ millions except as otherwise noted

6. FINANCIAL RISK MANAGEMENT (continued)

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

Interest rate risk

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

Other price risk

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

As at December 31, 2018, if the pooled investment fund unit and directly held equity prices increased or decreased by 10%, with all other factors remaining constant, net assets available for benefits would have increased or decreased by approximately $5,284 (2017: $5,132).

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 $80 (2017: $78), for the derivatives $10 (2017: $98) and for the due from sale of investments of $636 (2017: $4).

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.

$ millions except as otherwise noted

6. FINANCIAL RISK MANAGEMENT (continued)

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

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 and future foreign currency contracts.

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

Fair value of foreign denominated investment holdings

(Cdn dollar equivalent)	Total exposure	Economic hedging	Net exposure	% of total
		2018		
United States	$ 13,338	$ 5,469	$ 7,869	49%
Asia-Pacific, excluding Japan	3,847	635	3,212	20%
Euro countries	2,504	395	2,109	13%
Other	1,632	-	1,632	10%
Japan	713	18	695	4%
Other Europe	605	-	605	4%
United Kingdom	571	538	33	0%
	$ 23,210	**$ 7,055**	**$ 16,155**	**100%**
		2017		
United States	$ 12,968	$ 3,003	$ 9,965	55%
Asia-Pacific, excluding Japan	3,751	425	3,326	18%
Euro countries	2,209	383	1,826	10%
Other	1,650	-	1,650	10%
Japan	630	77	553	3%
Other Europe	527	4	523	3%
United Kingdom	524	310	214	1%
	$ 22,259	**$ 4,202**	**$ 18,057**	**100%**

The net foreign currency exposure of its underlying investments represents 31% (2017: 35%) of the Plan's total investments.

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.

$ millions except as otherwise noted

6. FINANCIAL RISK MANAGMENT (continued)

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

Interest rate risk (continued)

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
			2018			
Short-term	$ 944	$ 245	$ -	$ -	$ 1,189	2.24%
Bonds	359	3,062	2,828	2,362	8,611	2.94%
Real return bonds*	147	8	24	957	1,136	0.99%
Mortgages	669	948	244	-	1,861	3.16%
Debt	-	-	125	-	125	6.40%
	$ 2,119	**$ 4,263**	**$ 3,221**	**$ 3,319**	**$ 12,922**	
			2017			
Short-term	$ 1,997	$ 306	$ -	$ -	$ 2,303	1.39%
Bonds	117	3,113	1,616	2,167	7,013	2.55%
Real return bonds*	9	168	102	1,052	1,331	0.60%
Mortgages	275	987	18	-	1,280	3.16%
Debt	-	-	131	-	131	6.43%
	$ 2,398	**$ 4,574**	**$ 1,867**	**$ 3,219**	**$ 12,058**	

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

As at December 31, 2018, 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 $805 (2017: $762).

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.

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.

$ millions except as otherwise noted

6. FINANCIAL RISK MANAGMENT (continued)

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

Credit risk (continued)

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	2018		2017	
AAA/AA	$ 5,768	45%	$ 6,446	54%
A	2,756	21%	3,289	27%
BBB	1,125	9%	644	5%
Non-investment grade	937	7%	222	2%
	10,586	82%	10,601	88%
Unrated	2,336	18%	1,457	12%
	12,922	**100%**	**$ 12,058**	**100%**

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

7. FAIR VALUE OF FINANCIAL INSTRUMENTS

a) Fair value hierarchy

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

Level 1

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

Level 2

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

Level 3

Inputs that are not based on observable market data

$ millions except as otherwise noted

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
		2018		
Pooled fund units	$ 935	$ 37,180	$ 14,000	$ 52,115
Directly held equity	-	-	726	726
Directly held debt	-	-	125	125
Investments	**$ 935**	**$ 37,180**	**$ 14,851**	**$ 52,966**
Derivatives	**$ -**	**$ (180)**	**$ -**	**$ (180)**
		2017		
Pooled fund units	$ 2,132	$ 38,569	$ 10,016	$ 50,717
Directly held equity	-	-	599	599
Directly held debt	-	-	131	131
Investments	**$ 2,132**	**$ 38,569**	**$ 10,746**	**$ 51,447**
Derivatives	**$ -**	**$ 81**	**$ -**	**$ 81**

During 2018 and 2017, 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
		2018		
Balance, beginning of year	$ 10,016	$ 599	$ 131	$ 10,746
Net gains (losses) included in investment income	1,434	121	(3)	1,552
Purchases	3,953	42	6	4,001
Sales	(1,403)	(36)	(9)	(1,448)
Balance, end of year	**$ 14,000**	**$ 726**	**$ 125**	**$ 14,851**
Total unrealized gains (loss) included in investment income	$ 859	$ 109	$ (2)	$ 966
		2017		
Balance, beginning of year	$ 7,891	$ 503	$ 124	$ 8,518
Net gains included in investment income	709	52	1	762
Purchases	2,912	48	6	2,966
Sales	(1,496)	(4)	-	(1,500)
Balance, end of year	**$ 10,016**	**$ 599**	**$ 131**	**$ 10,746**
Total unrealized gain included in investment income	$ 23	$ 44	$ 1	$ 68

$ millions except as otherwise noted

7. FAIR VALUE OF FINANCIAL INSTRUMENTS (continued)

b) Valuation models

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

BCI uses widely recognized valuation methods for determining the fair value of common and less complex financial instruments such as investments in pooled funds, where fair value is based on the underlying net asset value of the respective pooled fund as determined by the underlying fund manager. Observable prices and model inputs are usually available in the market for listed equity and debt securities, simple derivatives such as forward or future currency contracts and pooled funds. The availability of observable market prices and model inputs reduces the need for management judgment and estimation, and reduces the uncertainty associated with the determination of fair values. The availability of observable market prices and inputs varies depending on the financial instrument and is subject to change based on specific events and general conditions in the financial markets.

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

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

c) Valuation framework

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

$ millions except as otherwise noted

7. FAIR VALUE OF FINANCIAL INSTRUMENTS (continued)

c) Valuation framework (continued)

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

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

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

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

$ millions except as otherwise noted

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:

Description	Fair value	Valuation technique	Unobservable input	Amount / range	Sensitivity to change in significant unobservable input
			2018		
					The estimated fair value would increase if:
Pooled fund units	$ 14,000	Net asset value	Net asset value	$ 14,000	The net asset value increased
Direct private equity	$ 530	Market approach	Multiple of EBITDA	11.5x	The multiple of EBITDA increased
Direct private agriculture investments	$ 196	Net asset value	Net asset value	$ 196	The net asset value increased
Direct debt	$ 125	Market approach	Multiple of EBITDA	11.5x	The multiple of EBITDA increased
			2017		
					The estimated fair value would increase if:
Pooled fund units	$ 10,016	Net asset value	Net asset value	$ 10,016	The net asset value increased
Direct private equity	$ 436	Market approach	Multiple of EBITDA	9.3x	The multiple of EBITDA increased
Direct private agriculture investments	$ 163	Net asset value	Net asset value	$ 163	The net asset value increased
Direct debt	$ 131	Market approach	Multiple of EBITDA	11.7x	The multiple of EBITDA increased

<u>Net asset value</u>

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

$ millions except as otherwise noted

7. FAIR VALUE OF FINANCIAL INSTRUMENTS (continued)

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

Multiple of EBITDA

Enterprise value (EV) represent amounts market participants would use when pricing direct equity investments and direct private debt. 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.

e) Effects of unobservable input on fair value measurement

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

Effects of unobservable input on Level 3 fair value measurement

	2018		2017	
	Favourable	Unfavourable	Favourable	Unfavourable
Pooled fund units	$ 1,400	$ (1,400)	$ 1,002	$ (1,002)
Direct private equity	33	(33)	26	(26)
Direct private agriculture investments	20	(20)	16	(16)
Direct debt	13	(13)	13	(13)
	$ 1,466	**$ (1,466)**	**$ 1,057**	**$ (1,057)**

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

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

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.

$ millions except as otherwise noted

8. INVESTMENT INCOME

	2018			2017		
	Income allocation	Change in fair value	Total	Income allocation	Change in fair value	Total
Short-term	$ 43	$ 3	$ 46	$ 25	$ 4	$ 29
Bonds	264	(128)	136	171	(13)	158
Canadian equities	156	(706)	(550)	196	415	611
U.S. equities	23	90	113	62	312	374
International equities	316	(727)	(411)	263	2,222	2,485
Mortgages	63	62	125	40	(1)	39
Real estate	178	640	818	277	77	354
Private equity	356	303	659	375	210	585
IRR*	239	362	601	333	85	418
	1,638	(101)	1,537	1,742	3,311	5,053
Directly held derivatives	-	(327)	(327)	-	152	152
	$ 1,638	**$ (428)**	**$ 1,210**	**$ 1,742**	**$ 3,463**	**$ 5,205**

* Infrastructure and renewable resources

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

$ millions except as otherwise noted

9. CONTRIBUTIONS

	Basic account	Inflation adjustment account	Retirement annuity account	Supplemental benefits account	Total
			2018		
Members' contributions					
Regular	$ 846	$ 111	$ -	$ 5	$ 962
Special agreements	-	-	1	-	1
Past service purchases	7	1	-	-	8
	853	112	1	5	971
Employers' contributions					
Regular	968	83	-	-	1,051
Special agreements	-	-	2	-	2
Past service purchases	7	1	-	-	8
Retired member group benefits	-	-	-	56	56
	975	84	2	56	1,117
	$ 1,828	**$ 196**	**$ 3**	**$ 61**	**$ 2,088**
			2017		
Members' contributions					
Regular	$ 802	$ 105	$ -	$ 5	$ 912
Special agreements	-	-	1	-	1
Past service purchases	9	1	-	-	10
	811	106	1	5	923
Employers' contributions					
Regular	906	77	-	5	988
Special agreements	-	-	2	-	2
Past service purchases	7	1	-	-	8
Retired member group benefits	-	-	-	69	69
	913	78	2	74	1,067
	$ 1,724	**$ 184**	**$ 3**	**$ 79**	**$ 1,990**

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

$ millions except as otherwise noted

10. BENEFITS

	Basic account	Inflation adjustment account	Retirement annuity account	Supplemental benefits account	Total
2018					
Regular pension benefits	$ 1,506	$ -	$ -	$ 9	$ 1,515
Indexing – regular pension benefits	234	-	-	1	235
Termination and refund benefits	63	63	16	-	142
Death benefit payments	23	12	-	-	35
Disability benefit	1	-	-	-	1
	$ 1,827	**$ 75**	**$ 16**	**$ 10**	**$ 1,928**
2017					
Regular pension benefits	$ 1,402	$ -	$ -	$ 8	$ 1,410
Indexing – regular pension benefits	217	-	-	1	218
Termination and refund benefits	59	66	15	-	140
Death benefit payments	24	14	-	1	39
Disability benefit	1	-	-	-	1
	$ 1,703	**$ 80**	**$ 15**	**$ 10**	**$ 1,808**

11. SUPPLEMENTAL BENEFITS ACCOUNT

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

To the extent extended health benefits are funded through the Supplemental Benefits Account (2018: $27; 2017: $27), they are funded from current contributions that would otherwise be employer inflation contributions. The amount of funding that can be used for extended health benefits is limited to 0.8% of pensionable salaries. For 2018, this funding totaled 0.2% of pensionable salaries (2017: 0.3%).

To the extent medical service plan premiums are funded through the Supplemental Benefits Account (2018: $24; 2017: $42), they are funded from current contributions that would otherwise be employer basic contributions.

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

$ millions except as otherwise noted

12. INVESTMENT AND ADMINISTRATION COSTS

	2018	2017
Investment management	$ 121.7	$ 85.1
Benefit administration	45.1	39.8
Board secretariat costs	1.1	0.9
Other professional services	0.9	0.6
Board remuneration and expenses	0.6	0.6
Actuarial	0.4	0.3
Audit	0.1	0.1
	$ 169.9	**$ 127.4**

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 $61.8 (2017: $52.4) 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.

$ millions except as otherwise noted

13. ACCOUNT TRANSFERS

	2018			2017		
	Basic account	Inflation adjustment account	Retirement annuity account	Basic account	Inflation adjustment account	Retirement annuity account
Cost-of-living adjustment	$ 259	$ (259)	$ -	$ 196	$ (196)	$ -
Indexing of deferred pensions	9	(9)	-	8	(8)	-
Pensions purchased from retirement annuity account	18	8	(26)	26	11	(37)
Excess investment return	(277)	277	-	(691)	691	-
	$ 9	**$ 17**	**$ (26)**	**$ (461)**	**$ 498**	**$ (37)**

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

All pension payments are made from the Basic Account. Each year, if pension payments are adjusted for the current cost-of-living adjustment, monies are transferred from the IAA to the Basic Account to cover the present value of all future payments arising from the current cost-of-living adjustment. The Board annually considers all relevant factors and its IAA funding policy to determine if a cost-of-living adjustment will be granted on pensions in pay and the amount of the cost-of-living adjustment, if any. As at January 2018, retired members received a cost-of-living adjustment of 1.6% (2017: 1.3%) and indexing supplements were transferred.

When a deferred pension is paid, the present value of the cost-of-living adjustments during the deferral period is transferred from the IAA to the Basic Account. Approximately $126 (2017: $111) of the current IAA balance is for cost-of-living adjustments intended for deferred pensions but not yet transferred to the Basic Account.

When investment earnings in the Basic Account are in excess of the actuarial assumption regarding investment rates of return, the excess investment returns are transferred from the Basic Account to the IAA**.** Excess investment returns is based on investment income earned on those assets in the Basic Account required for pensions currently being paid: approximately $18 billion of assets for 2018 (2017: $17 billion). The excess investment return rate is determined by taking the difference between the actual five-year annualized market rate of return (7.80%) and the rate of return used by the actuary (6.25%) in valuing the Plan's liabilities. The calculated excess investment return rate for 2018 was 1.55% (2017: 4.15%), resulting in a positive excess investment return amount of $277 (2017: $691) that was transferred to the IAA.

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

$ millions except as otherwise noted

13. ACCOUNT TRANSFERS (continued)

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

14. COMMITMENTS

The Plan participates in private equity, international real estate, mortgage and infrastructure and renewable resource pools. As at December 31, 2018, the Plan's share of commitments for future investment contracts in these pools over the next several years is approximately $7,813 (2017: $4,870).

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, 2015, and has three components: the basic account non-indexed benefits and, by considering the valuation of the entire Plan, the non-guaranteed IAA benefits and the RAA (note 1d). The next full actuarial valuation will be carried out as at December 31, 2018.

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

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