PBI ACTUARIES & CONSULTANTS

Report on the Actuarial Valuation as of December 31, 2020

Telecommunication Workers Pension Plan

Canada Revenue Agency
Registration Number 0397935

Office of the Superintendent of
Financial Institutions Canada
Registration Number 55745

June 25, 2021

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Executive summary

Purpose

At the request of the Trustees of the Telecommunication Workers Pension Plan (the "Plan"), we have prepared this report, which presents the results of an actuarial valuation performed on the Plan as at December 31, 2020. The purposes of this actuarial valuation were:

(i) to determine the financial position of the Plan as at December 31, 2020 and determine the adequacy of the current negotiated contributions;

(ii) to determine the solvency position of the Plan as at December 31, 2020, including any solvency deficiency and the solvency ratio as required under the Pension Benefits Standards Act, 1985 (the "PBSA-85") and Regulations thereto;

(iii) to analyze the experience of the Plan since the date of the last actuarial valuation, January 1, 2018;

(iv) to estimate the additional actuarial liabilities as at December 31, 2020 if the accrued pension benefit credits of active and disabled participants were updated to reflect more current earnings at each of January 1, 2022, 2023 and 2024 and if the target level of indexation to pensions in payment, defined in the Plan's Funding Policy as 25% of the increase in the Consumer Price Index, is granted at each of April 1, 2022, 2023 and 2024; and

(v) to provide information required for the ongoing administration of the Plan.

The results of our current actuarial valuation, the basis on which it was made and the results of the prior actuarial valuation, are set forth in the following pages of this report. This report outlines the evolution of the Plan's financial situation since the prior actuarial valuation at January 1, 2018 and is designed to be filed with the Office of the Superintendent of Financial Institutions Canada ("OSFI") in order to maintain Plan registration under the PBSA-85, with the Canada Revenue Agency ("CRA") in order to maintain plan registration under the *Income Tax Act (Canada)* and Regulations thereto and to be used by the Plan administrator in the administration of the Plan.

It is intended that this report will be used by the Trustees of the Telecommunication Workers Pension Plan, the Telecommunications Workers Union (TWU) United Steelworkers Local Union 1944, TELUS (the "Company"), OSFI, CRA and Smythe LLP, for the purposes stated above. The report has not been prepared in contemplation of reliance by any parties other than these specifically named parties. Therefore, items of relevance for other purposes and of possible interest to other parties have not been specifically addressed, and matters may exist that would be assessed differently for a different purpose or different user of the report. If the listed users of the report wish to use the report for a purpose that is not stated in the report, then PBI Actuarial Consultants Ltd.'s approval for the intended use should be sought. If any other party wishes to use the report for any purpose, the approval of the Trustees must be obtained, and PBI Actuarial Consultants Ltd.'s prior consent must be obtained before such party makes use of the report.

The numbers in this report are rounded to the nearest $1,000, where noted with "(in 000's)."

Terms of Appropriate Engagement

The terms of engagement with respect to the preparation of this actuarial valuation include:

- This actuarial valuation includes a review of the Plan's going concern and solvency position as at December 31, 2020 and must be filed with OSFI and CRA;
- The going concern financial position is to be determined using the Aggregate Actuarial Cost Method;
- The minimum funding requirements are to be determined using the Traditional Unit Credit Actuarial Cost Method;
- For the purpose of the going concern actuarial valuation, a provision for adverse deviation should be included in the actuarial valuation interest rate and the mortality table, as described in Section 7A; and
- For the purpose of the going concern actuarial valuation, the going concern value of assets is to be determined using the market value of assets as described in Section 7A.

Significant Events Occurring during the Intervaluation Period

a) The Trustees adopted resolutions to implement a benefit update at January 1, 2019, January 1, 2020 and January 1, 2021 in respect of active and disabled participants. The cost of providing these benefit updates are included in the actuarial valuation as at December 31, 2020.

b) The Trustees adopted resolutions to implement a 0.7% increase effective April 1, 2019 for benefits in payment in respect of members who retired on or prior to January 1, 2018 and a 0.5% increase effective April 1, 2020 for benefits in payment in respect of members who retired on or prior to January 1, 2019[1]. The cost of providing these increases has been included in the actuarial valuation as at December 31, 2020.

c) During the years 2018, 2019, and 2020, the Voluntary Departure Incentive Program ("VDIP") and the Early Retirement Incentive Program ("ERIP"), as pursuant to the Collective Agreement ratified in 2011, offered incentives to Plan participants, who met certain criteria, to terminate or retire as applicable, under programs known as "ERIP/VDIP".

   Participants who elected the "ERIP-Equivalent" incentive are entitled to the benefits of a Former Participant under the Plan. If they elect to retire early and they receive the consent of the Trustees, they will be entitled to a subsidized early retirement pension. Participants who elected the "VDIP" incentive are called Incented Terminated Participants under the Plan and are only entitled upon early retirement to the actuarial equivalent of their deferred retirement benefit payable as of their normal retirement date.

   The Company and the Union agreed that the Company would make additional contributions to the Plan as a result of the implementation of the ERIP/VDIP programs in 2005. As per the Collective Agreement effective January 1, 2016, the Company remitted a lump sum contribution in the amount of $32.50 million in December 2016 to cover an expected 500 ERIP/VDIP packages the Company expects to offer in the 5-year period starting December 31, 2016.

   The Plan Administrator's office has confirmed that between December 31, 2016 and December 31, 2020 there were 376 participants who elected to retire under the ERIP or who terminated under the VDIP.

[1] No increase effective April 1, 2021 was granted or warranted based on 25% of the increase in the Consumer Price Index.

Highlights

A) Actuarial Valuation Results

The principal results of the current actuarial valuation and comparative figures from the prior actuarial valuation are set out in the table below.

	December 31, 2020 (in 000's)	January 1, 2018 (in 000's)
Assets of the Plan		
Market value of assets	$ 5,609,129	$ 4,673,350
Actuarial value of assets	5,609,129	4,673,351
Average net annual return on market value of assets since last actuarial valuation date (geometric)	10.4%	6.8%
Funded Position – Going Concern		
Actuarial value of assets (A)	$ 5,609,129	$ 4,673,351
Actuarial liabilities for accrued benefits (L)	4,081,762	3,636,129
Excess of actuarial value of assets over actuarial liabilities for accrued benefits (A) - (L)	1,527,367	1,037,222
Funded ratio (A) ÷ (L)	1.37	1.29
Funded Position – Solvency		
Market value of assets plus receivable	$ 5,609,129	$ 4,673,350
Allowance for Plan windup expenses	(2,374)	(2,658)
Solvency assets (SA) (market value of assets less windup expenses)	$ 5,606,755	$ 4,670,692
Solvency liabilities (SL)	4,367,769	3,817,290
Solvency position (SA) / (SL)	$ 1,238,986	$ 853,402
Solvency ratio (SA) ÷ (SL)	not less than 1.0 (1.28)	not less than 1.0 (1.22)

B) Minimum Funding Requirements

We show below the required minimum funding of the Plan in the twelve months following the actuarial valuation date as determined in accordance with the requirements of the PBSA-85. This was calculated using the Unit Credit Actuarial Cost method and was derived after having taken into account the effect of the ERIP/VDIP. The numbers are expressed as a percentage of earnings.

	December 31, 2020	January 1, 2018
Total required minimum funding	22.14%	16.68%

We estimate that participants will contribute approximately 4.79% of their earnings in 2021. As noted below, the Employer will contribute 10.00% of member earnings. The total contributions to be remitted to the Plan in 2021 are therefore expected to be approximately 14.79% of earnings, which is less than the minimum

funding requirement. The estimated total negotiated contributions in 2021, 2022 and 2023 will be less than the required minimum funding contributions by approximately $44.0 million. However, as the actuarial value of assets exceed the accrued actuarial liabilities by $1,527.4 million, the minimum funding requirements can be met.

C) Negotiated Contributions

	December 31, 2020	January 1, 2018
Required regular Employer contributions in accordance with the existing collective agreement in effect at the actuarial valuation date expressed as a percentage of Bargaining Unit Employees' gross earnings	10.00%	Same
Required Employee contributions in accordance with the existing collective agreement in effect at the actuarial valuation date expressed as percentage of gross earnings	Under 30 – 3% 30 - 39 – 4% 40 - 49 – 5% 50 and over – 6%	Same

D) Maximum Employer Contributions

We show below the maximum Employer contributions as permitted under the *Income Tax Act (Canada)* for the four years following the actuarial valuation date.

	2021	2022	2023	2024
Employer maximum contribution as a percentage of covered earnings	26.82%	25.90%	25.01%	24.15%
Estimated Employer maximum contribution (in 000's)	$64,309	$63,966	$63,621	$63,277

E) Summary of Data Employed in the Actuarial Valuation

Both the non-retired participant data and the retired participant data were based on the records maintained under the Plan as at December 31, 2020 and obtained from the Plan Administrator.

A summary of the data is set forth below (and compared with the January 1, 2018 data) and a more detailed description of the data used is set forth in Section 9.

Number of Participants, Beneficiaries and Survivors

	December 31, 2020	January 1, 2018
Active Participants		
• Males	1,902	2,243
• Females	1,000	1,275
Total	2,902	3,518
Disabled Participants		
• Males	88	94
• Females	162	178
Total	250	272
Former Participants		
Terminated Vested:[1]		
• Males	739	659
• Females	1,088	1,222
Total	1,827	1,881
Transferred to Management:		
• Males	377	380
• Females	324	334
Total	701	714
Retired Participants[2]		
• Males	4,606	4,486
• Females	4,171	3,903
Total	8,777	8,389
Beneficiaries		
• Males	3	4
• Females	3	3
Total	6	7
Survivors		
• Males	136	123
• Females	688	621
Total	824	744
Total	**15,287**	**15,525**

[1] Including pending terminations and multi-service records for actuarial valuation purposes.

[2] Including Limited Members.

Membership Data Statistics

	December 31, 2020	January 1, 2018
Active Participants		
Average Years of Accrued Membership Service:[1]		
• Males	11.6	12.5
• Females	12.6	12.9
Combined	11.9	12.6
Average Annual Pensionable Earnings:[2]		
• Males	$ 77,306	$ 73,332
• Females	67,992	63,116
Combined	$ 74,096	$ 69,630
Average Age:[3]		
• Males	42.8	42.7
• Females	43.2	42.7
Combined	42.9	42.7
Disabled Participants		
• Males and Females Combined		
Average Age[3]	53.0	53.5
Retired Participants[4]		
• Males and Females Combined		
Annual Retirement Benefit	$ 205,021,280	$ 195,607,356
Average Annual Benefit	$ 23,359	$ 23,316[5]
Average Age[3]	70.8	69.5
Beneficiaries		
• Males and Females Combined		
Annual Benefit	$ 137,053	$ 189,156
Average Annual Benefit	$ 22,842	$ 27,024[5]
Average Age[3]	68.2	66.0
Survivors		
• Males and Females Combined		
Annual Benefit	$ 12,743,039	$ 10,833,348
Average Annual Benefit	$ 15,465	$ 14,556[5]
Average Age[3]	75.9	74.5

[1] Includes Supplemental and Purchased Service.

[2] Annualized pensionable earnings in the year prior to the actuarial valuation date increased by 3%, and further adjusted by the ratio of expected variable pay of 5% over the average variable pay in the year prior to the actuarial valuation date.

[3] Age is calculated to be age nearest birthday at the actuarial valuation date.

[4] Includes Limited Members.

[5] Including increase at April 1, 2018.

F) Results of Cost Calculations in respect of potential benefit improvements

In the same manner as has been done in past actuarial valuations, we calculated the estimated cost (i.e. increase in actuarial liabilities) that would result if pension benefit credits of active and disabled participants are updated as of January 1, 2022, 2023 and 2024 to reflect more current earnings and if the target level of indexation to pensions in payment, defined in the Plan's Funding Policy as 25% of the increase in the Consumer Price Index, is granted at each of April 1, 2022, 2023 and 2024. The estimated costs are shown below:

	December 31, 2020 (in 000's)
a) if the active and disabled participants' pension benefit credits are updated at January 1, 2022, 2023 and 2024 respectively, the estimated additional accrued actuarial liabilities under the Plan as at December 31, 2020, and assuming accrued benefits will be updated each year up to:	
• January 1, 2022 and no further updating thereafter	$ 4,003
• January 1, 2023 and no further updating thereafter	$ 13,114
• January 1, 2024 and no further updating thereafter	$ 24,493
b) if the participants' benefits in payment are increased at April 1, 2022, 2023 and 2024 respectively, the estimated additional accrued actuarial liabilities under the Plan as at December 30, 2020, and assuming benefits in payment will be updated each year up to:	
• April 1, 2022 and no further updating thereafter	$ 14,924
• April 1, 2023 and no further updating thereafter	$ 29,289
• April 1, 2024 and no further updating thereafter	$ 43,082
c) estimated funded position at December 31, 2020 after allowing the improvements described in (a) and (b) above (i.e. updates through to January 1, 2024 and April 1, 2024)	
• Funded ratio on going concern basis	1.35
• Solvency ratio	1.26

Discussion

Assets and Interest Assumption

As with our last actuarial valuation, the actuarial value of assets for this actuarial valuation was set equal to the market value of assets adjusted for benefits and expenses due and unpaid and contributions in transit.

In our last actuarial valuation, the future investment earnings, net of investment expenses, was assumed to be 4.10% per annum. We have employed an assumed rate of return, net of both investment and non-investment expenses, of 3.00% per annum for purposes of our current actuarial valuation. This decrease in interest rate has resulted in an increase in accrued liabilities at December 31, 2020 of approximately $513.1 million. The basis for adopting a 3.00% per annum actuarial valuation rate is discussed in Section 7A.

In the last three years prior to the current actuarial valuation date, the Fund earned an annual net rate of return, on a market value basis, of 10.4% compared to the 4.10% per annum net rate of return assumed in our prior actuarial valuation. After taking cashflows over the three-year period into account, this has resulted in an experience gain of approximately $934.9 million.

Funded Position – Going Concern

At our last actuarial valuation, the actuarial value of assets exceeded the actuarial liability for accrued benefits by approximately $1,037.2 million. Our current actuarial valuation indicates that the actuarial value of assets exceeds the accrued actuarial liability as at December 31, 2020 by approximately $1,527.4 million, based on the revised actuarial valuation assumptions.

A detailed analysis of the factors affecting the funded position is set forth in Section 5 of this report.

Funded Position – Solvency and Windup

The solvency position was determined using the method prescribed in the PBSA-85 and guidance from the Canadian Institute of Actuaries Revised Education Note: Alternative Settlement Methods for Hypothetical Wind-Up and Solvency Valuations. Results on this method are reported in Section 2B. Assumptions and methods are reported in Section 7B. On this prescribed method, we have determined that the Plan does not have a solvency deficiency at the actuarial valuation date and that the solvency ratio is not less than 1.0 (actual ratio equals 1.28) at the current actuarial valuation date.

If the Plan had been terminated at December 31, 2020 the market value of assets plus receivables net of Plan windup expenses would have exceeded the actuarial liabilities and expenses by approximately $1,239.0 million.

Transfer Deficiency

The transfer deficiency, as defined by the PBSA-85, is nil for the Plan at December 31, 2020. As a result, no restrictions are required on the lump sum portability transfers which may be made from the Plan until a subsequent actuarial valuation determines otherwise.

Employer and Employee Contributions

i) Employers

The Employers contribute a percentage of the employees' gross earnings as prescribed by the Collective Agreement or Participation Agreement (the "Agreements").

Based on the Agreements, the Employers' contributions to the Pension Plan have been 10.00% of gross earnings since 2009. As noted earlier, the Company is required to make additional contributions as a result of the Company's ERIP/VDIP offered during the intervaluation period. The value of these additional contributions, for members known to be affected by the ERIP/VDIP prior to the actuarial valuation date, was included in the previous going concern actuarial valuation. There are no such members in the current going concern actuarial valuation.

The Employers are not required to guarantee the benefits to be provided under the Plan or to assure the solvency of the Plan.

ii) Employees

The Plan participants contributed 2% of gross earnings to the Plan prior to April 1, 1994 in accordance with the Agreements.

In accordance with the Agreements, the Plan participants have been contributing, since April 1, 1994, at rates based on their age as follows:

Under age 30	– 3% of gross earnings
Age 30 or older but under 40	– 4% of gross earnings
Age 40 or older but under 50	– 5% of gross earnings
Age 50 or over	– 6% of gross earnings

iii) The required regular Employer and Employee contributions described above are assumed to be paid monthly and assumed not to change in the future.

iv) The shortfall of Employer and Employee contributions compared to the actuarial liability for benefits credited to the Plan participants during the intervaluation period has resulted in a loss to the Plan of approximately $12.8 million based on the actuarial valuation assumptions at January 1, 2018. This shortfall was covered by the excess of the actuarial value of assets over accrued liabilities.

Plan Membership

Since the last actuarial valuation, the total Plan membership covering all categories has decreased from 15,525 to 15,287 and active membership decreased from 3,518 to 3,152. The total Plan membership does not include 433 non-vested and untraced terminated vested participants who were entitled to the refund of their required contribution account. The required contribution account balance as at December 31, 2020 for the 433 participants was $0.3 million which was reflected in the accrued liabilities.

Plan Provisions

This actuarial valuation reflects the Plan provisions as at January 1, 2021.

Since the last actuarial valuation carried out as at January 1, 2018, the following amendments have had a material impact on the financial position of the Plan:

- benefit credits accrued to active and disabled participants have been updated at January 1, 2019, January 1, 2020 and January 1, 2021 to reflect more recent earnings history. These improvements created an additional actuarial liability for accrued benefits of approximately $5.3 million as at December 31, 2020 based on the actuarial valuation assumptions used for the January 1, 2018 actuarial valuation; and
- benefits in payment in respect of participants who retired on or before January 1, 2018 were increased by 0.7% effective April 1, 2019 and benefits in payment in respect of participants who retired on or before January 1, 2019 were increased by 0.5% effective April 1, 2020[1]. These improvements created an additional actuarial liability for accrued benefits of approximately $31.3 million as at December 31, 2020 based on the actuarial valuation assumptions used for the January 1, 2018 actuarial valuation.

Other than these changes, there have been no changes to the Plan provisions which have had a material impact on the financial condition of the Plan.

[1] No increase effective April 1, 2021 was granted or warranted based on 25% of the increase in the Consumer Price Index.

A summary of the main Plan provisions is set out in Section 8 of this report.

Actuarial Basis

Since the last actuarial valuation, there were no changes to the actuarial cost method and asset valuation method.

The assumptions used in the solvency valuation have been updated to reflect market conditions at the actuarial valuation date as well as the mortality table utilized under the replicating portfolio has changed as noted below.

In addition, there were changes to the going concern actuarial assumptions as below:

- the actuarial valuation interest rate has been decreased to 3.00% per annum from 4.10% per annum; and

  the mortality improvement scale for all participants have been changed to Canadian Institute of Actuaries scale MI-2017 from Canadian Pensioners' Mortality Improvement Scale B (CPM-B).

A summary of the actuarial basis for the going concern actuarial valuation appears in Section 7A.

A summary of the actuarial basis for the solvency valuation appears in Section 7B.

Government Filings

This report should be filed with OSFI as required pursuant to the PBSA-85 and with CRA pursuant to section 147.2(3) of the *Income Tax Act (Canada).*

Subsequent Events

We completed this actuarial valuation on June 25, 2021.

To the best of our knowledge and on the basis of our discussions with the Plan Administrator's Office, it is our understanding that there were no events which occurred between the actuarial valuation date and the date this actuarial valuation was completed which would have a material impact on the results of the actuarial valuation.

Conclusions

In our opinion, the actuarial valuation of the Plan as at December 31, 2020 indicates, on the basis of the assumptions used, that:

a) The assets together with future contributions and investment earnings on the Fund, will be sufficient to finance the benefits provided under the Plan. The funded ratio, as defined under the PBSA-85, is not less than 1.00 as at the actuarial valuation date;

b) There exists no solvency deficiency as defined under the PBSA-85 as at the actuarial valuation date. The solvency ratio is 1.28;

c) The contributions required to be made to the Fund by the Participants and the Employers pursuant to the Agreements, together with the excess of the actuarial value of assets over accrued liabilities at the actuarial valuation date, are estimated to be sufficient to meet the minimum funding requirements of the PBSA-85 for the period until the next scheduled actuarial valuation as of December 31, 2023; and

d) The financial condition of the Plan will allow the Trustees to update the benefit credits accrued to active and disabled participants as at January 1 of each of the next three years and grant increases to the benefits in payment equal to the target level of indexation, defined in the Plan's Funding Policy as 25% of the increase in the Consumer Price Index, as at April 1 of each of the next three years starting with an increase at April 1,

2022. These updates will not jeopardize the financial position of the Plan provided that the actual Plan experience from December 31, 2020 to the date on which the update is granted does not vary significantly from that expected by the assumptions made in this report.

Actuarial Opinion

The report and opinions given herein apply for the four years following the actuarial valuation date. The next actuarial valuation of the Plan for the purposes stated in this report must be performed with an actuarial valuation date no later than December 31, 2023, as required by the PBSA-85.

This actuarial valuation was based on membership data and other supplemental information and statistics provided by the Plan Administrator as at December 31, 2020, together with the financial statements supplied by CIBC Mellon Global Securities Services Company and the audited financial statements prepared by Smythe LLP. We have reviewed the data to test for reasonableness and consistency with the data provided for the last actuarial valuation as at January 1, 2018 by the Plan Administrator.

In our opinion,

- the data on which the actuarial valuation is based is sufficient and reliable for the purposes of this actuarial valuation, which are stated at the beginning of this report;
- the assumptions are individually reasonable and appropriate in aggregate for the purposes of the going concern actuarial valuation and solvency valuation;
- the methods employed in this actuarial valuation are appropriate for the purposes of the going concern actuarial valuation and solvency valuation;
- the value of the Plan assets, net of windup expenses, would be greater than the actuarial liabilities if the Plan were to be wound up on the actuarial valuation date.

The required rate of Employer and Employee contributions provided for in the current Agreements and the assets of the Plan and future investment earnings thereon, should be adequate to provide the benefits accruing under the Plan. Nonetheless, emerging experience under the Plan differing from the assumptions will result in gains or losses which will be revealed in future actuarial valuations.

This report has been prepared and our opinions given in accordance with accepted actuarial practice in Canada. The actuarial valuations have been determined in accordance with the funding and solvency standards prescribed by the PBSA-85 and Regulation thereto and the requirements of the *Income Tax Act (Canada)* and Regulation thereto.

Respectfully submitted,
PBI Actuarial Consultants Ltd.

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Vancouver, BC
June 25, 2021

Section 1: Assets of the Plan

Growth of Pension Fund Assets

The Plan is funded under a trust agreement. The custodian of the assets of the Trust is CIBC Mellon Global Securities Services Company. The investment of the majority of assets are separately managed by two investment managers – Phillips, Hager and North Investment Management (an operating division of RBC Global Asset Management Inc.) and CIBC Asset Management Inc. The value of the assets of the Plan is derived from the audited reports prepared by the Plan's auditor, Smythe LLP.

During the period from January 1, 2018 to December 31, 2020, the Fund assets, as developed on an accrual basis, have evolved as follows:

	(in 000's)		
	2020	**2019**	**2018**
Market value at beginning of Plan year	$ 5,167,083	$ 4,602,488	$ 4,673,350
PLUS			
Contributions			
• Employer	$ 20,751	$ 21,394	$ 22,198
• Employee			
• Required	9,929	10,174	10,691
• Voluntary	478	532	568
Investment income	52,519	68,691	73,273
Change in market value of investment	588,611	690,275	42,287
Subtotal	$ 672,288	$ 791,066	$ 149,017
LESS			
Pension payments	$ 218,425	$ 216,029	$ 208,796
Termination payments	3,724	2,239	2,714
Death benefit payments	1,500	1,529	2,670
Return of employee Voluntary Contributions	217	612	252
Expenses • investment (directly charged)	3,561	3,292	2,445
• non-investment	2,815	2,770	3,002
Subtotal	$ 230,242	$ 226,471	$ 219,879
Market value at end of Plan year	$ 5,609,129	$ 5,167,083	$ 4,602,488

Voluntary Contribution Account

The Voluntary Contribution Account represents additional voluntary contributions made to the Plan. Upon retirement, a participant who has a Voluntary Contribution Account must either receive a refund of the voluntary contributions with interest or use this balance to purchase an increase in their pension payments. In line with the

Plan's recent experience, we have assumed 100% of participants will purchase additional pension payments and therefore have continued to include the balances in the table above.

The Voluntary Contribution Account balance as of the Plan year end is as follows:

	(in 000's)			
	2020	**2019**	**2018**	**2017**
Market value at end of Plan year	$ 5,230	$ 4,721	$ 4,698	$ 4,551

Actuarial Value of Assets

The actuarial value of assets for the purposes of this actuarial valuation is determined to be $5,609,129,000, which is equal to the market value of assets. No additional adjustments were required.

Pension Fund Investment Return

The Fund has earned the following approximate rates of return, net of all expenses[1], in the years 2006 through 2020. Calculations were based on the audited financial statements.

Year	Pension Fund Net Investment Return on Market Value
2006	6.3%
2007	3.5%
2008	-0.4%
2009	3.5%
2010	15.8%
2011	19.8%
2012	5.0%
2013	-8.4%
2014	19.8%
2015	6.3%
2016	3.7%
2017	10.5%
2018	2.4%
2019	16.7%
2020	12.5%
3 year average (per annum)	10.4%
Geometric Average Over Period Shown	7.5%

The rates of return were derived on the assumption that new money was received at a constant rate over each year.

[1] For years prior to 2018, investment rates of return are net of investment and custodial fees only.

Asset Distribution

The following table shows the approximate asset class allocation of investments of the Fund, derived from the custodial reports, based on market value as at December 31, 2020 with comparative figures at January 1, 2018:

	December 31, 2020	January 1, 2018
Duration Matching Assets:		
• Bonds	21.0%	36.9%
• Mortgages and Debenture Funds[1]	11.9%	13.4%
• Hedge Funds[2]	2.0%	3.1%
• Direct Lending[2]	4.8%	3.5%
• Short-Term Bond[3]	11.8%	7.6%
• Dividend Equities[2]	2.9%	n/a
• Cash[2]	5.7%	3.7%
Sub-total	60.1%	68.2%
Other Assets:		
• Real Estate	21.8%	19.4%
• Public Market Equity	0.0%	1.0%
• Private Market Equity	5.4%	3.9%
• Infrastructure Equity	12.6%	7.4%
• Cash, Short Term Notes and Other	0.1%	0.1%
Sub-total	39.9%	31.8%
Total	100.0%	100.0%

The following table shows the approximate allocation of investments of the Fund that are non-Canadian dollar denominated and unhedged as at December 31, 2020:

	Asset Allocation
• Short-Term Bond	0.6%
• Private Market Equity	5.4%
• Infrastructure Equity	3.4%

[1] At December 31, 2020, 5.6% are held in the Plan's bond overlay structure; at January 1, 2018 it was 6.0%.

[2] These investments are held in the Plan's bond overlay structure.

[3] At December 31, 2020, 7.6% are held in the Plan's bond overlay structure; at January 1, 2018 it was 2.7%.

Target Asset Mix and Asset Mix Ranges

The target asset mix and asset mix ranges as permitted by the Plan's investment policy as at December 31, 2020 is as follows:

	Target Asset Allocation	Asset Allocation Range
• Cash & Short Term	0.0%	0.0% - 5.0%
• Special Bond Portfolio	26.0%	20.0% - 60.0%
• Mortgages outside of Bond Overlay Structure	9.0%	0.0% - 12.0%
• Private Equity	5.0%	0.0% - 7.5%
• Infrastructure Equity	15.0%	5.0% - 20.0%
• Real Estate	20.0%	5.0% - 25.0%
• Bond Overlay Structure, Including Mortgages, Hedge Funds, Dividend Equity, Short-Term Bonds and Direct Lending	25.0%	10.0% - 30.0%

Section 2A: Funded position – going concern

A going concern actuarial valuation, which assumes that the Plan will continue indefinitely, was performed to determine the funded position of the Plan at December 31, 2020 and to determine whether over the long term, the Plan is likely to have sufficient assets to provide the benefits promised.

The following exhibit compares the funded position of the Plan on a going concern basis at December 31, 2020 and January 1, 2018.

	December 31, 2020 (in 000's)	January 1, 2018 (in 000's)
A. Actuarial Value of Assets		
Actuarial value of assets	$ 5,609,129	$ 4,673,351
B. Actuarial Liabilities		
Actuarial liabilities for accrued benefits in respect of:		
• Active participants	$ 570,968	$ 621,059
• Disabled participants	96,604	93,196
• ERIP participants	-	1,414
• VDIP & ERIP–Equivalent participants	-	-
• Transferred to management participants	83,289	71,270
• Terminated vested participants[1,2]	192,526	172,190
• Pensioners[3]	3,133,145	2,672,449
• Voluntary Contribution Accounts	5,230	4,551
Total actuarial liabilities	$ 4,081,762	$ 3,636,129
C. Funded Position		
Excess of actuarial value of assets over actuarial liabilities for accrued benefits (A.) - (B.)	$ 1,527,367	$ 1,037,222
D. Funded Ratio		
Ratio of actuarial value of assets to accrued actuarial liabilities (A. / B.)	1.37	1.29

[1] Including Pending Terminations and paid out after actuarial valuation date.

[2] Including non-vested Lives and untraced deferred vested Lives.

[3] Including Beneficiaries and Survivors.

The approximate actuarial present value of the provision for adverse deviations included in the actuarial liabilities above is as follows:

- Margin included in the Interest rate = $676M; and
- Margin included in the pre- and post-retirement mortality rates = $66M.

The approximate actuarial present value of future expenses payable by the pension plan and included in the actuarial liabilities above is as follows:

- Provision for administrative expenses = $41M; and
- Provision for passive investment management expenses = $65M.

An analysis of the major factors which contributed to the change in the funded position of the Plan on a going concern basis is set out in Section 5 of this report.

Impact of Change in Interest Rates

Based on the current actuarial valuation assumptions, a 1.0% decrease in the actuarial valuation rate from 3.00% to 2.00% will increase the total accrued going concern actuarial liabilities of the Plan as at December 31, 2020 by 14.4% or $587 million. However, as the majority of the Plan's assets are invested in a fixed income portfolio, given a 1.0% decrease in interest rates, we expect that the market value of the Plan's assets as at December 31, 2020 will increase at a percentage approximately equal to or exceeding the percentage increase in the liabilities.

Section 2B: Funded position – solvency

A solvency actuarial valuation, which is required under the PBSA-85, is one in which the Plan's assets and liabilities are valued on a Plan termination basis. We have conducted a solvency actuarial valuation for the Plan as at December 31, 2020 on the assumption that the Plan would be terminated at that date based on the Plan provisions in effect as at December 31, 2020; such provisions include the restriction that the Trustees shall not grant consent for subsidized reduction (that is, unreduced benefits) on early retirement other than actuarial reduction for all active and inactive non-retired participants, except for the ERIP participants. To determine the solvency deficiency or solvency excess, the PBSA-85 permits certain adjustments to be made to the solvency assets.

The following exhibit compares the Plan's solvency position at December 31, 2020 and January 1, 2018.

	December 31, 2020 (in 000's)	January 1, 2018 (in 000's)
A. Solvency Assets		
i. Market value of assets plus receivable[1]	$ 5,609,129	$ 4,673,350
ii. Allowance for Plan windup expenses	(2,374)	(2,658)
iii. Solvency assets (assets less expenses)	$ 5,606,755	$ 4,670,692
B. Solvency Liabilities		
Settled by lump sum transfer:		
i. Active participants	$ 314,548	$ 287,679
ii. Disabled participants	25,135	20,826
iii. ERIP participants	-	-
iv. VDIP & ERIP–Equivalent participants	-	-
v. Transferred to management participants	42,730	37,272
vi. Terminated vested participants	98,454	98,415
vii. Total settled through lump sum transfer (Sum Bi. to Bvi.)	$ 480,867	$ 444,192
Settled by replicating portfolio:		
viii. Active participants	$ 223,257	$ 279,830
ix. Disabled participants	67,613	65,603
x. ERIP participants	-	1,571
xi. VDIP & ERIP–Equivalent participants	-	-
xii. Transferred to management participants	23,185	18,012
xiii. Terminated vested participants	96,390	76,196
xiv. Pensioners[2]	3,476,457	2,931,886

[1] For the purposes of the solvency actuarial valuation, the future regular Employee and Employer contributions in respect of participants of the ERIP/VDIP have been excluded. Excluding these contributions has no financial impact on the solvency position of the Plan.

[2] Including Beneficiaries and Survivors.

	December 31, 2020 (in 000's)	January 1, 2018 (in 000's)
xv. Total settled by replicating portfolio (Sum Bviii to Bxiv)	$ 3,886,902	$ 3,373,098
xvi. Total Solvency Liabilities (Bvii+Bxv)	$ 4,367,769	$ 3,817,290
C. Solvency Position – (A)(iii) - (Bxvi)	1,238,986	853,402
D. Solvency Ratio – (A)(iii)/(Bxvi)	1.28	1.22

The solvency ratio, as defined by the PBSA-85, is not less than 1.0 for the Plan at December 31, 2020. As explained earlier in this report, no restrictions are required, as described under the PBSA-85, on the lump sum portability transfers which may be made from the Plan until a subsequent actuarial valuation indicates that the ratio has changed.

The approximate actuarial present value of the provision for adverse deviations included in the replicating portfolio liabilities above is as follows:

- Margin included in the Interest rate = $134M; and
- Margin included in the pre- and post-retirement mortality rates = $103M.

The approximate actuarial present value of future expenses payable by the pension plan and included in the replicating portfolio liabilities above is as follows:

- Provision for administrative expenses = $20M; and
- Provision for passive investment management expenses = $36M.

Funded Position – Termination Scenario

For the solvency actuarial valuation, the Plan has been assumed to have a hypothetical voluntary termination on the actuarial valuation date. Under this scenario, for all members not yet retired, consent would not be given for favourable early retirement subsidized benefits, other than actuarial reductions.

Retired Participants and Non-Retired Participants Eligible to Retire Immediately

For all retired participants and all other participants who are eligible to retire immediately, the solvency scenario assumes the Trust will continue to deliver monthly pension benefits. Under this scenario, the assets of the Plan would be invested in a replicating portfolio that approximately matches the duration and cash flow characteristics of the group's remaining benefits cash flows.

All Other Participants Not Included Above

For participants not eligible to retire immediately, under the termination scenario, lump sum transfers would be made to discharge all benefit entitlements in the Plan.

Replicating Portfolio

Rationale

The amount of liabilities to be discharged under one or several annuity contracts would be in excess of $3.8 billion. From the Canadian Institute of Actuaries Educational Note: Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates on or after December 31, 2020 and no later than December 30, 2021 (document 221026) dated March 2021 (herein referred to as "CIA Educational Note"), it is noted that for non-indexed annuity liabilities in excess of $750 million, it may be difficult to effect a single annuity purchase. The Plan's liabilities, to be settled in this manner, are more than five times this amount and therefore can be argued to be limited by the Canadian annuity market.

If the Plan were to be wound up, it is reasonable to assume that the Trust would continue with a Board of Trustees to manage the delivery of pension benefits for current retirees and participants immediately eligible to retire, for the foreseeable future (at least the next 20 years). In this scenario to ensure the security of the remaining benefits to be delivered, a replicating portfolio would be put in place. This replicating portfolio would substantially consist of high quality fixed income instruments that closely match the cash flow and duration characteristics of the remaining benefits to be delivered.

The Plan has adopted an investment strategy in which the majority of the Plan's assets are currently invested in a fixed income portfolio that approximately matches the expected benefit cashflows of the Plan. Given that most of the assets required to establish the replicating portfolio are already owned by the Plan one could comfortably conclude that sufficient capacity of fixed-income securities is provided in the market.

Methodology and Assumptions

The methodology used to construct the replicating portfolio, its composition, provisions for adverse deviation, expenses and other required assumptions used for the benefit cashflows can be found in Section 7B.

Security of Benefits Utilizing Replicating Portfolio Methodology

As required by OSFI we have used a deterministic approach to determine the financial impact of adverse experience with respect to mortality and longevity risks as well as economic risks, including asset default and downgrade risks.

The replicating portfolio was constructed using high quality fixed income assets, taking the benefit cashflows into account. The benefit cashflows have been created assuming the mortality experience follows that of the 2014 Canadian Pensioners' Private Sector Mortality Table (CPM2014Priv) with generational mortality using improvement scale MI-2017. As discussed in Section 7A, these rates include a margin for mortality improvement and longevity risk. The margin as measured on a replicating portfolio basis is equivalent to an increase in solvency liabilities of approximately 2.4% or $103M.

The assumed average yield and assumed asset default and downgrade risk as provided by the Plan's main bond manager (CIBC Asset Management) and based on historical experience are as follows:

	Asset Mix	Average Yield	Default and downgrade risk (net of recovery)
Provincial Bonds	80%	1.85%	0.00%
'A' Corporate Bonds	2%	3.63%	0.06%
'BBB' Corporate Bonds	18%	4.80%	0.06%

The adverse deviation margin of 0.26% built into the replicating portfolio interest rate allows for 25% of the corporate bond allocation to default completely, lowering the average yield to 3.28%. As the expected default and downgrade risk (net of recovery) of corporate bonds is well within the allowed for margin, one can conclude that there is a high probability that the benefits will be made in full in the future should the unlikely event of plan windup occur. This does not take into account the large amount of surplus assets also available to help support promised benefits.

Required Additional Disclosures

As required by the CIA Standards, for Plan's that utilize a replicating portfolio method, the actuarial report must also disclose the solvency liabilities and solvency ratio that would have resulted if the single purchase of a group annuity had been assumed. The assumptions used in the group annuity valuation are summarized in Section 7B.

The following exhibit shows the solvency liabilities and solvency ratio on an annuity purchase scenario at December 31, 2020.

	December 31, 2020
Solvency Liabilities (in 000's)	$ 4,203,452
Solvency Ratio	1.33

In addition, OSFI requires the Plan to disclose the underlying equivalent annuity proxy rate that would produce an equivalent solvency liability as the replicating portfolio scenario assuming all other assumptions are those that would be used based on CIA Guidance for a single purchase of a group annuity. Specifically, we have assumed mortality rates follow the CPM Mortality Table (Combined) with generational mortality projection using mortality projection Scale CPM-B (sex distinct rates).

	December 31, 2020
Annuity purchase rate	2.13%

Average Solvency Ratio

In accordance with PBSA-85, the average solvency ratio (before adjustments for plan amendments) is the arithmetic average of the solvency ratios at December 31, 2020, January 1, 2020 (the prior valuation date) and January 1, 2019 (the prior second valuation date), adjusted to reflect the plan amendments effective January 1, 2019, April 1, 2019, January 1, 2020, April 1, 2020 and January 1, 2021 from the solvency liability at December 31, 2020.

The average solvency ratio (after adjustments for plan amendments) at December 31, 2020 is equal to the average solvency ratio (before adjustments for plan amendments) multiplied by the ratio of the solvency liability at December 31, 2020 excluding the plan amendments to the solvency liabilities at December 31, 2020 including the plan amendments.

Development of Average Solvency Ratio

	(in 000's)		
	January 1, 2019[1]	**January 1, 2020[1]**	**December 31, 2020**
Adjusted Solvency Value of Assets			
Solvency Assets	N/A	N/A	$ 5,606,755
Total	N/A	N/A	$ 5,606,755
Adjusted Solvency Liability			
Solvency Liability	N/A	N/A	$ 4,367,769
Present Value of Plan amendments since January 1, 2018	N/A	N/A	$ 44,707[2]
Total	N/A	N/A	$ 4,323,062
Adjusted Solvency Ratio (before adjustment for Plan amendments)	1.2837[3]	1.2837[3]	1.2969
Average Solvency Ratio			
Average of three adjusted solvency ratios (before adjustment for Plan amendments)	1.2881		
Average of three adjusted solvency ratios (after adjustment for Plan amendments)	1.2749		

Average Solvency Ratio to Determine Funding Requirements

	December 31, 2020	**January 1, 2018**
Adjusted Solvency Value of Assets		
Average solvency ratio	1.2749	1.1975
Solvency liability	$ 4,637,769	$ 3,817,290
Adjusted solvency value of assets	5,568,496	4,571,205
Solvency Liability	$ 4,637,769	$ 3,817,290
(Solvency Deficiency) / Solvency Excess	$ 1,200,727	$ 753,915

[1] No reports on actuarial valuations at January 1, 2019 and January 1, 2020 were filed.

[2] Determined at 1.40%/2.90%/2.05% per annum.

[3] In accordance with subsection 9(11) of the Pension Benefits Standards Regulations the solvency ratio without adjustments at the valuation date has been used as the adjusted solvency ratio for the prior valuation date and the prior second valuation date.

Impact of Change in Interest Rates and Solvency Incremental Cost

Based on the current actuarial valuation assumptions, a 1.0% decrease in the actuarial valuation interest rates (from 1.40%/2.90%/2.05% to 0.40%/1.90%/1.05%) will increase the total solvency liabilities of the Plan as at December 31, 2020 by approximately 15.6% or $681.9 million. However, as the majority of the Plan's assets are invested in a fixed income portfolio, given a 1.0% decrease in interest rates, we would expect the solvency assets (net of windup expenses) to increase by a percentage approximately equal to or exceeding the percentage increase in the liabilities.

We have determined the 3-year solvency incremental cost as at December 31, 2020 for the Plan to be $153,120,000.

The solvency incremental cost reflects the expected aggregate change in the Plan's liabilities from December 31, 2020 to December 31, 2023 (including decrements, expected benefit accruals and benefit improvements) on a solvency basis, adjusted upwards with the expected benefit payments in 2021, 2022 and 2023. The solvency incremental cost is meant to measure a three-year cost of accruals and benefit payments on a Plan termination basis (independent of the expected return on Plan assets) and is not an appropriate measure of the contributions that would be required to fund the Plan.

Section 3: Actuarial balance sheet – going concern aggregate actuarial cost method

	December 31, 2020 (in 000's)	January 1, 2018 (in 000's)
Assets		
1. Market value of assets on hand	$ 5,609,129	$ 4,673,350
2. Actuarial present value of future contributions to be made by participants	158,970	157,147
3. Actuarial present value of future contributions to be made by employers with respect to present participants	302,266	303,285
4. Actuarial present value of employee and employer contributions to be made in respect of ERIP/VDIP participants in the year following the actuarial valuation, less expenses	-	1
5. Company ERIP/VDIP contribution receivable in respect of the year prior to the actuarial valuation	-	-
6. Total Plan Assets (1.+2.+3.+4.+5.)	$ 6,070,365	$ 5,133,783
Liabilities		
7. Actuarial present value of retirement benefits granted to retired participants	$ 3,133,145	$ 2,672,449
8. Actuarial present value of benefits to be granted to former participants (including death before and after retirement):		
a) Who are terminated vested[1,2]	192,526	172,190
b) Who have been transferred to management	83,289	71,270
9. Actuarial present value of benefits to be granted to present disabled participants in respect of accrued service:		
a) Before retirement	933	918
b) After retirement (including death after retirement benefits)	95,671	92,278
10. Actuarial present value of benefits to be granted to active participants (including death after retirement benefit):		
a) On account of supplemental past service	-	4
b) On account of basic past service	19	270
c) On account of accrued membership service	504,334	557,489

[1] Including Pending Terminations and paid out after actuarial valuation date.

[2] Including non-vested Lives and untraced deferred vested Lives.

	December 31, 2020 (in 000's)	January 1, 2018 (in 000's)
11. Actuarial present value of death or disability before retirement benefits to be granted to active participants on account of service to the actuarial valuation date	66,615	63,296
12. Actuarial present value of benefits to be granted to ERIP participants in respect of service to their Severance Date	$ -	$ 1,414
13. Actuarial present value of benefits to be granted to VDIP and ERIP – Equivalent participants in respect of service to their Severance Date	-	-
14. Voluntary contribution accounts	5,230	4,551
15. Total actuarial liabilities for accrued benefits	$ 4,081,762	$ 3,636,129
16. Excess (Deficiency) of assets on hand over total actuarial liabilities for accrued benefits (1.+4.+5.-15.)	$ 1,527,367	$ 1,037,222
17. Actuarial present value of benefits to be granted to present disabled participants for future membership service		
a) Before retirement	391	265
b) After retirement (including death after retirement benefits)	27,328	19,441
18. Actuarial present value of benefits to be granted to active participants (including death after retirement benefits) on account of future membership service	630,794	477,857
19. Actuarial present value of death or disability before retirement benefits to be granted to active participants on account of future membership service	149,565	112,697
20. Actuarial present value of future non-investment related plan expenses	-	-
21. Total future membership service actuarial liabilities	$ 808,078	$ 610,260
22. Excess (Deficiency) of actuarial present value of future Employer and participants' contributions over total future membership service actuarial liabilities (2.+3.-21.)	(346,842)	(149,828)
23. Excess of total Plan assets over total Plan liabilities (6.-15.-21.)	1,180,525	887,394
24. Total Plan Liabilities Plus Total Excess (15.+21.+23.)	$ 6,070,365	$ 5,133,783
25. Actuarial present value of future compensation	$ 3,022,656	$ 3,032,846

Section 4: Contribution requirements

The Plan is a jointly trusteed negotiated contribution defined benefit pension plan for members of the Telecommunications Workers Union (TWU) United Steelworkers Local Union 1944 and certain employees of the Union and the Trustees.

The Employers contribute a percentage of the Bargaining Unit gross earnings as prescribed by the Collective Agreement or Participation Agreement (the Agreements) then in effect. Based on these Agreements, the actual Employer contributions were 10.00% of earnings effective January 1, 2009.

The Plan participants contributed 2% of gross earnings to the Plan prior to April 1, 1994 in accordance with the Agreements. Effective April 1, 1994, the Plan participants have contributed at the increased rates based on their ages as follows:

Under age 30	– 3% of gross earnings
Age 30 or older but under 40	– 4% of gross earnings
Age 40 or older but under 50	– 5% of gross earnings
Age 50 or over	– 6% of gross earnings

At present, the participants' required contributions are calculated to be on average approximately 4.79% of gross earnings.

Pursuant to the Collective Agreement ratified in 2011 the Company has agreed to make additional contributions to the Plan in respect of the participants who elected to leave under the ERIP/VDIP programs offered by the Company since January 1, 2005.

Under the PBSA-85 it is necessary for the actuary to test for the sufficiency of contributions to provide for the following:

- the normal cost of accruing benefits;
- the funding of going concern unfunded liabilities, if any, over a period of not more than fifteen years from the review date on which it is first determined;
- the funding of solvency deficiencies, if any, over a period of not more than five years from the review date on which it is first determined.

If negotiated contributions are not sufficient to meet these funding requirements, the actuary must provide the Trustees with options to remedy the situation.

Minimum Funding Requirements

Using the Unit Credit Actuarial Cost Method, we have calculated the required minimum funding of the Plan, expressed as a percentage of covered earnings, for the next three Plan years. The results of these calculations, along with the estimated total employer and employee contributions, are set forth below:

($ in 000's)	in 2021	in 2022	in 2023
1. Normal Cost under Plan	22.14%	22.14%	22.14%
2. Required annual special payments towards unfunded actuarial liabilities	-	-	-
3. Required annual special payments towards solvency deficiency	-	-	-
4. Total required minimum funding contributions	22.14%	22.14%	22.14%
5. Estimated total employer and employee required contributions in accordance with the Agreements	14.79%	14.79%	14.79%
6. Estimated present value of current year's contributory earnings at the beginning of year (in '000's)	$ 193,548	$ 199,354	$ 205,335
7. Estimated shortfall of contributions (in '000's) ([5.-4.]x6.)	$ (14,236)	$ (14,653)	$ (15,091)

Thus, the total negotiated contributions in 2021, 2022 and 2023 will be less than the required minimum funding contributions by approximately $43,980,000. However, as the actuarial value of assets on hand exceed the accrued actuarial liabilities by $1,527,367,000 and the Plan's solvency ratio is 1.28, the minimum funding requirements can be met.

The Normal Cost percentage has increased since the prior actuarial valuation at January 1, 2018; it increased from 16.68% in 2018 to 22.14% in 2021 because of changes in the actuarial assumptions and changes in the demographics of plan participants.

The approximate actuarial present value of the provision for adverse deviations included in the Normal Cost above is as follows:

- Margin included in the Interest rate = $13.5M; and
- Margin included in the pre- and post-retirement mortality rates = $0.6M.

The approximate actuarial present value of the provision for expenses in the year following the actuarial valuation date, payable by the pension plan and included in the Normal Cost above is as follows:

- Provision for administrative expenses = $1.0M; and
- Provision for passive investment management expenses (paid directly to investment managers) = $1.5M.

Based on the current actuarial valuation assumptions, a 1.0% decrease in the actuarial valuation rate used in determining the value of liabilities for future service benefits, from 3.00% to 2.00%, will increase the present value (as at December 31, 2020) of the benefits expected to accrue in 2020 from 22.14% of earnings to 29.17% of earnings.

Maximum Employer Contributions and Excess Surplus

Under the *Income Tax Act (Canada)*, the maximum amount that an Employer is permitted to contribute is equal to:

- The Employer's current service cost in respect of service accruing after the actuarial valuation date; plus
- The lump sum amount to eliminate any unfunded liability and/or solvency deficiency that exists at the actuarial valuation date; less
- Any excess surplus as required.

The plan targets providing benefits upon retirement that are based on the participant's final average earnings immediately prior to retirement and a post-retirement increase in pensions of 0.5% each year (25% of assumed CPI increases) . Historically the Trustees have approved earnings updates and increases to benefits in payment on an annual basis in line with that target when certain funding goals are reached. Therefore it is reasonable to consider the position of the plan assuming: i) benefits are based on final average earnings and ii) target cost-of-living-adjustments are granted to pensions in pay, when determining maximum employer contributions. We have conducted a valuation on such basis and the results of the valuation on an aggregate basis are provided below:

	December 31, 2020 (in 000's)
Assets	
1. Market value of assets on hand	$ 5,609,129
2. Actuarial present value of future contributions to be made by participants	210,907
3. Actuarial present value of future contributions to be made by employers with respect to present participants	403,078
4. Actuarial present value of employee and employer contributions to be made in respect of ERIP/VDIP participants in the year following the actuarial valuation, less expenses	-
5. Company ERIP/VDIP contribution receivable in respect of the year prior to the actuarial valuation	-
6. Total Plan Assets (1.+2.+3.+4.+5.)	$ 6,223,114
Liabilities	
7. Actuarial present value of retirement benefits granted to retired participants	$ 3,299,717
8. Actuarial present value of benefits to be granted to former participants (including death before and after retirement):	
a) Who are terminated vested[1,2]	204,736
b) Who have been transferred to management	89,238
9. Actuarial present value of benefits to be granted to present disabled participants in respect of accrued service:	
a) Before retirement	1,130
b) After retirement (including death after retirement benefits)	114,020

[1] Including Pending Terminations and paid out after actuarial valuation date.

[2] Including non-vested Lives and untraced deferred vested Lives.

	December 31, 2020 (in 000's)
10. Actuarial present value of benefits to be granted to active participants (including death after retirement benefit):	
a) On account of supplemental past service	-
b) On account of basic past service	19
c) On account of accrued membership service	686,875
11. Actuarial present value of death or disability before retirement benefits to be granted to active participants on account of service to the actuarial valuation date	95,077
12. Actuarial present value of benefits to be granted to ERIP participants in respect of service to their Severance Date	-
13. Actuarial present value of benefits to be granted to VDIP and ERIP – Equivalent participants in respect of service to their Severance Date	-
14. Voluntary contribution accounts	5,230
15. Total actuarial liabilities for accrued benefits	$ 4,496,042
16. Excess (Deficiency) of assets on hand over total actuarial liabilities for accrued benefits (1.+4.+5.-15.)	$ 1,113,087
17. Actuarial present value of benefits to be granted to present disabled participants for future membership service	
a) Before retirement	475
b) After retirement (including death after retirement benefits)	34,277
18. Actuarial present value of benefits to be granted to active participants (including death after retirement benefits) on account of future membership service	1,061,195
19. Actuarial present value of death or disability before retirement benefits to be granted to active participants on account of future membership service	238,612
20. Actuarial present value of future non-investment related plan expenses	-
21. Total future membership service actuarial liabilities	$ 1,334,559
22. Excess (Deficiency) of actuarial present value of future Employer and participants' contributions over total future membership service actuarial liabilities (2.+3.-21.)	(720,574)
23. Excess of total Plan assets over total Plan liabilities (6.-15.-21.)	392,513
24. Total Plan Liabilities Plus Total Excess (15.+21.+23.)	$ 6,223,114
25. Funded Ratio (6./[15.+21.])	1.07

Data Model – New Entrants

For purposes of our actuarial valuation, we have constructed a model of potential future Plan membership based on direction from the Trustees. The Trustees have reviewed the model and believe the estimates are reasonable and appropriate for use in determining the maximum contributions of the Plan. The model is based on the assumption that the membership will be stable for ten years and thereafter the membership will shrink in accordance with the decrement assumptions, commencing in year 2031.

We conducted a study of new entrants' age and contributory earnings at entry for the year 2020 and found for males the average age is 35.0 and the average contributory earnings is $50,900 and for females the average age is 36.0 and the average contributory earnings is $45,100. We then assumed that the characteristics of the new entrants will be in line with recent experience.

Actuarial Methods – Liabilities

The actuarial liability and the normal cost are developed using the Projected Unit Credit Cost Method. The actuarial liability was determined as the actuarial present value of non-retired participant's prospective benefits multiplied by the ratio of the participant's credited service at the actuarial valuation date to the participant's total potential credited service (the service prorate method).

The actuarial liabilities for retired participants were determined as the actuarial present value of their respective benefits.

The normal cost for non-retired participants was determined as the actuarial present value of their prospective benefits multiplied by the ratio of the participant's expected credited service in the following year to the participant's total potential credited service. The normal cost as a percentage of earnings will be stable over time if the demographic characteristics of the non-retired participants remain stable over time. All other things being equal, as the average age of non-retired participants increase (decrease) the normal cost as a percentage of earnings will increase (decrease).

Excess Surplus

The *Income Tax Act (Canada)* prescribes the maximum going concern surplus that may be retained by the Plan while Employer contributions continue. In general, this maximum is defined as 25% of the going concern actuarial liability.

There is no excess surplus at the actuarial valuation date and therefore Employer contributions are not affected by the prescribed maximum surplus limit.

Maximum Employer Contributions

The maximum Employer contributions as a percentage of covered earnings and the estimated dollar amounts for the next four years following the actuarial valuation date is shown below:

	in 2021	in 2022	in 2023	in 2024
1. Total required minimum funding contributions	31.45%	30.53%	29.64%	28.78%
2. Less: Participants' required contributions in accordance with the Agreements	(4.63%)	(4.63%)	(4.63%)	(4.63%)
3. Employer's current service cost under the Plan	26.82%	25.90%	25.01%	24.15%
4. Plus: Contributions to eliminate any unfunded liability or solvency deficit	0.00%	0.00%	0.00%	0.00%
5. Less: Excess Surplus	(0.00%)	(0.00%)	(0.00%)	(0.00%)
6. Employer maximum contribution	26.82%	25.90%	25.01%	24.15%
7. Estimated present value of current year's contributory earnings at the beginning of year (in '000's)	$239,781	$246,974	$254,384	$262,015
8. Estimated Maximum Employer Contributions (in '000's) (6x7.)	$ 64,309	$ 63,966	$ 63,261	$ 63,277

For the years following 2020, the maximum Employer contributions may be different depending on the contributions actually made by the Employer since December 31, 2020.

Timing of Contributions

To satisfy the requirements of the PBSA-85, the Employer and participant contributions must be remitted to the fund monthly and within 30 days of the end of the month to which they pertain.

Section 5: Experience analysis

Funded Position

The going concern funded position has changed from an excess of assets over actuarial liabilities for accrued benefits of $1,037.2 million at January 1, 2018 to an excess of assets over actuarial liabilities for accrued benefits of $1,527.4 million at December 31, 2020. The following exhibit provides an approximate analysis of the major factors which have contributed to this change.

	(in 000's)	(in 000's)
A. Excess of assets over actuarial liabilities for accrued benefits at January 1, 2018	$1,037,200	
Plus • interest adjustment	132,900	
Expected excess of assets over actuarial liabilities for accrued benefits at December 31, 2020	$1,170,100	$1,170,100
B. Gains/(Losses) from Economic Experience:		
• net investment returns greater/(less) than assumed	$ 934,900	
• excess/(shortfall) of Employer and Employee contributions over/(under) the actuarial liabilities for benefit credits earned during the same period, considering the increases in earnings	(12,800)	$ 922,100
C. Gains/(Losses) from Demographic Experience:		
• retirement experience not in ERIP/VDIP program	$ 5,200	
• mortality experience	1,400	$ 6,600
D. Gains/(loss) due to all other economic and demographic experience factors	$ 1,500	$ 1,500
E. Gains/(Losses) from Plan amendments		
• benefit improvements during the intervaluation period – added actuarial liabilities with respect to updating of benefit credits at January 1, 2019, January 1, 2020 and January 1, 2021 and increasing pensions in payment at April 1, 2019 and April 1, 2020	$ (36,500)	$ (36,500)
F. Fund financial position at December 31, 2020 on prior actuarial valuation assumptions = A.+B.+C.+D.+E.	$2,063,800	$2,063,800
G. Change in actuarial assumptions		
• change in the interest rate assumption from 4.10% to 3.00%	$(513,100)	
• change in the mortality assumptions	(23,300)	$(536,400)
H. Excess of assets over actuarial liabilities for accrued benefits at December 31, 2020		
Fund financial position at December 31, 2020 on current actuarial valuation assumptions after the January 1, 2021 benefits updating		$1,527,400

Normal Cost

The cost of benefits accruing, including the allowance for expenses, expressed as a percentage of covered payroll has increased from 16.68% in the previous valuation to 22.14% at December 31, 2020.

The following exhibit provides an approximate analysis of the major factors which have contributed to this change:

Minimum funding contribution rate at January 1, 2018 for current benefit accruals and expenses		16.68%
Plus	increase resulting from change in valuation mortality assumption	0.17%
	increase resulting from change in valuation interest rate assumption	5.31%
Less	decrease resulting from change in demographics	(0.02%)
Minimum funding contribution rate at December 31, 2020 for current benefit accruals and expenses		22.14%

Section 6: Plausible Adverse Scenarios

There are numerous factors that could pose a risk to the Plan's ability to meet funding requirements. Outlined below are the major risk factors and the impact on the Plan's ability to meet the statutory funding requirements should these scenarios occur.

Actuarial Valuation Interest Rate

As the majority of the Plan's assets are invested in fixed income instruments, long term interest rates have a significant impact on the Plan's asset values and the determination of the actuarial valuation interest rate. A significant decrease in interest rates should not affect the funded position significantly as the increase in the liability due to the drop in discount rates will be partially offset by a corresponding increase in assets, assuming the market value of all other assets (non-fixed income assets) remain unchanged. However, the decrease in interest rates will impact the Plan's ability to meet future funding requirements.

We have illustrated below the potential impact on the Plan should the actuarial valuation interest rate decrease by 1.00%.

	Base (in 000's)	Actuarial Valuation Interest Rate Decreases by 1% (in 000's)
A. Actuarial Value of Assets	$ 5,609,129	$ 6,402,087
B. Actuarial Liabilities	$ 4,081,762	$ 4,668,579
C. Funded Position		
Excess of actuarial value of assets over actuarial liabilities for accrued benefits (A.) - (B.)	$ 1,527,367	$ 1,733,508
D. Funded Ratio		
Ratio of actuarial value of assets to accrued actuarial liabilities (A. / B.)	1.37	1.37

As the Plan's assets are invested in a portfolio with a duration approximately the same as the duration of the accrued liabilities, the funded ratio is essentially unchanged under this scenario.

However, a lower actuarial valuation interest rate results in a higher normal cost. The total negotiated contributions in 2021, 2022 and 2023 will be less than the required minimum funding contributions by approximately $85,603,000 in this adverse scenario. However, as the actuarial value of assets on hand exceed the accrued actuarial liabilities by $1,733,508,000 and the Plan's solvency ratio is 128%, the minimum funding requirements can be met.

($ in 000's)	in 2021	in 2022	in 2023
1. Normal Cost under Plan (with actuarial valuation interest rate decreased by 1%)	29.03%	29.03%	29.03%
2. Required annual special payments towards unfunded actuarial liabilities	-	-	-
3. Required annual special payments towards solvency deficiency	-	-	-
4. Total required minimum funding contributions	29.03%	29.03%	29.03%
5. Estimated total employer and employee required contributions in accordance with the Agreements	14.79%	14.79%	14.79%
6. Estimated present value of current year's contributory earnings at the beginning of year (in '000's)	$ 194,494	$ 200,329	$ 206,339
7. Estimated shortfall of contributions (in '000's) ([5.-4.]x6.)	$ (27,695)	$ (28,526)	$ (29,382)

Longevity Improvement

There have been periodic updates to the mortality table to be used in pension actuarial valuations in the last ten years as members' life expectancy continues to improve. Longevity improvements can result in major increases in liabilities and are not offset by changes in assets, which may cause pension funding challenges.

We have illustrated below the impact from further mortality improvements in the Plan by using the 2014 CPM Private Sector Mortality Table adjusted to have the effect of members being three years younger than their true ages (a 3 year "setback").This is equivalent to assuming that members on average will live close to three years longer than current assumptions.

	Base (in 000's)	Mortality Table with 3 year setback (in 000's)
A. Actuarial Value of Assets	$ 5,609,129	$ 5,609,129
B. Actuarial Liabilities	$ 4,081,762	$ 4,388,579
C. Funded Position		
Excess of actuarial value of assets over actuarial liabilities for accrued benefits (A.) - (B.)	$ 1,527,367	$ 1,220,550
D. Funded Ratio		
Ratio of actuarial value of assets to accrued actuarial liabilities (A. / B.)	1.37	1.28

In this scenario, the actuarial liabilities for accrued benefits increased by $306,817,000 and the funded ratio decreased by 9%.

The change in mortality assumption also results in higher normal cost, as illustrated below. The required minimum funding contributions exceed the total negotiated contributions in the 3 years following the valuation date by

approximately $51,362,000. However, the minimum funding requirements can be met since the actuarial value of assets on hand exceed the accrued actuarial liabilities by $1,220,550,000 and the Plan's solvency ratio is 128%.

($ in 000's)	in 2021	in 2022	in 2023
1. Normal Cost under Plan (with longevity improvement assumed)	23.42%	23.42%	23.42%
2. Required annual special payments towards unfunded actuarial liabilities	-	-	-
3. Required annual special payments towards solvency deficiency	-	-	-
4. Total required minimum funding contributions	23.42%	23.42%	23.42%
5. Estimated total employer and employee required contributions in accordance with the Agreements	14.79%	14.79%	14.79%
6. Estimated present value of current year's contributory earnings at the beginning of year (in '000's)	$ 193,623	$ 199,432	$ 205,415
7. Estimated shortfall of contributions (in '000's) ([5.-4.]x6.)	$ (16,423)	$ (17,211)	$ (17,728)

Equity Market Fluctuations

Equity market fluctuations can pose a significant risk to the Plan as a drop in the equity market could potentially result in a decrease in the Plan's funded status.

We have illustrated below the potential impact on the Plan should the equity-like assets[1] held by the Plan decrease in market value by 25%.

	Base (in 000's)	-25% Equity Shock (in 000's)
A. Actuarial Value of Assets	$ 5,609,129	$ 5,144,853
B. Actuarial Liabilities	$ 4,081,762	$ 4,081,762
C. Funded Position		
Excess of actuarial value of assets over actuarial liabilities for accrued benefits (A.) - (B.)	$ 1,527,367	$ 1,063,091
D. Funded Ratio		
Ratio of actuarial value of assets to accrued actuarial liabilities (A. / B.)	1.37	1.26

[1] It was assumed that half of the real estate investments and infrastructure funds will react similarly to equities when there is a market crash.

The fund ratio decreased by 11% in this scenario and the excess of actuarial value of assets over actuarial liabilities for accrued benefits decreased by $464,276,000. However, the minimum funding requirements are unchanged, and this excess is still more than sufficient to cover the difference between the normal cost and expected contributions in the three years following the actuarial valuation.

Reduction in Contribution Base

Employer and employee contributions to the Plan are determined by percentage-of-earnings contribution rates fixed by the Collective Agreement. A reduction in the total of active members' contributory earnings in a year decreases the total contributions to the Plan for that year. While lower than expected future contributions does not affect the current funded position on an accrued basis, it could potentially impair the Plan's ability to meet funding requirements.

In Section 4, we presented the results of a valuation assuming benefits are based on final average earnings and target cost-of-living-adjustments are granted. This valuation includes new entrants to the Plan such that the membership will be stable for ten years and then shrink in accordance with the decrement assumptions thereafter. To illustrate the potential impact of lower-than-expected contributions, we compare these results with a scenario in which the number of new entrants is reduced by 40% which is consistent with recent Plan experience.

	Base (in 000's)	40% Decrease in New Entrants (in 000's)
Assets		
1. Market value of assets on hand	$ 5,609,129	$ 5,609,129
2. Actuarial present value of future Employer and participants' contributions	613,985	552,885
3. Total Plan Assets (1.+2.)	$ 6,223,114	$ 6,162,014
Liabilities		
4. Total actuarial liabilities for accrued benefits	$ 4,496,042	$ 4,496,042
5. Total future membership service actuarial liabilities	1,334,559	1,197,920
6. Total Plan liabilities (4.+5.)	$ 5,830,601	$ 5,693,962
Funded Position		
7. Excess (Deficiency) of assets on hand over total actuarial liabilities for accrued benefits (1.-4.)	$ 1,113,087	$ 1,113,087
8. Excess (Deficiency) of actuarial present value of future Employer and participants' contributions over total future membership service actuarial liabilities (2.-5.)	(720,574)	(645,035)
9. Excess of total Plan assets over total Plan liabilities (3.-6.)	$ 392,513	$ 468,052
Funded Ratio		
10. Funded Ratio (3./6.)	1.07	1.08

With some pension plans, a reduction in future contributions (due to a decrease is active membership or decrease in hours worked) has a negative impact on the plan's ability to meet future funding requirements; however, for this Plan the cost to fund future service benefits is greater than the prescribed contributions under the Plan. Therefore under this scenario the funded ratio increases by 1% and the excess of total Plan assets over total Plan liabilities increases by $75,539,000 on an aggregate basis.

Section 7A: Actuarial basis – going concern

Introduction

Pension plans are long term financial commitments and for a negotiated contribution plan the cost of these commitments (or liabilities) must be estimated in order to confirm that the funds being set aside would be sufficient to meet them.

To estimate the cost of the future commitments, assumptions must be made about future events and conditions that will affect the cost. These assumptions may be categorized as either economic or demographic assumptions. Economic assumptions pertain to factors such as the rate of investment return, inflation and earnings increases. Demographic assumptions pertain to events affecting the Plan participants, such as terminations, mortality, and retirement and other assumptions which pertain to conditions that are more Plan specific, such as marital status and the percentage of Plan participants selecting survivors' benefits.

The actuarial basis of calculation for this actuarial valuation is set out below. The actuarial basis includes the economic and demographic assumptions used to value the liabilities. It also includes the actuarial methods used to determine the actuarial value of assets and the allocation of actuarial liabilities to past and future service for determination of the funded position and adequacy of contributions (as provided for in the Collective Agreement) to fund the Plan benefits.

Future events will show the actual cost to be higher or lower than the actuarial estimate since any difference between the Plan's actual experience and the actuarial assumptions will emerge as experience gains or losses in future actuarial valuations. In the long run, the cost of the Plan will ultimately be determined by the benefits provided and by the Plan's actual experience, not by the actuarial basis chosen from time to time by actuaries to estimate this cost.

As in previous actuarial reviews, we have considered the appropriateness of the actuarial assumptions and methods which were used in the previous actuarial valuation in the context of a long term horizon. Since changes in the actuarial basis affect the funded position as reported, major changes are not made frequently or without good reason. We expect to modify the actuarial basis from time to time in response to changing circumstances and experience.

Any changes in assumptions, methods, or basis from those employed in the previous actuarial valuation are noted in this section.

Summary of Actuarial Basis

	December 31, 2020	January 1, 2018
Economic Assumption		
Rate of Inflation	2.00% per annum	Same
Interest rate net of expenses	3.00% per annum	4.10% per annum
Non-investment expenses	Included in the interest rate	Same
Earnings increases		
• For actuarial valuation	2020 annualized earnings increased by 3% per annum (assumed)	2017 annualized earnings increased by 3% per annum (assumed)
• For updating	• 2021 earnings = 2020 earnings increased by 3% • 2022 earnings = 2021 earnings increased by 3% • 2023 earnings = 2022 earnings increased by 3%	• 2018 earnings = 2017 earnings increased by 3% • 2019 earnings = 2018 earnings increased by 3% • 2020 earnings = 2019 earnings increased by 3%
Variable pay	5% per annum	Same
Interest on employee contributions	Same as interest rate	Same
Demographic Assumptions		
Mortality rates	2014 Canadian Pensioners' Private Sector Mortality Table (CPM2014Priv) (Table 1) with generational mortality using improvement scale MI-2017	2014 Canadian Pensioners' Private Sector Mortality Table (CPM2014Priv) (Table 1) with generational mortality using improvement scale CPM-B
Termination rates	None assumed	Same
Retirement rates for active participants	Age related (Table 2)	Same
Retirement age for terminated vested and transferred to management participants	Earliest age at which an unreduced retirement benefit may be granted	Same
Disability rates	Age related (Table 3)	Same
Disabled Retirement Age		
• Date of Disability prior to September 1, 1990	Age 65	Same
• Date of Disability after September 1, 1990	Age of attaining 25 years of service but not prior to age 60 or later than age 65	Same

	December 31, 2020	January 1, 2018
Other Assumptions		
Marital Status		
• non-pensioners	100% married	Same
• pensioners	Actual	Same
Member/Spouse Age Difference		
• non-pensioners	Males 3 years older	Same
• pensioners	Males 3 years older if actual DOB not available	Same
New entrants	None assumed	Same
Voluntary Contribution Account	100% purchase additional benefit payments under the Plan upon retirement	Same
Benefits subject to consent	Included	Same
Actuarial cost method	Aggregate Accrued benefit	Same
Asset valuation method	Market value[1]	Same

[1] Plus, where applicable, the additional regular Employer and Employee contributions receivable in respect of participants of the ERIP/VDIP programs.

Table 1 – Sample Mortality Rates

Age	Rates per 1000 Participants CPM Private Sector Table Base Table – used at January 1, 2018 and December 31, 2020	
	Male	Female
20	0.93	0.20
25	1.23	0.27
30	1.36	0.33
35	1.36	0.46
40	1.54	0.67
45	2.16	0.95
50	3.01	1.42
55	4.53	2.28
60	7.27	3.85
65	10.24	6.18
70	14.88	9.74
75	25.00	16.15
80	45.07	30.00

Table 2 – Retirement Rates

Age	Rates per 1000 Participants	
	Male	Female
54 or under	0.0	0.0
55	100.0	100.0
56	200.0	150.0
57	200.0	150.0
58	100.0	120.0
59	100.0	120.0
60	215.6	215.6
61	266.8	266.8
62	219.2	219.2
63	272.8	272.8
64	327.6	327.6
65	1,000.0	1,000.0

Table 3 – Sample Disability Rates

Age	Rates per 1000 Participants	
	Male	Female
34 or under	0.0	0.0
35	1.8	3.6
40	3.6	7.2
45	3.6	7.2
50	5.4	10.8
55	12.6	25.2
60 or over	0.0	0.0

Rationale for Actuarial Assumptions

Rate of Inflation

The assumption reflects an estimate of future rates of inflation considering economic and financial market conditions at the actuarial valuation date.

For purposes of estimating the cost of increases to benefits in payment at April 1, 2022, 2023 and 2024, it was assumed that the increase each year will be equal to 0.50% (i.e. 25% of the 2.0% assumed rate of inflation).

Interest Rate

The Trustees have adopted an investment strategy which consists primarily of investing the assets in fixed income instruments. The strategy serves to provide greater certainty that the benefits will be fully funded by the assets on hand plus the investment earnings on such assets and future contributions. Securities have been selected with regard to the expected contribution and benefit cashflows to ensure that the Plan's benefits can be provided with a high degree of certainty.

As long as the above mentioned investment strategy remains in place, the actuarial valuation interest rate assumption, to be used in determining the accrued liabilities at the actuarial valuation date, will be determined by reference to the expected yield on the assets held in respect of these liabilities at the same date.

To determine the expected yield on the assets, the expected return for each asset class is multiplied by the percentage that each asset class represents of the total fund. The 3.00% per annum actuarial valuation interest rate was determined as follows:

a) the assumed rate of inflation of 2.00% per annum, plus

b) the expected long-term real return of 2.59% per annum, which is equal to a blend of the expected long-term real return as at December 31, 2020 on the fund's assets existing at that date of 2.53%(2/3^{rds}) and on the fund's asset mix reflecting future commitments already made but not yet drawn down of 2.69%(1/3rd), less

c) an allowance for directly paid investment management fees of 0.11% per annum, less

d) an allowance for non-investment fees of 0.07% per annum, less

e) a margin for adverse deviations of 1.41% per annum comprised of 1.11% per annum for default risk, mismatching, equity risk, other interest rate risks and 0.30% per annum for other non-investment assumptions.

The margin set out in e) above is intended to include the default risk margin and a provision for the potential that the non-fixed income assets will not perform as well as anticipated.

Plan Expenses – investment and non-investment

The interest rate is net of all expenses, as described above The assumed expense level is based on the last several years of experience of the Plan as well as on future expectations and is unchanged from the expense assumption used in the January 1, 2018 actuarial valuation.

Earnings Increases

We have increased each participant's 2020 annualized covered earnings by 3% per annum to estimate 2021 and future earnings for purposes of projecting future Employee and Employer contributions to the Plan and calculating the actuarial liabilities for benefits to be accrued after the actuarial valuation date.

Pursuant to the Collective Agreement ratified in 2011, variable pay was offered to eligible participants as a portion of their earnings. In this actuarial valuation, all active and disabled participants are assumed to be eligible for

variable pay at 5% of regular earnings per annum from the actuarial valuation date, the same assumptions as in the January 1, 2018 actuarial valuation.

Mortality

In the previous actuarial valuation report, we presented the results of a mortality experience study covering the ten-year period from January 1, 2008 to December 31, 2017. Based on the findings, we concluded that the CPM private table with generational projection using improvement scale CPM-B, adjusted for size and industry factors[1], provides a good representation of the mortality experienced by the Plan membership and can be considered a best estimate. However, for the January 1, 2018 actuarial valuation we removed the adjustments for size and industry factors, thereby including a margin for adverse deviations in regards to mortality improvements and longevity risk.

We believe that the adjusted CPM private table combined with the CPM-B improvement scale continues to provide a reasonable best estimate assumption for the Plan. However, for the December 31, 2020 actuarial valuation we have used the CPM private table without adjustments to once again include a margin for adverse deviations in the mortality assumption. In addition, we have updated the improvement scale from CPM-B to MI-2017 and therefore have increased this margin compared to the previous valuation.

Termination

No allowance has been made for withdrawals prior to retirement as including such assumption would not have a material impact on the actuarial valuation results.

Retirement from active participant status

We have continued to utilize the same rates of retirement that were used for the January 1, 2018 actuarial valuation as the Plan's experience over recent years cannot conclusively suggest that the assumption is inappropriate for the Plan and the current rates of retirement are consistent with an assessment of future expectations. All participants are assumed to commence their pension at the retirement date.

Retirement from termination vested and transferred to management status

For purposes of valuing benefit liabilities with respect to former participants (terminated vested), it was assumed that the former participants would retire at the earliest age at which an unreduced retirement benefit may be granted based on their respective dates of termination.

For purposes of valuing benefit liabilities with respect to transferred to management participants, it was assumed that their eligibility service for unreduced retirement benefits will continue to grow until retirement and they would retire at the earliest age at which an unreduced retirement benefit may be granted.

Disability

The rates of disability are based on the Plan's experience and an assessment of future expectations. No recovery rate is assumed. The same rates of disability were used for the January 1, 2018 actuarial valuation.

Marital Status and Spouse's Age

For purposes of calculating the actuarial liability for the pre-retirement spouse's benefit, we have continued to assume that 100% of participants and former participants were married at date of death and on average a female spouse is three years younger than a male spouse.

[1] Size factor adjustments of 1.020975 for male participants and 0.978555 for female participants and industry factor adjustment of 1.07.

For purposes of calculating reserves for benefits payable to retired participants who have elected Joint and Last Survivor options, if the date of birth of a spouse is not available, it was assumed a female spouse is three years younger than a male spouse.

Maximum Pensions

For purposes of our current actuarial valuation and cost calculations, we have ignored the maximum pension limitations contained in the Income Tax Act as these have no material impact on the results.

New Entrants

As with our previous actuarial valuations, we have continued to make no advance allowance for replacement of participants who retire, die or become disabled in the future.

Voluntary Contribution Account

We have assumed that all participants who have a Voluntary Contribution Account balance at the time of their retirement will choose to purchase additional benefits under the Plan. This assumption is consistent with the Plan's recent experience.

Benefits subject to consent

Upon receipt of consent from the Board of Trustees, participants are eligible to receive pension benefits inclusive of the early retirement subsidies upon retirement from the Plan.

For purposes of valuing benefit liabilities, it was assumed that consent is provided and therefore the cost of providing such early retirement subsidies has been included in the actuarial liabilities.

Going Concern Actuarial Methods

Assets

As with our last actuarial valuation, the actuarial value of assets for this actuarial valuation was set equal to the market value of assets adjusted for benefits and expenses due and unpaid and contributions in transit.

Liabilities

The going concern actuarial valuation of the liabilities is conducted using the Aggregate Actuarial Cost Method. This is the same as the method used in the previous actuarial valuation. The results of our calculations are presented in the form of an actuarial balance sheet as shown in Section 3. We have assembled these results in order to compute the actuarial liability for benefits accrued for service up to the actuarial valuation date, so that this figure can be compared with the assets on hand.

The accrued actuarial liabilities are determined based on service and benefit credits accrued up to the actuarial valuation date and are equal to the sum of:

a) the actuarial present value of benefit credits accrued to non-pensioners; and

b) the actuarial present value of benefits payable to pensioners.

For purposes of determining the required minimum funding under the PBSA-85, the actuarial liabilities for benefits to be earned in the year following the actuarial valuation date are calculated based on the Unit Credit Cost Method, expressed as a percentage of covered earnings, and the assumptions outlined in this Section. It has been assumed that the Unit Credit Cost, expressed as a percentage of covered earnings, for the years 2022 and 2023 will be approximately equal to the cost calculated for 2021. This implicitly assumes that new entrants will replace

active participants who leave because of death, disability or retirement and that the demographic profile of the membership will be preserved.

Benefits Valued

The benefits valued were those in effect at the actuarial valuation date as described in Section 8.

For purposes of disability benefit, we assumed that all future disabled participants will receive long term disability benefit payments under the Company disability plan and will accrue benefit credits under the Plan until retirement. The retirement age of 65 is applied for the participants who became disabled prior to September 1, 1990. For all other disabled participants, the retirement age was set to the age when they would attain 25 years of service, but not prior to age 60 or later than age 65.

Contributions

This is a negotiated contribution, jointly trusteed defined benefit pension plan.

In our calculations we assumed that future contributions would be paid by Employees and Employers in accordance with the terms of the applicable Collective Agreements or special agreements entered into between the parties concerned. As of January 1, 2021 the required rates of contribution for Employees and Employers are as shown in Section 4. Contributions were assumed to be received monthly.

Section 7B: Actuarial basis – solvency

Introduction

As required by the PBSA-85, a solvency actuarial valuation was performed on the Plan as at December 31, 2020 in accordance with the standards prescribed by the PBSA-85. The following actuarial assumptions and methods were used in performing the solvency actuarial valuation.

Summary of Actuarial Basis

	December 31, 2020	January 1, 2018
Economic Assumptions		
Interest Rate		
• Lump sum transfers	1.40% per annum for 10 years, then 2.90% per annum	2.80% per annum for 10 years, then 3.30% per annum
• Replicating Portfolio • Annuity Purchase	2.05% per annum 2.50% per annum	3.20% per annum 3.05% per annum
Allowance for expenses on windup • Replicating Portfolio • Annuity Purchase	 $2,374,000 (assumed to be the sum of a fixed cost of $100,000 to set up replicating portfolio plus $400 per non-retired participant) $4,277,000 (assumed to be the sum of a fixed cost of $1,000,000 plus $400 per non-retired participant plus $100 per retired participant)	 $2,658,000 (assumed to be the sum of a fixed cost of $100,000 to set up replicating portfolio plus $400 per non-retired participant) $4,511,000 (assumed to be the sum of a fixed cost of $1,000,000 plus $400 per non-retired participant plus $100 per retired participant)
Earnings increases	Nil	Nil
Demographic Assumptions		
Mortality		
• Lump sum transfers/Annuity Purchase	2014 Canadian Pensioners' Combined Mortality Table with generational mortality using improvement scale CPM-B	Same
• Replicating Portfolio	2014 Canadian Pensioners' Private Sector Mortality Table (CPM2014Priv) (Table 1) with generational mortality using improvement scale MI-2017	2014 Canadian Pensioners' Private Sector Mortality Table (CPM2014Priv) (Table 1) with generational mortality using improvement scale CPM-B
Termination	Immediate	Same

	December 31, 2020	January 1, 2018
Retirement age		
• active participants who elect ERIP	Date of severance	Same
• other active participants	Age 65	Same
• disabled participants	Age 65	Same
• terminated vested and transferred to management participants	Age 65	Same
Disability	None assumed	Same
Other Assumptions		
Settlement Method		
• Lump sum transfers	Only non-retired participants not eligible to retire immediately	Same
• Replicating Portfolio/Annuity Purchase	Retired participants and beneficiaries of retired participants and 100% of non-retired participants eligible to retire immediately	Same
Voluntary Contribution Account	100% purchase additional benefit payments under the Plan upon retirement	Same
Benefits subject to consent	Not included	Same
Actuarial cost method	Accrued benefit	Same
Asset valuation method	Market value	Same

Solvency Liability Scenario

The solvency actuarial valuation is based on a solvency liability scenario, involving the participants' accrued pensions and associated rights, based on applicable statutory windup requirements, Plan provisions, credited service, historical earnings and accumulated contributions up to the actuarial valuation date.

Replicating Portfolio

At December 31, 2020 we have valued the scenario for which participants who have retired and those participants who are eligible to retire, the Plan will continue to provide monthly pension benefits. The Plan's assets would be invested in a replicating portfolio with similar cash flow and duration characteristics to the accrued benefit cash flows. All other member benefits are discharged through lump sum transfers.

Annuity Purchase

As required by the CIA Standards, we have also disclosed information assuming that, in the wind-up scenario, a single premium annuity purchase is completed for those participants who have retired and those who are eligible to retire. All other member benefits are discharged through lump sum transfers.

Rationale for Actuarial Assumptions

Replicating Portfolio

It was assumed that, in the event of Plan windup, the Trust would invest the assets in a replicating portfolio that would approximately match the cash flow and duration characteristics of the accrued benefit cashflows in respect of retired participants, beneficiaries of retired participants and 100% of non-retired participants at the actuarial valuation date.

The replicating portfolio was produced, as of the actuarial valuation date, by the Plan's primary bond manager (CIBC Asset Management) after taking Plan benefit cashflows into account:

Asset Mix (and gross avg. yield):	80% provincial bonds (average yield = 1.85%) 2% 'A' corporate bonds (average yield = 3.63%) 18% 'BBB' corporate bonds (average yield = 4.80%)
Modified Duration:	12.7 years
Expected Gross Yield:	2.42%
Expenses (investment):	0.07%
Expenses (non-investment):	0.04%
Provision for Adverse Deviations:	0.26%
Net Yield to Value Liabilities:	2.05%

Passive fixed income investment manager expenses are assumed to be 0.07% of assets which is equivalent to the current investment fees paid to CIBC Asset Management. Non-investment expenses to continue managing the Trust are assumed to be 0.04%. In 2021, this equates to approximately $2.2 million. Actual non-investment expenses in 2020 were $2.8 million. It is noted that the cost of administering the Plan would decrease significantly given that only monthly benefits are being paid and no active participants would remain.

The provision for adverse deviation is 0.26% of assets. This includes a provision for bond default, reinvestment risk and other adverse experience. The provision for adverse deviations as measured on a replicating portfolio basis is equivalent to an increase in total liabilities of approximately 3.1%.

With respect to the replicating portfolio scenario, the benefit cashflows have been created assuming the same mortality experience as the going concern actuarial valuation. Specifically, we have used the 2014 Canadian Pensioners' Private Sector Mortality Table (CPM2014Priv) with generational mortality using improvement scale MI-2017. Sample rates can be found in Table 1 of Section 7A. As discussed in Section 7A, these rates include a margin for mortality improvement and longevity risk. The margin as measured on a replicating portfolio basis is equivalent to an increase in total liabilities of approximately 2.4%.

Annuity Purchases

In this scenario, it was assumed that, in the event of Plan windup, annuities would be purchased in respect of retired participants and beneficiaries of retired participants and all active and inactive participants who are eligible for immediate retirement at the actuarial valuation date.

The cost of any such annuities was estimated based on economic conditions in effect at the actuarial valuation date. An interest rate of 2.50% per annum and mortality rates from the 2014 CPM Mortality Table (Combined) with generational mortality projection using mortality projection Scale CPM-B (sex distinct rates) were used to estimate the cost of these annuities. These rates were established in accordance with the Canadian Institute of Actuaries ("CIA") Standards of Practice - General Standards and are based on the research conducted by the CIA Committee on Pension Plan Financial Reporting (Education Note of March 2021). The guidance suggests that the annuity purchase rate depends on the duration of the liabilities. The duration of the liabilities to be settled via a non-indexed annuity is 11.58.

Lump Sum Transfer Values

Where annuities were not assumed to be purchased, or a replicating portfolio created, as per the foregoing, it was assumed that the commuted value payable in the event of a Plan windup would be the lump sum transfer amount payable on an individual termination of employment, in lieu of a deferred pension payable from the Plan.

Lump sum transfer amounts were determined in accordance with the CIA Standards of Practice for Pension Commuted Values (i.e. Section 3500 of the CIA Standards of Practice - Practice-Specific Standards for Pension Plans, revised March 31, 2015) as applicable to terminations occurring in December 2021 resulting in discount rates of 1.40% per annum for 10 years and 2.90% per annum thereafter and mortality rates from the 2014 CPM Mortality Table (Combined) with generational mortality projection using mortality projection Scale CPM-B (sex distinct rates).

Earnings Increases

No allowance was made for future increases in earnings.

Retirement Age

Depending on the participants' status at date of actuarial valuation, we have employed the following retirement age assumptions to calculate benefits (except for active participants who elect ERIP, where members retire immediately, actuarial equivalence will be calculated from the ages below):

- for active participants who elect ERIP – date of severance
- for other active participants – age 65
- for disabled participants – age 65
- terminated vested and transferred to management participants – age 65

Disability

No provision was made for disability after the actuarial valuation date.

Termination

It was assumed that all participants terminate at the actuarial valuation date, with full vesting of accrued benefits.

Settlement Method

We have assumed that 100% of active and inactive participants who are eligible for immediate retirement at the actuarial valuation date would have annuities purchased on their behalf.

Voluntary Contribution Account

We have assumed that all participants who have a Voluntary Contribution Account balance at the time of their retirement will choose to purchase additional benefits under the Plan. This assumption is consistent with the Plan's recent experience.

Benefits subject to consent

Upon receipt of consent from the Board of Trustees, participants are eligible to receive pension benefits inclusive of the early retirement subsidies upon retirement from the Plan.

For purposes of valuing benefit liabilities, it was assumed that consent is not provided and therefore the cost of providing such early retirement subsidies has been excluded from the actuarial liabilities.

Solvency Actuarial Valuation Actuarial Methods

Assets

Assets deemed to be available for purposes of the solvency actuarial valuation are equal to:

i) the market value of assets in the Fund, adjusted for any receivables or payables; plus

ii) the present value of admissible special payments as defined under the Regulation to the PBSA-85, discounted using the assumed interest rates of the solvency actuarial basis; less

iii) windup expenses.

Liabilities

The Accrued Benefit Actuarial Cost Method was used to determine the solvency liabilities. Under this method, for each Plan participant, the accrued actuarial liabilities are determined as the present value of all benefits accrued to the actuarial valuation date.

Total solvency liabilities are compared with the assets deemed to be available to cover such liabilities to determine the solvency of the Plan at the actuarial valuation date.

Benefits Valued

The benefits valued were based on the Plan provisions applicable on Plan termination in effect at date of actuarial valuation, including the benefit improvements granted effective January 1, 2021. On Plan termination, consent is not granted to members for the subsidized early retirement provisions. Actuarial equivalent reductions are employed.

No allowance was made for subsequent benefit increases granted or improvements implemented, if any, under the Plan after the actuarial valuation date.

Section 8: Summary of Plan provisions including improvements and amendments up to January 1, 2021

The following section provides a summary of Plan provisions only. For a complete listing of the provisions and terms, the Plan document should be referenced.

I. Effective Date and Eligibility

The Effective Date of the Plan was January 1, 1973. Prior to January 1, 1975, the Plan was called the Federation of Telephone Workers of British Columbia Supplemental Retirement Plan. Effective December 31, 1978, O.K. Tel Plan participants became Participants in this Plan.

All employees shall become Participants in accordance with the collective agreement.

II. Definitions

1. Annualized Earnings

Beginning with 2008, a Participant's Annualized Earnings for the calendar year is the amount equal to the Participant's Earnings divided by the Participant's Credited Service accumulated during the calendar year.

2. Average Annual Earnings

Beginning with 2009, a Participant's Average Annual Earnings for the calendar year is the amount, on January 1, of that calendar year, that is the lessor of:

(a) The average of the Participant's Earnings over the three calendar years preceding that January 1; and

(b) The product of 260.89 multiplied by the average of the Participant's Daily Rate on December 31 for each of the three years immediately preceding that January 1.

3. Average Annualized Earnings

Beginning with 2009, a Participant's Average Annualized Earnings is the amount, on each January 1, that is the lessor of:

(a) The average of the Participant's Annualized Earnings over the three calendar years preceding that January 1; and

(b) The product of 260.89 multiplied by the average of the Participant's Daily Rate as of December 31 for each of the three years immediately preceding that January 1.

4. Disability Pension Commencement Date

Prior to September 1, 1990

A Participant who becomes totally and permanently disabled as hereinafter defined may retire on a Disability Pension Commencement Date which may be the first day of any month prior to his sixty-fifth (65th) birthday and subsequent to the date the Trustees determine such Participant to be totally and permanently disabled.

Subsequent to September 1, 1990

A Participant who becomes totally and permanently disabled as hereinafter defined may retire on a Disability Pension Commencement Date which may be the first day of any month prior to his sixtieth (60th) birthday or his attainment of twenty-five (25) years of Service, whichever is the later, provided such date is prior to his sixty-fifth (65th) birthday and subsequent to the date the Trustees determine such Participant to be totally and permanently disabled.

5. Early Pension Commencement Date

i) A Participant who has attained the age of fifty-five (55) years or who has attained the age of fifty (50) years and who has attained thirty (30) years of Pension Eligibility Service or more may retire on the benefit described in paragraph III(2)(ii) of this Section 8.

ii) On written application to and with the consent of the Trustees a Participant who has either attained the age of sixty (60) years or who has both attained the age of fifty-five (55) years and has twenty-five (25) years of Pension Eligibility Service or more may retire on the benefit described in paragraph III(2)(i) of this Section 8.

iii) On written application to and with the consent of the Trustees a Participant who has attained the age of fifty (50) years and who has attained thirty (30) years of Pension Eligibility Service or more may retire on the benefit described in paragraph III(2)(iii) of this Section 8.

iv) On written application to and with the consent of the Trustees a Participant who has attained the age of fifty-five (55) years but who has not attained the age of sixty (60) years has not attained twenty-five (25) years of Pension Eligibility Service may retire on the benefit described in paragraph III(2)(iv) of this Section 8.

Upon satisfying any one of the above described conditions, a Participant may retire as of the first day of any calendar month following the date his service with the Company ceases.

The granting of consent by the Trustees shall be on a non-discriminatory basis. However, if the Trustees receive or anticipate the receipt of a series of applications for consent for early retirement under this Section 8 which result from or are based on an ERIP the Trustees shall consider the financial and actuarial implications of granting or continuing to grant consent for early retirement and determine whether or not such applications for early retirement should be granted.

6. Normal Pension Commencement Date (Pensionable Age)

The Normal Pension Commencement Date of a Participant shall be the first day of any month coinciding with or following the date upon which the Participant has attained his sixty-fifth (65th) birthday, but not later than December 1 of the year in which the Participant attains age 71.

7. Pension Eligibility Service

Pension Eligibility Service is equal to the full calendar months of Covered Employment with an Employer, expressed in calendar years and a fraction of a calendar year.

8. Voluntary Contribution Account

The Voluntary Contribution Account is equal to the total of a Participant's Voluntary Contributions plus interest on those contributions. Upon retirement, a Participant must either use their Voluntary Contribution Account balance to purchase additional pension benefit payments or transfer the balance out of the Plan.

III. Amount of Benefits

1. Retirement Benefit

Every Participant who retired at his Normal Pension Commencement Date prior to January 1, 2021, was provided an annual Retirement Benefit, payable monthly, in accordance with the terms of this Plan or the O.K. Tel. Plan as was applicable at the date they retired.

Upon retirement at his Normal Pension Commencement Date, on or after January 1, 2021 each Participant shall be entitled to receive an annual Retirement Benefit, payable monthly, equal to the sum of:

i) twenty-five percent (25%) of the total of the Participant's Required Contributions made to The Federation of Telephone Workers of British Columbia Supplemental Retirement Plan prior to January 1, 1975,

PLUS

ii) the larger of either one and three-quarters percent (1¾%) of the Participant's Average Annual Earnings as of January 1, 2021 times his years of Past Service or the Participant's Former Plan Benefit,

PLUS

iii) one and three-quarters percent (1¾%) times the Participant's years of accrued Credited Service as of January 1, 1995 multiplied by his Average Annual Earnings at January 1, 2021,

PLUS

iv) one and three-quarters percent (1¾%) times the Participant's years of accrued Credited Service subsequent to December 31, 1994 as of January 1, 2021 multiplied by his Average Annualized Earnings at January 1, 2021,

PLUS

v) one and three-quarters percent (1¾%) of the Participant's Earnings during each Plan year subsequent to January 1, 2021.

Disabled Participants as of January 1, 2021 shall also have their annual Retirement Benefits computed in accordance with the foregoing paragraphs.

In no event shall a Disabled Participant's or Participant's Retirement Benefit under item (ii) above be less than his Retirement Benefit under such item (ii) at December 31, 2020 nor shall the Retirement Benefit under items (iii) and (iv) above combined be less than his accrued Retirement Benefit under such paragraphs (iii), (iv) and (v) combined as existed at December 31, 2020.

In determining the Retirement Benefit payable to a Disabled Participant at retirement there shall be deducted from the Retirement Benefit computed in accordance with this paragraph the amount, if any, of the annual benefit being paid to such Disabled Participant by the Company on a life annuity basis on account of his disability.

A Former Participant will be entitled to a Retirement Benefit in accordance with the provisions of the Plan applicable at the date of termination of employment with the Company.

2. Early Retirement Benefit

A Participant who retires at an Early Pension Commencement Date shall receive an annual Retirement Benefit, payable monthly, calculated as follows:

i) If the Participant has attained the age of sixty (60) years or has both attained the age of fifty-five (55) years and has twenty-five (25) years of Pension Eligibility Service or more and has received the consent of the Trustees, in accordance with paragraph II(3)(ii) of this Section 8, to retire at an Early Pension Commencement Date, the full amount of the Participant's Retirement Benefit shall become payable.

ii) If the Participant does not satisfy the provisions of paragraph (i) of this subsection or has not received the consent of the Trustees to retire at an Early Pension Commencement Date then the Actuarial Equivalent of his Retirement Benefit shall become payable.

iii) If the Participant has attained the age of fifty (50) years and has thirty (30) years of Pension Eligibility Service or more and has received the consent of the Trustees, in accordance with paragraph II(3)(iii) of this Section 8, to retire at an Early Pension Commencement Date, then the Actuarial Equivalent of his Retirement Benefit, calculated on the basis that it is due to commence without reduction on the first day of the month following his attainment of age fifty-five (55), shall become payable.

iv) If the Participant has attained the age of fifty-five (55) years but has not attained the age of sixty (60) and has less than twenty-five (25) years of Pension Eligibility Service and has received the consent of the Trustees, in accordance with paragraph II(3)(iv) of this Section 8, to retire at an Early Pension Commencement Date, then the Actuarial Equivalent of his Retirement Benefit calculated on the basis that it is due to commence without reduction on the first day of the month following his attainment of age sixty (60), shall become payable.

Pursuant to the requirements of the *Income Tax Act (Canada)* and the Regulations thereto any Retirement Benefit payable pursuant to paragraphs (ii) or (iv) of this subsection shall not exceed an amount that is equal to the Retirement Benefit reduced by one-quarter of one percent (0.25%) for each month between the first day of the month that the Retirement Benefit commences payment and the earliest of the first day of the month following the attainment of age sixty (60), the first day of the month following the attainment of thirty (30) years of Continuous Service, assuming the Participant continued to be employed and the first day of the month following the attainment of eighty (80) points, where age is added to years of Continuous Service and assuming the Participant continued to be employed.

Such Retirement Benefit, payable in the normal form shall commence as of the applicable Early Pension Commencement Date.

3. Disability Retirement Benefit

Commencing from January 1, 1992, all disability pensions in payment as at December 31, 1991 and future disability benefits will be payable under the LTD Plan. No disability benefits will be payable under the Plan on and after January 1, 1992 irrespective of a Participant's date of disability.

While disabled, the Participant continues to accrue credits on the basis of the rate of earnings he would be receiving had he not become disabled. A Disabled Participant shall be deemed to have recovered from total and permanent disability, as that term is used in this Plan, on the earliest of the following dates:

For a Disabled Participant whose date of disability was prior to September 1, 1990:

i) the date that the Disabled Participant ceases to be entitled to disability benefits under the Canada Pension Plan;

ii) the date the Disabled Participant is determined by the Trustees not to be totally and permanently disabled; and

iii) the first day of the month coinciding with or next succeeding his sixty-fifth (65th) birthday (at this date he would be eligible to retire).

For a Disabled Participant whose date of disability was subsequent to September 1, 1990:

i) the date that the Disabled Participant ceases to be entitled to disability benefits under the Canada Pension Plan;

ii) the date that the Disabled Participant is determined by the Trustees not to be totally and permanently disabled; and

iii) the latest of: the first day of the month coinciding with or next succeeding the Disabled Participant's sixtieth (60th) birthday, the first day of the month coinciding with or next succeeding his attainment of twenty-five (25) years of Service, the date that he ceases to be eligible to receive a disability benefit or disability loan under the Telecommunication Workers Employee Life and Health Trust, and the date he ceases to be eligible to receive disability payments from the Company's Disability and Death Benefits Plan; provided such date is not later than the first day of the month next following his sixty-fifth (65th) birthday.

4. Termination of Membership Benefit

A Participant may elect a refund of his Voluntary Contribution Account, if any, with interest at any time.

Upon termination prior to July 1, 2011, before completion of two (2) years of Pension Eligibility Service, a refund shall be paid of the Participant's Required Contributions, with credited interest, and the Voluntary Contribution Account, if any, with interest.

A Participant who has terminated after February 12, 1987 but before July 1, 2011 and has completed two (2) years of Pension Eligibility Service or more, or after June 30, 2011 with any amount of Pension Eligibility Service, may not elect a refund of his Required Contributions, with credited interest, at his date of termination but may elect a refund of his Voluntary Contribution Account, if any. Such a Participant shall become a Former Participant and will be entitled to a deferred Retirement Benefit commencing at his Normal Pension Commencement Date equal to the sum of his Retirement Benefit accrued to his date of termination plus any amounts provided under paragraph III(7) of this Section 8. A Participant who becomes a Former Participant before reaching age fifty-five (55), who is neither a Management Transferee nor a person who contributions to a TELUS defined contribution plan, may transfer the Actuarial Equivalent Value of the Retirement Benefit to another plan or other permitted retirement vehicle. A Participant who is transferred to non-bargaining unit employment may not elect a refund of his Required Contributions, with credited interest, but may elect a refund of his Voluntary Contribution Account, if any, and his rights and benefits under the Plan shall be determined upon the subsequent termination of his employment.

Each Participant who elected to terminate employment with the Company in accordance with the 2002-2003 My Future Choice voluntary departure incentive program or the Voluntary Departure Incentive Program pursuant to the Collective Agreement ratified in 2005 and who has been reported by the Company as having received a payment in accordance with the VDIP option shall become an Incented Terminated Participant. Effective January 1, 2002, Former Participants shall include Incented Terminated Participants. Unless otherwise indicated, Incented Terminated Participants shall be treated the same as Former Participants.

Early Retirement of a Former Participant

A Former Participant entitled to a deferred Retirement Benefit may elect to commence his Retirement Benefit prior to his Normal Pension Commencement Date in accordance with the early retirement provisions of paragraph III(2) of this Section 8.

Notwithstanding the above, an Incented Terminated Participant may elect to commence his Retirement Benefit prior to his Normal Pension Commencement Date provided that such Retirement Benefit is determined as the Actuarial Equivalent of the deferred Retirement Benefit commencing at the Incented Terminated Participant's Normal Pension Commencement Date plus any amounts provided under paragraph III(7) of this Section 8.

5. Death Benefit after July 30, 2011

Before Retirement – A Participant's, Disabled Participant's or Former Participant's beneficiary shall be paid such Participant's Voluntary Contribution Account, if any, at such Participant's date of death and, depending on his age and years of Pension Eligibility Service and marital status at his date of death, a regular benefit payment or a lump sum refund, described as follows:

i) Prior to attaining age fifty-five (55) – his surviving spouse/beneficiary/estate shall be paid the commuted value of the Retirement Benefit, including any amounts provided under paragraph III(7) of this Section 8, as if he had terminated employment on his date of death. An additional benefit shall be paid to a surviving non-spouse beneficiary, if one was designated on or before February 12, 1987;

ii) After attaining age fifty-five (55) with a surviving spouse – his surviving spouse shall be paid a regular monthly benefit equal to that which the spouse would receive with respect to the Retirement Benefit, including any amounts provided under paragraph III(7) of this Section 8, had he retired, with the consent of the Trustees, on the first day of the month following his date of death on the joint and survivor option with one hundred percent (100%) continuance to the joint annuitant. An additional benefit shall be paid to a surviving non-spouse beneficiary, if one was designated on or before February 12, 1987;

iii) After attaining age fifty-five (55) and without a surviving spouse – his beneficiary or estate shall be paid the Actuarial Equivalent Value of the Retirement Benefit, including any amounts provided under paragraph III(7) of this Section 8, had he retired, with the consent of the Trustees, on the first day of the month following his date of death on the life annuity guaranteed for fifteen (15) years option.

Notwithstanding the above, the death benefit payable under sub-paragraphs (ii) and (iii) above in respect of an Incented Terminated Participant shall be calculated as if he had retired without the consent of the Trustees on the first day of the month following his date of death.

After Retirement – the Retired Participant's beneficiary is entitled to benefits in accordance with the Retired Participant's elected form of retirement income.

6. Normal Form of Retirement Benefit

The normal form of Retirement Benefit under the Plan shall be one providing for monthly retirement benefit payments for the remaining lifetime of the Retired Participant with the provision that, should the Retired Participant die after his Retirement Benefit has commenced but before he has received sixty (60) payments thereof, the said payments shall be continued to his designated beneficiary until sixty (60) payments in all, including monthly payments made to the Retired Participant, shall have been made. If the Retired Participant's death occurs after sixty (60) monthly payments have been made, all payments shall cease after the payment immediately preceding the Retired Participant's death.

7. Minimum Benefit on and after July 1, 2011 for Retirement, Termination and Pre-Retirement Death

On and after July 1, 2011, a Participant, Disabled Participant or Former Participant shall have his Retirement Benefit increased, where such increment is the sum of:

i) the Actuarial Equivalent of the excess, if any, of his Required Contributions, with credited interest, over 50% of the Actuarial Equivalent of his Retirement Benefit, and

ii) Actuarial Equivalent of the excess, if any, of his Required Contributions, with credited interest, over the Actuarial Equivalent of his Retirement Benefit plus the amount, if any, in paragraph III(7)(i) of this Section 8.

IV. Contributions

1. Participant

Required Contributions

Participants are required to contribute based on their age as follows:

- Under age 30 – 3% of gross earnings
- Age 30 or older but under 40 – 4% of gross earnings
- Age 40 or older but under 50 – 5% of gross earnings
- Age 50 or over – 6% of gross earnings

Disabled Participants are not required to contribute to the Plan.

Voluntary Contributions

Participants are permitted to make additional voluntary contributions up to the maximum permitted under the Income Tax Act. A participant may elect a refund of his Voluntary Contribution Account at any time.

2. Employer

The Employers make contributions of 10% of earnings to the Pension Plan in accordance with the Collective Agreement.

The Employer is not required to make contributions to the Plan for Disabled Participants.

Section 9: Summary and reconciliation of membership data

Membership data as at December 31, 2020 was based on the information supplied by the Employer and records maintained under the Plan by the Plan Administrator, which provides name, sex, date of birth, date of participation, years of credited service, covered earnings and other applicable details for active participants, disabled participants, terminated vested participants, transfer to management participants, retired participants, beneficiaries and survivors.

We were also provided with the auditor's financial report prepared as at the actuarial valuation date.

We have reviewed the data and compared it to the data used in the prior actuarial valuation for consistency and reliability for use in this actuarial valuation. The main tests of sufficiency and reliability which were conducted on the membership data were as follows:

- a review of consistency of individual data items and statistical summaries between current and prior actuarial valuations;
- a review of reasonableness of individual data items, statistical summaries and changes in such information since the prior actuarial valuation;
- a comparison of the membership data and the auditor's financial statements for consistency;
- a reconciliation of Plan membership status from the prior actuarial valuation to the current actuarial valuation.

The data and information provided, with the exception of the financial statement, were unaudited. Some clarifications and verifications on certain data and information were made during the process of our review.

Summary of Data

Various summaries of the membership data entering the actuarial valuation and membership movements since the last actuarial valuation are set out in the following tables:

A. Active Participants

a) Overall Summary

	At December 31, 2020			At January 1, 2018		
	Males	Females	Combined	Males	Females	Combined
Number of Participants	1,902	1,000	2,902	2,243	1,275	3,518
Average Age[1]	42.8	43.2	42.9	42.7	42.7	42.7
Average Required Contribution Account Balance[2]	$ 39,414	$ 35,856	$ 38,188	$ 41,699	$ 35,188	$ 39,339
Average Voluntary Contribution Account Balance	$ 1,613	$ 1,240	$ 1,484	$ 1,195	$ 1,047	$ 1,141
Average Years of Past Service	0.0	0.0	0.0	0.0	0.0	0.0
Average Years of Accrued Membership Service[3]	11.6	12.6	11.9	12.5	12.9	12.6
Average Estimated Pensionable Earnings[4,5]	$ 77,306	$ 67,992	$ 74,096	$ 73,332	$ 63,116	$ 69,630
Average Accrued Pension	$ 14,826	$ 13,910	$ 14,510	$ 15,758	$ 14,048	$ 15,138

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] Adjusted to include Supplemental and Purchased Contributions.

[3] Adjusted to include years of Supplemental and Purchased Service.

[4] Estimated 2018 pensionable earnings are the Annualized 2017 earnings increased by 3%, further adjusted by the ratio of expected variable pay of 5% to the average total of variable pay and lump sum received in 2017.

[5] Estimated 2021 pensionable earnings are the Annualized 2020 earnings increased by 3%, further adjusted by the ratio of expected variable pay of 5% to the average total of variable pay and lump sum received in 2020.

b) Active Participants – Data Distributed by Quinquennial Age Group as at December 31, 2020

Age[1] Group	Number of Participants	Years of Past Service	Years of Membership Service[2]	Annual Supplemental Past Service Benefit Credit	Annual Accrued Past Service Benefit Credit	Annual Accrued Membership Service Benefit Credit[3]	Microtel Accrued Service Benefit Offset	Required Contribution Account Balance[4]	Voluntary Contribution Account Balance	Average Estimated Annualized 2021 Pensionable Earnings[5]
Males										
20-24	27	-	54	$ -	$ -	$ 54,475	$ -	$ 94,143	$ 13,136	$ 57,978
25-29	147	-	491	-	-	545,281	-	941,190	6,012	66,499
30-34	266	-	1,480	-	-	1,779,796	-	3,447,516	147,310	72,802
35-39	383	-	3,140	-	-	3,946,217	-	8,587,044	372,602	76,904
40-44	300	-	3,032	-	-	3,941,212	-	9,455,105	357,710	80,029
45-49	248	-	3,037	-	-	3,910,269	-	10,354,334	571,548	79,457
50-54	233	-	3,974	-	-	5,095,006	-	14,288,427	538,513	80,649
55-59	189	-	4,100	-	-	5,256,646	1,282	16,156,546	782,334	81,710
60-64	96	-	2,518	-	-	3,257,850	-	10,171,115	278,577	81,803
65-69	13	-	324	-	213	414,256	-	1,470,337	-	82,711
TOTAL	1,902	-	22,150	$ -	$ 213	$ 28,201,008	$ 1,282	$ 74,965,757	$ 3,067,742	$ 77,306
Females										
20-24	22	-	35	$ -	$ -	$ 30,517	$ -	$ 52,801	$ -	$ 54,503
25-29	97	-	349	-	-	357,460	-	617,087	-	70,758
30-34	169	-	973	-	-	1,053,661	-	1,993,408	15,524	65,570
35-39	155	-	1,092	-	-	1,214,609	-	2,585,524	15,172	66,802
40-44	100	-	830	-	-	926,635	-	2,205,704	69,836	68,447
45-49	85	-	946	-	-	1,055,466	-	2,646,685	61,743	67,949
50-54	161	-	3,151	-	-	3,475,439	-	9,065,502	349,859	69,360
55-59	137	-	3,365	-	-	3,741,558	7,862	10,592,204	286,836	69,683
60-64	64	1	1,638	4	936	1,848,796	-	5,355,850	361,391	69,856
65-69	10	-	202	-	-	213,147	-	741,189	79,736	68,903
TOTAL	1,000	1	12,581	4	936	13,917,288	7,862	35,855,954	1,240,097	67,992
GRAND TOTAL	2,902	1	34,731	$ 4	$ 1,149	$ 42,118,296	$ 9,144	$ 110,821,711	$ 4,307,839	$ 74,096

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] Adjusted to include years of Supplemental and Purchased Service.

[3] Adjusted to include Supplemental and Purchased Benefit Credits.

[4] Adjusted to include Supplemental and Purchased Contributions.

[5] Estimated 2021 pensionable earnings are the Annualized 2020 pensionable earnings increased by 3%, further adjusted by the ratio of expected variable pay of 5% to the average total of variable pay and lump sum received in 2020.

B. Disabled Participants (in receipt of monthly disability benefit payments under the LTD Plan as at December 31, 2020, and continuing to accrue pension benefit credits under the Plan)

a) Overall Summary

	At December 31, 2020			At January 1, 2018		
	Males	Females	Combined	Males	Females	Combined
Number of Participants	88	162	250	94	178	272
Average Age[1]	54.0	52.4	53.0	54.9	52.7	53.5
Average Required Contribution Account Balance[2]	$ 52,063	$ 31,088	$ 38,471	$ 54,300	$ 30,568	$ 38,769
Average Voluntary Contribution Account Balance	$ 813	$ 773	$ 787	$ 794	$ 509	$ 607
Average Years of Past Service	0.0	0.0	0.0	0.0	0.0	0.0
Average Years of Accrued Membership Service[3]	24.4	22.2	23.0	27.0	23.4	24.6
Average Estimated Earnings at Valuation Date[4,5]	$ 67,476	$ 58,593	$ 61,720	$ 62,972	$ 54,596	$ 57,491
Average Accrued Pension	$ 28,097	$ 21,751	$ 23,985	$ 30,366	$ 22,516	$ 25,229

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] Adjusted to include Supplemental and Purchased Contributions.

[3] Adjusted to include years of Supplemental and Purchased Service.

[4] Estimated 2018 pensionable earnings are the Annualized 2017 earnings increased by 3%, further adjusted by the ratio of expected variable pay of 5% to the average total of variable pay and lump sum received in 2017.

[5] Estimated 2021 pensionable earnings are the Annualized 2020 earnings increased by 3%, further adjusted by the ratio of expected variable pay of 5% to the average total of variable pay and lump sum received in 2020.

b) Disabled Participants – Data Distributed by Quinquennial Age Group as at December 31, 2020

Age[1] Group	Number of Participants	Years of Past Service	Years of Membership Service[2]	Annual Supplemental Past Service Benefit Credit	Annual Accrued Past Service Benefit Credit	Annual Accrued Membership Service Benefit Credit[3]	Microtel Accrued Service Benefit Offset	Required Contribution Account Balance[4]	Voluntary Contribution Account Balance	Average Estimated Annualized 2021 Pensionable Earnings[5]
Males										
30-34	2	-	19	$ -	$ -	$ 19,553	$ -	$ 27,109	$ -	$ 57,553
35-39	9	-	80	-	-	88,618	-	125,073	-	66,710
40-44	5	-	51	-	-	60,952	-	114,582	-	63,071
45-49	9	-	155	-	-	174,734	-	245,429	17,059	67,041
50-54	9	-	167	-	-	170,218	-	148,583	-	58,938
55-59	25	-	711	-	-	811,606	-	1,361,223	-	68,044
60-64	26	-	844	-	-	1,000,843	2,800	2,258,788	54,514	71,247
65-69	3	-	123	-	-	148,829	-	300,798	-	73,240
TOTAL	88	-	2,150	$ -	$ -	$ 2,475,353	$ 2,800	$ 4,581,585	$ 71,573	$ 67,476
Females										
20-24	1	-	2	$ -	$ -	$ 1,303	$ -	$ 1,971	$ -	$ 51,118
25-29	2	-	7	-	-	6,173	-	7,578	-	50,215
30-34	5	-	22	-	-	22,383	-	33,153	-	54,210
35-39	8	-	73	-	-	71,189	-	80,283	-	58,085
40-44	9	-	60	-	-	63,793	-	84,025	-	60,015
45-49	19	-	275	-	-	271,887	-	259,935	-	59,172
50-54	37	-	826	-	-	807,675	-	1,108,393	16,820	58,785
55-59	53	-	1,455	-	-	1,405,410	-	2,032,864	54,218	58,254
60-64	27	-	845	-	-	847,239	-	1,348,930	54,166	59,879
65-69	1	-	26	-	-	26,533	-	79,050	-	61,192
TOTAL	162	-	3,591	$ -	$ -	$ 3,523,585	$ -	$ 5,036,182	$ 125,204	$ 58,593
GRAND TOTAL	250	-	5,741	$ -	$ -	$ 5,998,938	$ 2,800	$ 9,617,767	$ 196,777	$ 61,720

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] Adjusted to include years of Supplemental and Purchased Service.

[3] Adjusted to include Supplemental and Purchased Benefit Credits.

[4] Adjusted to include Supplemental and Purchased Contributions.

[5] Estimated 2021 pensionable earnings are the Annualized 2020 pensionable earnings increased by 3%, further adjusted by the ratio of expected variable pay of 5% to the average total of variable pay and lump sum received in 2020.

C. Former Participants

a) Terminated Vested (Including Pending Terminations)

i) Overall Summary

	At December 31, 2020			At January 1, 2018		
	Males	**Females**	**Combined**	**Males**	**Females**	**Combined**
Number of Participants	739	1,088	1,827	659	1,222	1,881
Average Age[1]	45.6	50.5	48.5	45.7	50.3	48.7
Average Required Contribution Account Balance[2]	$ 16,221	$ 17,247	$ 16,832	$ 17,369	$ 18,534	$ 18,126
Average Voluntary Contribution Account Balance	$ 506	$ 197	$ 322	$ 245	$ 137	$ 175
Average Accrued Benefit at Valuation Date[3]	$ 6,033	$ 6,062	$ 6,050	$ 6,281	$ 6,491	$ 6,417

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] Adjusted to include Supplemental and Purchased Contributions.

[3] Average Accrued Benefit doesn't include excess pension due to 50% rule.

ii) Data Distributed by Quinquennial Age Group as at December 31, 2020

Age[1] Group	Number of Participants	Years of Past Service	Years of Membership Service[2]	Annual Supplemental Past Service Benefit Credit	Annual Accrued Past Service Benefit Credit	Annual Accrued Membership Service Benefit Credit[3]	Microtel Accrued Service Benefit Offset	Required Contribution Account balance[4]	Voluntary Contribution Account Balance	Excess Pension Due to 50% Cost Rule[5]
Males										
20-24	7	-	5	$ -	$ -	$ 4,743	$ -	$ 7,531	$ -	$ -
25-29	33	-	82	-	-	84,921	-	149,793	-	-
30-34	84	-	307	-	-	323,590	-	594,843	-	5,897
35-39	115	-	444	-	-	471,985	-	982,792	52,384	11,298
40-44	91	-	440	-	-	507,411	-	1,163,440	86,408	35,071
45-49	107	-	539	-	-	528,854	-	1,369,890	18,409	117,140
50-54	146	-	1,240	-	-	1,220,000	-	3,488,264	101,839	249,230
55-59	121	-	1,106	-	-	1,054,919	-	3,373,807	115,249	282,729
60-64	23	-	250	-	-	230,067	-	762,279	-	45,355
65-69	5	-	37	17	-	30,867	-	94,333	-	3,753
70-74	1	-	-	97	-	-	-	-	-	-
75 & Over	6	-	-	580	-	-	-	-	-	-
Total	739	-	4,450	$ 694	$ -	$ 4,457,357	$ -	$ 11,986,972	$ 374,289	$ 750,473
Females										
20-24	2	-	2	-	-	1,255	-	2,171	-	-
25-29	26	-	86	-	-	87,687	-	153,526	-	189
30-34	68	-	261	-	-	263,625	-	480,701	-	2,329
35-39	92	-	285	-	-	274,561	-	538,907	-	6,627
40-44	76	-	254	-	-	227,977	-	508,232	-	48,684
45-49	111	-	599	-	-	514,394	-	1,299,646	4,561	177,258
50-54	267	-	2,184	-	-	1,757,099	995	4,959,921	69,371	704,809
55-59	314	-	3,090	-	-	2,247,393	5,338	6,919,774	127,755	816,933
60-64	116	-	1,539	-	-	1,108,702	-	3,519,122	12,889	242,669
65-69	10	-	139	-	-	118,745	-	383,161	-	18,908
70-74	1	-	-	57	-	-	-	-	-	-
75 & Over	5	-	-	377	-	-	-	-	-	-
Total	1,088	-	8,439	$ 434	$ -	$ 6,601,438	$ 6,333	$ 18,765,161	$ 214,576	$ 2,018,406
GRAND TOTAL	1,827	-	12,889	$ 1,128	$ -	$ 11,058,795	$ 6,333	$ 30,752,133	$ 588,865	$ 2,768,879

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] Adjusted to include years of Supplemental and Purchased Service.

[3] Adjusted to include Supplemental and Purchased Benefit Credits.

[4] Adjusted to include Supplemental and Purchased Contributions.

[5] Determined at the Date of Termination.

b) Transferred to Management

i) Overall Summary

	At December 31, 2020			At January 1, 2018		
	Males	**Females**	**Combined**	**Males**	**Females**	**Combined**
Number of Participants	377	324	701	380	334	714
Average Age[1]	44.3	43.9	44.1	43.4	44.0	43.7
Average Required Contribution Account Balance[2]	$ 20,781	$ 18,424	$ 19,692	$ 21,244	$ 19,517	$ 20,437
Average Voluntary Contribution Account Balance	$ 227	$ 158	$ 195	$ 44	$ 75	$ 59
Average Accrued Benefit at Valuation Date	$ 7,776	$ 7,137	$ 7,481	$ 7,785	$ 7,377	$ 7,594

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] Adjusted to include Supplemental and Purchased Contributions.

ii) Data Distributed by Quinquennial Age Group as at December 31, 2020

Age[1] Group	Number of Participants	Years of Past Service	Years of Membership Service[2]	Annual Supplemental Past Service Benefit Credit	Annual Accrued Past Service Benefit Credit	Annual Accrued Membership Service Benefit Credit[3]	Microtel Accrued Service Benefit Offset	Required Contribution Account Balance	Voluntary Contribution Account
Males									
25-29	4	-	9	$ -	$ -	$ 7,982	$ -	$ 14,312	$ -
30-34	48	-	218	-	-	249,607	-	473,887	22,712
35-39	84	-	497	-	-	562,596	-	1,172,267	31,924
40-44	64	-	300	-	-	322,177	-	765,884	14,691
45-49	64	-	333	-	-	337,927	-	874,579	4,893
50-54	58	-	503	-	-	506,072	-	1,453,631	6,262
55-59	39	-	489	-	-	547,035	-	1,768,324	4,939
60-64	15	-	330	-	-	385,485	-	1,263,093	-
65-69	1	-	10	-	-	12,701	-	48,319	-
Total	377	-	2,689	$ -	$ -	$ 2,931,582	$ -	$ 7,834,296	$ 85,421
Females									
20-24	1	-	3	-	-	2,233	-	3,928	-
25-29	14	-	53	-	-	53,020	-	92,782	-
30-34	61	-	268	-	-	273,440	-	510,750	-
35-39	56	-	242	-	-	238,559	-	492,387	14,299
40-44	31	-	168	-	-	166,296	-	386,644	3,868
45-49	47	-	315	-	-	288,181	-	743,169	10,440
50-54	63	-	704	-	-	644,316	-	1,800,867	20,162
55-59	36	-	487	-	-	446,079	-	1,345,168	2,383
60-64	13	-	192	-	-	169,901	-	498,011	-
65-69	2	1	33	-	1,296	30,452	-	95,661	-
Total	324	1	2,465	$ -	$ 1,296	$ 2,312,477	$ -	$ 5,969,367	$ 51,152
GRAND TOTAL	701	1	5,154	$ -	$ 1,296	$ 5,244,059	$ -	$ 13,803,663	$ 136,573

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] Adjusted to include years of Supplemental and Purchased Service.

[3] Adjusted to include Supplemental and Purchased Benefit Credits.

D. Retired Participants

a) Overall Summary

	At December 31, 2020			At January 1, 2018		
	Males	Females	Combined	Males	Females	Combined
Number of Participants[1]	4,606	4,171	8,777	4,486	3,903	8,389
Average Age[2]	71.6	69.9	70.8	70.2	68.6	69.5
Average Annual Pension at Valuation Date	$ 27,279	$ 19,030	$ 23,359	$ 26,232	$ 18,696	$ 22,728
Average Annual Pension at April 1, 2021[3]	$ 27,279	$ 19,030	$ 23,359	$ 26,940	$ 19,152	$ 23,316

b) Data Distributed by Quinquennial Age Group as at December 31, 2020[4]

Age Group	Number of Participants	Total Monthly Benefit on December 31, 2020	Average Monthly Benefit on December 31, 2020
Under 55	13	$ 18,217	$ 1,401
55-59	451	1,233,828	2,736
60-64	1,600	3,936,870	2,461
65-69	2,167	4,341,258	2,003
70-74	2,109	3,960,556	1,878
75-79	1,102	1,803,864	1,637
80-84	721	992,818	1,377
85-89	399	552,220	1,384
90 & Over	215	245,476	1,142
TOTAL	8,777	$ 17,085,107	$ 1,947

[1] Duplicate Records are combined for this summary. (Duplicate records are due to voluntary account balances being converted into additional benefits upon retirement.)

[2] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[3] April 1, 2018 for the Valuation at January 1, 2018

[4] Including 266 Limited Members at 1-1-18 and 275 Limited Members at 12-31-20.

E. Beneficiaries

a) Overall Summary

	At December 31, 2020			At January 1, 2018		
	Males	Females	Combined	Males	Females	Combined
Number of Participants	3	3	6	4	3	7
Average Age[1]	72.0	64.3	68.2	66.8	65.0	66.0
Average Annual Pension at Valuation Date	$ 20,376	$ 25,308	$ 22,842	$ 22,296	$ 31,356	$ 26,184
Average Annual Pension at April 1, 2021[2]	$ 20,376	$ 25,308	$ 22,842	$ 22,944	$ 32,460	$ 27,024

b) Data Distributed by Quinquennial Age Group as at December 31, 2020

Age Group	Number of Participants	Total Monthly Benefit on December 31, 2020	Average Monthly Benefit on December 31, 2020
55-59	1	$ 1,114	$ 1,114
60-64	-	-	-
65-69	2	2,707	1,354
70-74	2	4,801	2,400
75-80	1	2,798	2,798
TOTAL	6	$ 11,421	$ 1,903

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] April 1, 2018 for the Valuation at January 1, 2018

F. Survivors

a) Overall Summary

	At December 31, 2020			At January 1, 2018		
	Males	Females	Combined	Males	Females	Combined
Number of Participants	136	688	824	123	621	744
Average Age[1]	73.6	76.3	75.9	71.5	75.1	74.5
Average Annual Pension at Valuation Date	$ 11,144	$ 16,319	$ 15,465	$ 10,296	$ 14,844	$ 14,100
Average Annual Pension at April 1, 2021[2]	$ 11,144	$ 16,319	$ 15,465	$ 10,596	$ 15,348	$ 14,556

b) Data Distributed by Quinquennial Age Group as at December 31, 2020

Age Group	Number of Participants	Total Monthly Benefit on December 31, 2020	Average Monthly Benefit on December 31, 2020
Under 55	12	$ 8,770	$ 731
55-59	29	29,830	1,029
60-64	58	91,706	1,581
65-69	112	177,840	1,588
70-74	147	222,585	1,514
75-79	148	184,587	1,247
80-84	161	188,265	1,169
85-89	106	112,037	1,057
90 & Over	51	46,299	908
Total	824	$ 1,061,920	$ 1,289

[1] Age is calculated to be age nearest birthday at actuarial Valuation Date.

[2] April 1, 2018 for the Valuation at January 1, 2018

Reconciliation of Membership Data

	Active	Terminated[1,2] Vested	Transferred	Disabled	Retired	Beneficiaries	Survivors
At Jan. 1, 2018 including duplicate records	3,518	1,892	714	272	8,763[3]	7	756[4]
Net adjustment made after actuarial valuation date:	2			(2)			
New Entrants:	547						
Terminated:							
• Deferred vested	(319)	413	(91)	(3)			
• Lump sum settlement/non vested	(188)	(145)	(7)	(2)			
• Bridged Records that were Combined with Current Service Record		(5)					
Transferred:	(144)		144				
Disabled:	(105)			105			
Retired:							
• New Retiree	(444)	(312)	(54)	(69)	879		
• New Limited Member					22		
• Duplicated records					51		
Deceased:							
• With a Survivor Benefit	(3)	(2)	(1)	(6)	(164)		176
• GTD benefit continued					(2)	2	
• Without residual benefit					(327)		(95)
• Lump sum settlement	(6)	(10)	(2)	(3)	(22)		
• Others[5]					(14)		
Total	(9)	(12)	(3)	(9)	(529)	2	81
Benefit Payment Expired:						(3)	
Returned to Active Status:	44		(2)	(42)			
At Dec. 31, 2020 including duplicate records	2,902	1,831	701	250	9,186[6]	6	837[7]
At Dec. 31, 2020 without duplicate records	2,902	1,827	701	250	8,777	6	824

[1] Including 11 participants at 1-1-2018 and 4 participants at 12-31-2020 with multiple records.
[2] Not including 434 non-vested Participants and untraced terminated vested Lives at 1-1-2018 and 433 participants at 12-31-2020 not in the Penfax system.
[3] Including 266 Limited Members and 374 duplicate records. Duplicate records are due to voluntary account balances being converted into additional benefits upon retirement.
[4] Including 12 duplicate records. Duplicate records are due to voluntary account balances being converted into additional benefits upon retirement.
[5] Combined Records, LM pension ended due to death of retired participant/ reverted pension due to death of LM/ both retiree and spouse deceased in same year/LM pension became survivor pension due death of retired participant.
[6] Including 275 Limited Members and 409 duplicate records. Duplicate records are due to voluntary account balances being converted into additional benefits upon retirement.
[7] Including 13 duplicate records. Duplicate records are due to voluntary account balances being converted into additional benefits upon retirement.

Appendix A: Plan administrator certification

I hereby certify that, to the best of my knowledge and belief, for the purposes of the actuarial valuation:

i) the membership data provided to PBI Actuarial Consultants Ltd. for the December 31, 2020 actuarial valuation of the Telecommunication Workers Pension Plan, as summarized in Section 9 of this report, is accurate and complete; and

ii) the Summary of Plan Provisions contained in Section 8 of this report is an accurate and complete summary of the terms of the Plan in effect on December 31, 2020; and

iii) all events that may have an impact on the results of the actuarial valuation, including any events which may have occurred subsequent to the actuarial valuation date, have been communicated to PBI Actuarial Consultants Ltd.

TELECOMMUNICATION WORKERS PENSION PLAN

June 24, 2021

Date

Signature

Jennifer Bucholtz

Name

Administrator

Title