PENSION PLAN FOR THE EMPLOYEES OF THE UNIVERSITY OF PRINCE EDWARD ISLAND

REPORT ON THE ACTUARIAL VALUATION AS AT APRIL 30, 2019

(REGISTRATION NO. 0520635)

JULY 2019

PREPARED BY:

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Summary of Results

(All financial figures in $000's)	
Membership Data	**April 30, 2019**
Active Members	665
Deferred Members	87
Pensioners (including survivor pensions)	417
Total Membership	**1169**

Going Concern Financial Position	**April 30, 2019**
Going concern value of assets	$279,681
Going concern actuarial liability	(278,168)
Going concern excess / (unfunded liability)	**$1,513**
Funded Ratio for purposes of Funding Agreement	103.8%

Windup Financial Position	**April 30, 2019**
Total windup assets	$285,272
Total windup actuarial liabilities	(357,057)
Windup excess/(deficiency)	**($71,785)**

Funding Requirements (annualized)	**2019 / 2020**	
	% of payroll	**$ 000s**
Estimated pensionable payroll for year beginning April 30, 2019		$56,862
Total annual current service cost	16.70%	$9,495
Member current service contributions	(8.35%)	(4,748)
Employer current service contributions	8.35%	$4,748
Member Special Contributions	0.88%	$500
Employer Contributions Towards Initial Deficit	1.00%	$569
Total member contribution requirement	9.23%	$5,248
Total employer contribution requirement	9.35%	5,317
Total plan contribution requirement	18.58%	$10,564

SECTION I INTRODUCTION AND PURPOSE OF VALUATION

At the request of the Trustees of the *Pension Plan for the Employees of the University of Prince Edward Island* (the "Plan"), we have completed an actuarial valuation of the Plan as of April 30, 2019. The last valuation was conducted at September 30, 2016.

The purposes of this actuarial valuation are as follows:

- to determine the funded position of the Plan by calculating and comparing the Plan's actuarial liabilities with its assets;
- to determine the Plan's ongoing funding requirements, so that assets can be accumulated to provide for benefits under the Plan in advance of the time they are actually required to be paid;
- to determine the Plan's Funded Ratio in accordance with the Funding Agreement
- to meet the statutory filing requirements under the *Income Tax Act*; and
- to test the Plan's financial position on a wind-up basis.

In this report, we have first summarized any Plan and assumption changes since the last valuation. We then provide the valuation results, along with an actuarial opinion with recommended funding levels for use until the next valuation. The data, actuarial assumptions and methodology used in valuing both the assets and the liabilities of this pension plan is provided by way of Appendices for ease of reference.

Section II Plan Changes

The *Pension Plan for the Employees of the University of Prince Edward Island* is one which may be described as a "best average salary" defined benefit Plan. This means that each member's retirement pension is calculated as a specified percentage of his or her average salary during the best three years of membership in the Plan.

Where death occurs before retirement, the Plan also provides for the payment of a pension to the surviving spouse of a deceased member. Subject to minimum service requirements, there is also provision for a waiver of employee contributions during periods of disability.

There have been no Plan changes since those reflected with the prior actuarial valuation as at September 30, 2016.

The Sponsor Board has chosen to reduce the going concern discount rate from 6.00% down to 5.75% with this valuation. This change has the impact of increasing going concern liabilities by $7,860,000 and increasing the cost of new benefits by $389,000 or 0.68% of payroll.

Summary of Plan Changes Effective January 1, 2017

The following Plan changes were reflected with the prior valuation as at September 30, 2016.

Effective January 1, 2017, the Plan became a jointly sponsored pension plan (JSPP). The Plan's governance documents were signed on November 24, 2017, and include a Sponsors Agreement, a Trust Agreement, a Funding Agreement, and a consolidated version the Plan Rules.

The conversion to a JSPP did not result in any changes to the benefit provisions under the Plan, including, but not limited to, the pension formula, benefits on early retirement, termination or death.

The Funding Agreement sets out the funding requirements of the Plan. The Funding Agreements defines the Plan's "Initial Deficit" as the assets of the Plan plus the present value of the Member Special Contributions (0.88% of active members' pensionable pay until June 30, 2025) less the liabilities as at September 30, 2016. As such, the September 30, 2016 actuarial valuation report set out this Initial Deficit, which is to be funded by the University. The Initial Deficit was calculated to be $6,475,000 at September 30, 2016 and it is being funded with University contributions of 1.00% of pensionable payroll until September 30, 2031.

The Funding Agreement also stipulates that the Plan's current service cost beginning with the September 30, 2016 actuarial valuation and any emerging deficits subsequent to that actuarial valuation will be shared equally by the University and the members.

A more detailed description of the Plan is contained in Appendix D, and full detail is contained in the above mentioned documents.

SECTION III FINANCIAL POSITION OF THE PLAN

A. Going Concern Basis: Financial Position as at April 30, 2019

Our calculations show that the Plan's actuarial liabilities as of April 30, 2019, measured on a going concern basis, for all benefits accrued to active, terminated and retired members is $278,168,000. This compares to going concern assets of $279,681,000 (after including provision for contributions and expenses in-transit, and the asset smoothing adjustment), and, as shown below, results in a going concern excess of $1,513,000. The following valuation balance sheet summarizes liability figures and the corresponding asset values as of April 30, 2019:

FINANCIAL POSITION – GOING CONCERN BASIS
(ALL FIGURES IN $000S)

	September 30, 2016	April 30, 2019
Going Concern Assets		
Market Value of Assets	$239,248	$285,888
Net Contributions / Expenses in Transit	(102)	(266)
Smoothing Adjustment	(4,026)	(5,941)
Total Going Concern Actuarial Value of Assets	**$235,120**	**$279,681**
Going Concern Actuarial Liabilities		
Active Members	$124,401	$132,528
Pensioners and Survivors	115,601	140,600
Deferred Members	5,139	5,019
Additional Voluntary Contributions	18	21
Total Actuarial Liabilities	**$245,159**	**$278,168**
Going Concern Excess / (Unfunded Liability)	**($10,039)**	**$1,513**
Present Value of Member Special Contributions	3,564	2,842
Initial Deficit as at September 30, 2016	($6,475)	n/a
Present Value of Employer Contributions Towards Initial Deficit	6,475	6,093
Going Concern Excess / (Emerging Deficit)	**$0**	**$10,448**
Funded Ratio for Purposes of Funding Agreement	**100.0%**	**103.8%**

As shown above, the April 30, 2019 actuarial valuation has revealed a going concern excess in the amount of $1,513,000 prior to accounting for the *Present Value of Member Special Contributions* and the *Present Value of Employer Contributions Towards Initial Deficit*. This compares to an unfunded liability at the previous valuation of $10,039,000.

After accounting for the *Present Value of Member Special Contributions* and the *Present Value of Employer Contributions Towards Initial Deficit*, the Plan has a going concern excess of $10,448,000. In accordance with the Plan's Funding Agreement, no new Emerging Deficit Contributions are required, and there are no Emerging Deficit Contribution schedules established in the past to be reduced at this time.

Sensitivity to interest rate changes

In accordance with the Canadian Institute of Actuaries' Standards of Practice, we are required to report on the impact on going concern liabilities of a 1% decrease in the discount rate. Had the Plan's going concern liabilities been calculated using discount rates that were 1% lower than those used, the going concern liabilities would be $314,740,000 (or 13.1% higher than that shown in the previous table).

Reconciliation of Going Concern Financial Position

The reconciliation provides an independent cross-check of the calculations performed, and also determines the chief reasons leading to the changes in the going concern financial position that have occurred since the previous valuation date.

Although a complete analysis down to the final dollar can be made, such an analysis requires the processing of a considerable amount of detailed data relating to the Plan, the expense of which would not normally be justified unless there were special circumstances. It is possible, however, to make an approximate analysis along broader lines and, under normal circumstances, this type of analysis will produce meaningful results.

The table below summarizes the results of our reconciliation of change in financial position over the past two years and seven months under consideration.

RECONCILIATION OF GOING CONCERN FINANCIAL POSITION
(ALL FIGURES IN $000S)

Going Concern Unfunded Liability as at September 30, 2016:			**($10,039)**
Remove Smoothing Adjustment			4,026
Going Concern Unfunded Liability as at September 30, 2016 (market value basis):			**($6,013)**
Add:	▪	Investment earnings more than expected under the valuation assumption	15,314
	▪	Special contributions plus interest	3,607
	▪	Salary increases lower than expected under actuarial assumptions	4,266
	▪	Maximum pension / YMPE increases lower than expected under actuarial assumptions	119
	▪	Retirement experience	1,508
	▪	Miscellaneous gain/(loss)	895
Deduct:	▪	Interest on market value unfunded liability for two years and seven months	(977)
	▪	Impact of change in discount rate	(7,860)
	▪	Cost of pensioner indexing	(2,827)
	▪	Mortality experience	(579)
Going Concern Excess as at April 30, 2019 (market value basis):			**$7,454**
Smoothing Adjustment			(5,941)
Going Concern Excess as at April 30, 2019:			**$1,513**

B. Wind-Up Basis: Financial Position as at April 30, 2019

The financial position of the Plan on a wind-up basis as of April 30, 2019 is as follows:

FINANCIAL POSITION – WIND-UP BASIS
(ALL FIGURES IN $000S)

	September 30, 2016	April 30, 2019
Wind-up Assets		
Market Value of Assets	$239,248	$285,888
Net Contributions/Expenses in Transit	(102)	(266)
Estimated Wind-up Expenses	(350)	(350)
Total Wind-up Assets	**$238,796**	**$285,272**
Wind-up Liabilities		
Active Members	$173,027	$170,111
Pensioners and Survivors	156,814	179,984
Deferred Members	7,578	6,941
Additional Voluntary Contributions	18	21
Total Member Liabilities	**$337,437**	**$357,057**
Wind-up excess/(deficiency)	**($98,641)**	**($71,785)**

As shown above, on a wind-up basis there is a deficiency of $71,785,000 in the Plan after providing for settlement of all accrued benefit entitlements as at April 30, 2019.

Sensitivity of Wind-up Financial Position and Wind-up Incremental Cost

The wind-up liabilities shown at April 30, 2019 are based upon the discount rates as shown in Appendix B. In accordance with Section 3200 of the *Canadian Institute of Actuaries Standards of Practice – Pension-Specific Standards for Pension Plans*, we are required to report on the impact on wind-up liabilities of a 1% decrease in the discount rate. Had the Plan's wind-up liabilities been calculated using discount rates that were 1% lower than those used, the wind-up liabilities would be $411,852,000 (or 15.3% higher than that shown in the previous table).

In addition, we are required to report on the Plan's *incremental cost* between the valuation date and the next expected valuation date, which we have assumed to be April 30, 2022. The incremental cost is, by definition, calculated on a wind-up basis; between April 30, 2019 and April 30, 2022, we have calculated the incremental cost to be $52,353,000. This cost represents the expected change in liability over the course of the three years subsequent to the valuation date due to all factors, including service rendered during the period, expected changes in discount rate and/or settlement method for each member, and expected changes in Plan provisions. The estimated incremental cost is for information purposes only.

SECTION IV FUNDING REQUIREMENTS

A. Current Service Costs

The Plan's current service cost is the value of the benefits accruing to members in the year following the valuation determined on a going concern basis.

The table below summarizes the Plan's current service cost for the 12-month period from April 30, 2019 and the comparison with the required employee contributions over this period. From this, it will be noted that the cost of the benefits to be earned on account of service in the year commencing April 30, 2019 amounts to $9,495,000 or 16.70% of pensionable payroll. In accordance with Section 2(1) of the Funding Agreement, contribution requirements to fund the current service cost are to be shared equally between the Members and the Employer, resulting in required current service contributions of $4,748,000 or 8.35% of pensionable payroll for each.

	% of payroll	$ 000s
Estimated pensionable payroll for year beginning April 30, 2019		$56,862
Total annual current service cost	16.70%	9,495
Member current service contributions	(8.35%)	(4,748)
Employer current service contributions	8.35%	$4,748

Sensitivity to interest rate changes

In accordance with the *Canadian Institute of Actuaries' Standards of Practice*, we have measured the impact of a one percentage point drop in the going concern discount rate assumption (all other assumptions unchanged) on current service costs. The impact would be a current service cost of 20.12% of pensionable payroll (a 20.5% increase in cost).

B. Deficit Amortization

As outlined in Section III, due to the financial position of the Plan, no new Emerging Deficit Contributions have been established. Therefore, the University's minimum funding obligation is 9.35% of pay (8.35% for current service plus 1.00% for amortization of the Initial Deficit). The Members' total contribution rate is therefore 9.23% of pay (8.35% for current service plus 0.88% in Member Special Contributions).

C. Member Contribution Rates

The following table sets forth the recommended Member contribution rates. The recommendation results in a 0.26% of payroll increase in contribution rates over the rates set out in the September 30, 2016 valuation report.

	Basic Contribution in Respect of Current Service Cost		Member Special Contribution Rate		Recommended Member Contribution Rate
On earnings up to the YBE ($3,500 in 2019)	9.40%	+	0.88%	=	10.28%
On earnings between the YBE and the YMPE ($57,400 in 2019)	7.60%	+	0.88%	=	8.48%
On earnings in excess of the YMPE	9.40%	+	0.88%	=	10.28%

Note that this contribution structure will generate the required overall 9.23% of earnings needed to fund the current service cost, plus the 0.88% Member Special Contribution Rate.

SECTION V ACTUARIAL OPINION

The following represent our primary conclusions as a result of our actuarial valuation as at April 30, 2019:

1. As at the valuation date there exists a going concern excess of $1,513,000. In accordance with Section 2 of the Funding Agreement, Member Special Contributions of 0.88% of pay will remain in place until June 30, 2025, and the Employer Contributions Towards the Initial Deficit of 1.00% of pay will remain in place until September 30, 2031. Because the Plan's Funded Ratio exceeds 100%, no new Emerging Deficit Contributions are required.

2. The cost of the benefits to be earned on account of service in the year commencing April 30, 2019 amounts to $9,495,000 or 16.70% of pensionable payroll. In accordance with Section 2(1) of the Funding Agreement, contribution requirements to fund the current service cost are to be shared equally between the Members and the University, resulting in required current service contributions of $4,748,000 or 8.35% of pensionable payroll for each.

3. In accordance with the *Income Tax Act*, we have determined there to be no excess surplus as at April 30, 2019. Furthermore, we believe the University's contributions, if made in accordance with this report's recommendations, meet the requirements of an "eligible contribution" as defined in the *Income Tax Act*.

4. The University's minimum contribution, therefore, in accordance with the Plan rules, is 9.35% of payroll (8.35% plus 1.00%), or $5.32 million based on the estimated payroll in the year immediately following the valuation. The adequacy and appropriateness of the funding levels identified in this valuation should be reviewed at the next actuarial valuation of this Plan, which should take place no later than April 30, 2022.

5. If the Plan were to be wound up on the valuation date, the value of Plan assets would be less than actuarial liabilities by an amount of $71,785,000.

6. We are not aware of any events that occurred between the valuation date and the date this report was completed that have not already been addressed that would have a material impact on the results of this valuation. Any investment experience occurring between the valuation date and the report date, which differs from the assumption made, is not reported on in this valuation report and will be reported on in a future valuation.

7. In our opinion:

   a. the data on which the valuation is based are sufficient and reliable for the purposes of the valuation as described in Section I;

   b. the assumptions described herein are appropriate for the purposes of the valuation;

   c. the methods employed in the valuation are appropriate for the purposes of the valuation;

   d. this report has been prepared, and our opinions given, in accordance with accepted actuarial practice.

Nonetheless, emerging experience, differing from the assumptions, will result in gains or losses which will be revealed in future valuations.

Respectfully submitted,

Jeff Turnbull, FSA, FCIA

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APPENDIX A PLAN ASSETS

The Plan's assets are currently managed in such a way as to allow for a balanced mix of equity, fixed income, and real asset investments. Several independent fund managers, who are at arm's length from the University, manage the assets; the assets are held in custody by CIBC Mellon.

At April 30, 2019, the market value of the fund amounted to $285,888,000 plus net contributions/expenses in transit of -$266,000. At the last valuation, the market value of assets was $239,248,000.

Reconciliation of Plan Assets

A summary of pension fund transactions for the period since the last valuation at September 30, 2016 to April 30, 2019 is summarized below:

RECONCILIATION OF PLAN ASSETS
(ALL FIGURES IN $000S)

Period:	30-Sep-16 to 30-Apr-17	30-Apr-17 to 30-Apr-18	30-Apr-18 to 30-Apr-19
Market value (beginning of period)	$239,248	$253,594	$263,885
Employee contributions	2,609	4,645	4,890
Employer contributions	3,405	4,718	4,948
Past service/Transferred service contributions	40	550	108
Employer other contributions	0	0	0
Investment income, gains and losses	16,831	14,470	27,055
Pension payments	(6,381)	(11,734)	(12,417)
Termination and death benefit payments	(1,123)	(522)	(868)
Plan expenses	(1,035)	(1,836)	(1,714)
Market value (end of period)	**$253,594**	**$263,885**	**$285,888**

Performance of Plan Assets

The rates of return on the pension fund's assets over the past two years and five months is shown below:

RATES OF RETURN

Period	Gross Rate of Return	Net of Expenses Rate of Return
Sept. 30, 2016 to April 30, 2017	7.1%	6.6%
April 30, 2017 to April 30, 2018	5.8%	5.0%
April 30, 2018 to April 30, 2019	10.4%	9.7%
2 year and 7 month average (annualized)	**9.0%**	**8.3%**

The average rate of return since the last valuation was 9.0% per year, or 8.3% net of expenses. This rate was greater than the rate used to discount actuarial liabilities, and resulted in an investment experience gain.

APPENDIX B ACTUARIAL METHODS AND ASSUMPTIONS

A. Valuation of Assets

For purposes of this valuation, we have employed an asset valuation method that contains a smoothing of asset values, but still relates them to their market values. This smoothing approach amortizes the difference between actual and expected investment returns over a three-year period (the current and two subsequent years).

The following table traces the development of the Plan's assets from the last valuation to this one, and shows in detail the mechanics of the smoothing approach:

SMOOTHED VALUE OF ASSETS
(ALL FIGURES IN $000S)

Year Ending April 30th	2017	2018	2019
Market value (BoY)	225,591	253,594	263,885
Market value (EoY)	253,594	263,885	285,888
Contributions	11,072	9,913	9,946
Benefits	12,179	12,256	13,284
Expenses	(1,905)	(1,836)	(1,714)
Interest Rate	5.90%	6.00%	6.00%
Expected Interest	13,268	14,512	15,491
Actual Interest (net of expenses)	29,111	12,634	25,341
Difference	15,843	(1,877)	9,850
Amortization	5,281	(626)	3,283
Fund (BoY)	225,591	243,032	259,855
Add: Contributions net of Benefits	(1,107)	(2,344)	(3,338)
Expected Interest	13,268	14,512	15,491
Amortization (current year)	5,281	(626)	3,283
Amortization (last year)	0	5,281	(626)
Amortization (2 years ago)	0	0	5,281
Fund (EoY)	243,032	259,855	**279,947**
Remaining Amortizations:			
This Year	10,562	(1,252)	6,566
Last Year	0	5,281	(626)
Smoothing adjustment:			5,941
Smoothing adjustment as a percentage of market value			-2.08%
Smoothing adjustment constrained to 5% of market value of assets			**5,941**

The smoothing method results in an actuarial value of assets which is 2.08% lower than the market value of assets.

B. Going Concern Valuation

In this section, we describe the cost method and actuarial assumptions that have been adopted so as to make proper allowance for the Plan's future liabilities by way of payment of pensions and other benefits. In calculating actuarial liabilities, assumptions must be made:

(1) as to the probability that a particular payment will be made at a certain time (for example, depending upon whether or not the individual concerned survives to that date); and

(2) the expected amount of each such payment.

In order to do this, we must make a series of assumptions in connection with the many factors which will have a bearing upon the future financial operation of the Plan. These include the following:

(a) future rates of mortality (and the corresponding life expectancies of the Plan members and their spouses);

(b) future rates of salary increase for members of the Plan;

(c) the rate of increase in the maximum pension (as mandated by the *Income Tax Act*) that the Plan is allowed to pay;

(d) future rates of employee turnover (withdrawal from the Plan);

(e) the age at which retirement occurs; and

(f) the proportion of those Plan members who are married (and in respect of whom a survivor's pension would be payable to that individual's surviving spouse in the event of the member's death prior to retirement).

Finally, we must give consideration to the rate of interest that will be earned on the assets of the pension fund in future years.

As part of our process of analysis, all of these factors have received consideration. Where applicable, we have taken into account the actual experience of this pension plan. However, it should be noted that from a statistical point of view, actual experience data developed from a pension plan with relatively few members has limited validity. Therefore, it becomes necessary to take into account statistics developed from many other larger pension plans.

The assumptions we have adopted, as well as a brief commentary where appropriate, are described below:

Economic Assumptions

Interest Rate

The discount rate assumption, net of expenses, has been decreased since the last valuation, from 6.00% to 5.75% per annum.

We have taken a "best estimate" approach to the determination of the discount rate, based on the expected future investment return on the assets of the pension plan, and considering the fund's investment policy. In particular, our approach consists of:

- determining the best estimate of long-term, expected future investment returns for the various asset classes in which the Plan invests;
- combining these best estimate long-term, expected future investment returns to reflect the Plan's investment policy, thereby creating an "expected" fund return that is a weighted average of the asset class returns;
- including an allowance for additional return due to active versus passive management, and the impact of rebalancing and diversification, which we have considered appropriate in the circumstance as a result of stochastic modelling specific to the Plan's target asset mix;
- and making appropriate provision for expenses and a provision for adverse deviation.

The result of our analysis is depicted in the following table:

DISCOUNT RATE

	Discount Rate
Unadjusted "best estimate" return reflecting the Plan's investment policy	6.05%
Less provision for Plan expenses	(0.80%)
Plus value added return from active management	0.45%
Plus "rebalancing and diversification effect"	0.50%
Less provision for adverse deviation	(0.45%)
Going concern discount rate assumption	**5.75%**

The post-retirement interest assumption is influenced by the method used to index pensions in payment. The Plan uses an "excess interest method" of indexing, such that indexing takes place only if the fund earns a return in excess of a threshold rate. The post-retirement interest assumption has been set equal to this threshold rate (i.e., 5.75% per annum).

Salary Scale

Pensions from the UPEI Plan are predicated on the average of an employee's best 3 years' earnings. Since wage levels typically increase over time, an employee's best 3 years of earnings usually occur towards the end of their career. In conducting our valuation, it is prudent to project each employee's accrued pension to the time of their retirement by projecting their earnings level, and this is accomplished through the use of a salary scale.

For this valuation we have maintained an assumption of 3.50% per annum for future salary increase expectations.

Canada Pension Plan

For this valuation, we have maintained an assumption of 2.50% per annum for the increase rate of the Maximum Pensionable Earnings under the Canada Pension Plan.

Maximum Pension

Pensions are capped by regulation at $3,025.56 per year of service for retirements occurring in 2019. Thereafter, the maximum is expected to be increased in accordance with an increase in the average wage index. For this valuation, we have maintained an assumption of 2.50% per annum for the increase in the average wage index.

Demographic Assumptions

Mortality

We have maintained the mortality table for this valuation, CPM2014Publ generational mortality table projected with Scale CPM-B. This mortality assumption reflects the life expectancies of Canadian pensioners.

We expect to review the mortality assumption from time to time, both to reflect trends in mortality, as well as the development of new actuarial tables and standards.

Retirement Age

The retirement age assumption has been maintained for this valuation. We currently assume retirement rates of 50% at Rule of 85 (min age 55), or age 60 if earlier, 60% of those remaining at age 65, 25% at each age between ages 66 and 70, with everyone remaining retiring at age 71.

Future experience should be monitored over time to review the ongoing validity of this assumption.

Withdrawal Rates

The scale of withdrawal rates, varying by age and sex, from the last valuation has been maintained for this valuation. Examples of the rates used are:

WITHDRAWAL RATES

At Age	Male	Female
20	0.075	0.249
30	0.035	0.099
40	0.015	0.049
50	0.004	0.019
60	Nil	Nil

Proportion Married and Spouse's Age

Ninety percent of active members were assumed to have a spouse at the time of their death, according to the last valuation. While we have not precisely tested this assumption, which influences the liability associated with pre-retirement death benefits, any change that would be made is likely to be small, with a relatively insignificant effect on the overall results. We have therefore continued to assume that 90% of members have a spouse at the time of their death.

Male spouses are assumed to be 3 years older than their female counterparts.

Cost Method

The actuarial cost method used in conducting this valuation is the projected unit credit method. This is the same method as was used in the previous valuation.

In using this method, as a first step, a calculation is made of the liability in respect of all benefits that have accrued to members on account of service up to and including the valuation date. This represents the "accrued liability". It should be noted that this calculation takes into account projected future pay increases for each member up to and including expected retirement date.

Then, as a completely separate process, the current year cost has been calculated (using exactly the same actuarial assumptions). This represents the cost of providing the benefits that will accrue in respect of the 12-month period following the valuation date. This is compared with the amount of required employee contributions over that period. The difference represents the minimum required employer contribution necessary in order for these benefits to be properly funded.

For an individual member, the funding pattern produced by the projected unit credit method is one that increases (both in dollar terms and as a percentage of salary) over time. However, for the group as a whole, if the average age remains constant (which can occur through the retirement of older members and the addition of new, younger members) and salary levels increase in accordance with the salary scale, the contribution rate recommended under this method will remain relatively constant. If the Plan's average age increases, on the other hand, the current year cost will also increase. Such increases would be revealed in future valuations.

The following table details the actuarial assumptions that have been used in the going concern valuation (including, in each case, the source of the statistics used for this purpose).

GOING CONCERN VALUATION ACTUARIAL ASSUMPTIONS

Interest:	5.75% per annum 3.75% per annum for termination commuted values
Salary Scale:	3.50% per annum
Increases in YMPE/YBE:	2.50% per annum
Maximum Pension:	$3,025.56 in 2019, with increases thereafter at 2.50% per annum.
Mortality:	CPM2014 Public Mortality tables with improvement scale CPM-B (pre-retirement and post-retirement)
Retirement Age:	50% at Rule of 85 (min age 55), or age 60 if earlier, 60% of remaining at age 65, 25% at each age between ages 66 and 70, with everyone remaining retiring at age 71
Withdrawals:	Examples of rates by Age:
Proportion Married:	90%
Age of Spouse	Male spouses are assumed to be three years older than their female counterparts
Cost Method:	Projected Unit Credit Method

Withdrawals — examples of rates by Age:

Age	Males	Females
20	0.075	0.249
30	0.035	0.099
40	0.015	0.049
50	0.004	0.019

C. Wind-Up Valuation

The Canadian Institute of Actuaries’ Standards mandate a wind-up valuation. A wind-up valuation permits the sponsor to assess the funded status of the Plan should it terminate or wind-up effective on the valuation date. That is, an assessment is made as to whether the assets of the pension fund would be sufficient if no further benefits were provided and all members were paid their entitlements.

For active members not eligible for immediate retirement, the interest rate used for calculating wind-up liabilities was 2.40% p.a. for 10 years and 2.90% p.a. thereafter (this rate, in conjunction with the 2014 Canadian Pensioners' Mortality Table (CPM2014) combined with mortality improvement scale CPM-B, is in accordance with Section 3500 of the *Canadian Institute of Actuaries' (CIA) Standards of Practice* in effect for the month of April 2019). For retired lives and active members eligible for immediate retirement, the wind-up liabilities were calculated using an interest rate of 3.01% per annum. These rates, in conjunction with the 2014 Canadian Pensioners' Mortality Table (CPM2014) combined with mortality improvement scale CPM-B, form the proxy for settlement of the Plan's obligations for retired lives by the purchase of insured annuities on the valuation date, and are in accordance with the CIA Annuity Survey at the valuation date.

Note that the wind-up valuation does not make any assumptions about future pay increases or future terminations of employment since all members are assumed to terminate on the valuation date. The actuarial assumptions for the wind-up valuation are described in the following table:

WIND-UP VALUATION ACTUARIAL ASSUMPTIONS

Interest:	3.01% per annum for deferred Members, pensioners and active Members eligible for retirement benefits. 2.40% per annum for 10 years and 2.90% per annum thereafter for active Members not eligible for retirement benefits.
Salary Scale:	Nil
Maximum Pension:	$3,025.56 per year of service
Mortality:	2014 Canadian Pensioners' Mortality Table (CPM2014) combined with mortality improvement scale CPM Improvement Scale B (CPM-B)
Retirement Age:	Immediate for active members eligible for unreduced retirement benefits. Age 65 for deferred Members and active Members not eligible for unreduced retirement benefits.
Withdrawals:	None
Actuarial Cost Method:	Termination method

APPENDIX C MEMBERSHIP DATA

Records were submitted to us by the Human Resources Department of the University of Prince Edward Island.

There were 665 active members at April 30, 2019, an increase of 44 since the previous valuation. Table C1 summarizes the changes that have occurred in active membership, and Table C2 gives a brief statistical profile of the active group. The data received contained pertinent information for each member, such as birth date, date of employment, years of service, rates of pay and accumulated contributions plus interest.

The total number of retirees receiving payments from the pension fund as of the valuation date was 417. The changes in the number of individuals receiving pensions since the last valuation are also summarized in Table C1, while Table C3 gives a brief statistical profile of the pensioner group.

There were 87 deferred vested members as of the valuation date.

The data was reviewed by us as to accuracy and reasonableness. By comparing the data to that provided in previous years and examining the level of membership cessation over the previous years, we are satisfied that the data are complete. In addition, we performed various checks of reasonableness on dates of employment, plan membership, and birth. We also compared lists of active members with lists of inactive and retired members to check for duplicates. In all cases, we found the data to be sufficient and reliable for the purpose of the valuation. Appendix D contains a confirmation by the University of Prince Edward Island as to the accuracy and completeness of the data provided.

TABLE C1
RECONCILIATION OF MEMBERSHIP

Actives	Males	Females	Total
Number as of September 30, 2016	290	331	621
less retirees	-33	-29	-62
less changes to deferred status	-8	-16	-24
less terminations, refunds or transfers	-7	-10	-17
less deaths with surviving spouse receiving pension	-2	0	-2
Sub-total	240	276	516
plus new entrants	55	94	149
Total Actives as at April 30, 2019:	**295**	**370**	**665**

Pensioners	Males	Females	Total
Number as of September 30, 2016	191	173	364
less deaths	-20	-8	-28
Sub-total	171	165	336
plus new retirees and survivors	41	38	79
plus new pensioner due to marriage breakdown	0	2	2
Total Retirees as at April 30, 2019:	**212**	**205**	**417**

Deferred Vested	Males	Females	Total
Number as of September 30, 2016	34	51	85
less deaths, retirements, terminations, and changed back to active	-9	-13	-22
Sub-total	25	38	63
plus new deferreds	8	16	24
Total Deferreds as at April 30, 2019:	**33**	**54**	**87**

TABLE C2
ACTIVE MEMBERS AT APRIL 30, 2019

	Number	Average Age	Average Credited Service	Average Expected Pensionable Salary, Year Following April 30, 2019*	Average Accumulated Contributions
Males	295	50.5	13.5	$97,603	$91,618
Females	370	49.1	10.7	$82,835	$58,802
Total	**665**	**49.7**	**11.9**	**$89,414**	**$73,359**

* The average shown here excludes 14 individuals who are not currently accruing pensionable service due to being on leave of absence or LTD. For those who are part-time, the average includes an annualized salary, as though the individual were working full time.

SEPTEMBER 30, 2016 TABLES FOR COMPARISON

Total	**621**	**50.3**	**13.0**	**$85,105**	**$74,168**

TABLE C3
PENSIONERS AT APRIL 30, 2019

	Number	Average Age	Average Annual Lifetime Pension
Males	210	73.6	$36,758
Females	207	70.3	$23,972
Total	**417**	**72.0**	**$30,411**

SEPTEMBER 30, 2016 TABLES FOR COMPARISON

Total	**364**	**71.6**	**$29,323**

Appendix D Summary of Plan Provisions

Effective Date:

July 1, 1967

Eligibility:

Employees employed on a full-time or part-time basis (subject to working a minimum of 13.5 hours per week, where the position has been designated regular) with the University shall become Members of the Plan coincident with their commencement of employment.

Normal Retirement Date:

The Normal Retirement Date of each Member whose date of birth is between January 1st and June 30th shall be the July 1st nearest to their attainment of age 65. The Normal Retirement date of each Member whose date of birth is between July 1st and December 31st shall be the January 1st nearest to their attainment of age 65.

Normal Retirement Pension:

For any Member who retires prior to July 1, 2010, the monthly normal retirement pension payable to the Member shall be one-twelfth of the total of (a) plus (b) as follows:

(a) in respect of Pensionable Service prior to January 1, 1990, the product of (1) times (2), where

(1) is 2% of the Best Average Salary (i.e., the average of the Employee's best 3 years of annual pensionable salary); and

(2) is the number of years and fractional years of Pensionable Service prior to January 1, 1990 attributed to the Member at his date of retirement; plus

(b) in respect of Pensionable Service after December 31, 1989, the product of (1) times (2) times (3), where

(1) is 2% of the Best Average Salary;

(2) is the number of years and fractional years of Pensionable Service attributed to the Member at their date of retirement; and

(3) is the Integration Ratio.

For any Member who retires on or after July 1, 2010, the monthly normal retirement pension payable to the Member shall be one-twelfth of the total of (a) plus (b) plus (c) as follows:

(a) in respect of Pensionable Service prior to January 1, 1999, the product of (1) times (2), where

(1) is 2% of the Best Average Salary; and

(2) is the number of years and fractional years of Pensionable Service prior to January 1, 1999 attributed to the Member at their date of retirement; plus

(b) in respect of Pensionable Service between January 1, 1999 and July 1, 2010, the product of (1) times (2) times (3), where

(1) is 2% of the Best Average Salary;

(2) is the number of years and fractional years of Pensionable Service attributed to the Member at their date of retirement;

(3) is the Integration Ratio; plus

(c) in respect of Pensionable Service on or after July 1, 2010, the product of (1) times (2), where

(1) is the sum of (A) plus (B) plus (C), where

(A) 2% of the average of the Employee's best 3 years of annual pensionable salary up to the average YBE for the same 3 years;

(B) 1.5% of the same average pensionable salary in excess of the same average YBE and up to the average YMPE for the same 3 years; plus

(C) 2% of the same average pensionable salary in excess of the same average YMPE;

(2) is the number of years and fractional years of Pensionable Service attributed to the Member at his date of retirement.

Where the Integration Ratio is the minimum of:

i) 1; and

ii) the fraction equal to the aggregate of the Member's Required Contributions between January 1, 1990 and June 30, 2010, divided by the aggregate of 6% of the Earnings between January 1, 1990 and June 30, 2010 upon which the Member has made Required Contributions.

In no event shall the pension payable from the Plan exceed the maximum pension restrictions imposed by the Income Tax Act.

Normal Form of Pension:

The normal form of pension is a monthly pension payable for the lifetime of the pensioner with payment guaranteed for 10 years.

Early Retirement:

A Member may retire ten years prior to the Normal Retirement Date. The amount of pension payable is the actuarial equivalent of the pension payable at the Normal Retirement Date. Member's whose age plus service total 85 (subject to a minimum age 55), or have reached age 60, may elect to retire with an unreduced pension.

Delayed Retirement:

Members who continue employment past their Normal Retirement Date may continue to contribute to and accrue benefits under the Plan.

Death Benefits After Retirement:

Members Receiving the Normal Form of Pension:
Monthly pension payments will be continued to the Member's beneficiary until a total of 120 monthly payments have been made to the member and beneficiary.

Members Receiving Optional Forms of Benefits:
Death benefits will be payable in accordance with the optional form of pension elected.

Death Benefits Before Retirement:

In the case of a Member who dies and leaves a spouse and dependent child(ren), the survivor(s) will receive a pension equal to 75% of the pension earned to the date of the member's death. In cases where there is only one survivor, the benefit in respect of service after December 31, 1991 will normally be reduced to 66 $^{2}/_{3}$% of the corresponding portion of the member's pension. The pension payable to the survivor shall continue to the later of the death of the spouse or the date the youngest child turns age 18. In the absence of a surviving spouse or dependent child(ren), a Member's beneficiary is entitled to receive the total amount of the member's contributions accumulated with interest.

Termination Benefits:

If a Member's service is terminated prior to death or retirement, the Member is entitled to one of the following options:

(a) Deferred pension commencing on the member's Normal Retirement Date in an amount equal to the pension accrued to the date of termination; or

(b) Transfer to a registered retirement savings plan (RRSP) an amount equal to the Commuted Value of the pension benefit to which the Member is entitled (a) above.

Where the Member's Required Contributions accumulated with Interest (excluding Transferred Contributions and Additional Voluntary Contributions) exceeds one-half the Commuted Value of the Member's pension in respect of Pensionable Service accrued while the Member was employed by the University, the Member is entitled to a refund of any such excess.

Disability Benefits:

If a Member becomes disabled prior to the Normal Retirement Date, but after having been a member of the plan for ten years, the member will continue to accumulate pensionable service until:

(a) the member is no longer disabled;

(b) the member becomes eligible for a Normal Retirement Pension; or

(c) the member dies.

During the period of disability, if the member continues to receive benefits from a University sponsored program, the University shall make contributions on behalf of the member.

Employee Contributions:

Effective with this actuarial valuation and in accordance with the Funding Agreement, Members are required to contribute at a rate which covers:

- half of the current service cost, currently 8.35% of pay, plus
- Member Special Contributions of 0.88% of pay until June 30, 2025, plus
- half of any emerging deficit funding requirements after this actuarial valuation.

The current total Member contribution rate is 9.23% of pay. This aggregate contribution requirement will be achieved through Member contributions at rates of 10.28% on non-CPP earnings and 8.48% on CPP earnings.

Employer Contributions:

Effective with this actuarial valuation and in accordance with the Funding Agreement, the Employer is required to contribute at a rate which covers:

- half of the current service cost, currently 8.35% of pay, plus
- Initial Deficit contributions of 1.00% of pay until September 30, 2031, plus
- half of any emerging deficit funding requirements after this actuarial valuation.

The current total Employer contribution rate is 9.35% of pay.

Employer contribution levels are determined based on actuarial advice, and subject in any event to certain limitations under the Income Tax Act which prohibit a plan sponsor from making contributions in any situation where the plan's actuarial surplus exceeds the limits prescribed under the Income Tax Act.

Cost of Living Adjustments:

Increases to pensions in payment are subject to the investment performance of the pension fund.

APPENDIX E EMPLOYER CERTIFICATION

On behalf of the University of Prince Edward Island, I hereby certify the data provided to Eckler Ltd. for the purposes of the actuarial valuation of the *Pension Plan for the Employees of the University of Prince Edward Island* as at April 30, 2019, are accurate and complete as recorded on the records of the Administrator.

____
Name

____
Signature

____
Title

____
Date