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NOVA SCOTIA HEALTH EMPLOYEES' PENSION PLAN

REPORT ON THE ACTUARIAL VALUATION FOR FUNDING PURPOSES AS AT JULY 1, 2017

DECEMBER 2017

Nova Scotia Superintendent of Pensions Registration Number: 0355925
Canada Revenue Agency Registration Number: 0355925

MARSH & McLENNAN COMPANIES

Note to reader regarding actuarial valuations:

This valuation report may not be relied upon for any purpose other than those explicitly noted in the Introduction, nor may it be relied upon by any party other than the parties noted in the Introduction. Mercer is not responsible for the consequences of any other use. A valuation report is a snapshot of a plan's estimated financial condition at a particular point in time; it does not predict a pension plan's future financial condition or its ability to pay benefits in the future. If maintained indefinitely, a plan's total cost will depend on a number of factors, including the amount of benefits the plan pays, the number of people paid benefits, the amount of plan expenses, and the amount earned on any assets invested to pay the benefits. These amounts and other variables are uncertain and unknowable at the valuation date. The content of the report may not be modified, incorporated into or used in other material, sold or otherwise provided, in whole or in part, to any other person or entity, without Mercer's permission. All parts of this report, including any documents incorporated by reference, are integral to understanding and explaining its contents; no part may be taken out of context, used or relied upon without reference to the report as a whole.

To prepare the results in this report, actuarial assumptions are used to model a single scenario from a range of possibilities for each valuation basis. The results based on that single scenario are included in this report. However, the future is uncertain and the plan's actual experience will differ from those assumptions; these differences may be significant or material. Different assumptions or scenarios within the range of possibilities may also be reasonable, and results based on those assumptions would be different. Furthermore, actuarial assumptions may be changed from one valuation to the next because of changes in regulatory and professional requirements, developments in case law, plan experience, changes in expectations about the future and other factors.

The valuation results shown in this report also illustrate the sensitivity to one of the key actuarial assumptions, the discount rate. We note that the results presented herein rely on many assumptions, all of which are subject to uncertainty, with a broad range of possible outcomes and the results are sensitive to all the assumptions used in the valuation.

Should the plan be wound up, the going concern funded status and solvency financial position, if different from the wind-up financial position, become irrelevant. The hypothetical wind-up financial position estimates the financial position of the plan assuming it is wound up on the valuation date. Emerging experience will affect the wind-up financial position of the plan assuming it is wound up in the future. In fact, even if the plan were wound up on the valuation date, the financial position would continue to fluctuate until the benefits are fully settled.

Decisions about benefit changes, granting new benefits, investment policy, funding policy, benefit security and/or benefit-related issues should not be made solely on the basis of this valuation, but only after careful consideration of alternative economic, financial, demographic and societal factors, including financial scenarios that assume future sustained investment losses.

Funding calculations reflect our understanding of the requirements of Nova Scotia *Pension Benefits Act*, the *Income Tax Act*, and related regulations that are effective as of the valuation date. Mercer is not a law firm, and the analysis presented in this report is not intended to be a legal opinion. You should consider securing the advice of legal counsel with respect to any legal matters related to this report.

CONTENTS

1

Summary of Results

	01.07.2017	**01.07.2014**
Going Concern Financial Status		
Market value of assets	$7,716,288,000	$5,183,331,000
Going concern funding target	$5,576,202,000	$4,248,051,000
Funding excess (shortfall)	$2,140,086,000	$935,280,000
Funded Ratio	138%	122%
Hypothetical Wind-up Financial Position		
Wind-up assets	$7,706,288,000	$5,178,331,000
Wind-up liability	$8,790,820,000	$7,269,187,000
Wind-up excess (shortfall)	($1,084,532,000)	($2,090,856,000)
Wind-up Ratio	88%	71%
Solvency Financial Position		
Solvency assets	$7,706,288,000	$5,178,331,000
Solvency liability	$7,133,072,000	$5,130,199,000
Solvency excess (shortfall)	$573,216,000	$48,132,000
Solvency ratio	108%	101%
Funding Requirements in the Year Following the Valuation [1]		
Total current service cost	$279,726,000	$237,616,000
Estimated members' required contributions	($130,130,000)	($118,481,000)
Estimated current service cost (net of members' required contributions)	$149,596,000	$119,135,000
Total current service cost as a percentage of members' pensionable earnings	17.59%	16.45%
Minimum special payments in the Year Following the Valuation	$0	$0
Estimated minimum employers' contribution [2]	$152,402,000	$138,682,000
Estimated maximum eligible employers' contribution	$1,234,128,000	$2,209,991,000
Next required valuation date	01.07.2020	01.07.2017

[1] Provided for reference purposes only. Contributions must be remitted to the Plan in accordance with the Minimum Funding Requirements and Maximum Eligible Contributions sections of this report.

[2] Based on provisions of the Joint Trust Agreement and Plan documents effective June 4, 2012.

2

Introduction

To Nova Scotia Health Employees' Pension Plan Trustees

At the request of the Nova Scotia Health Employees' Pension Plan Trustees (the "Trustees"), we have conducted an actuarial valuation of the Nova Scotia Health Employees' Pension Plan (the "Plan"), as at the valuation date, July 1, 2017. We are pleased to present the results of the valuation.

Purpose

The purpose of this valuation is to determine:

- The funded status of the Plan as at July 1, 2017 on going concern, hypothetical wind-up, and solvency bases;
- The minimum required funding contributions from July 1, 2017, in accordance with the Nova Scotia *Pension Benefits Act* (the "Act"); and
- The maximum permissible funding contributions from July 1, 2017, in accordance with the *Income Tax Act.*

The information contained in this report was prepared for the internal use of the Trustees and for filing with the Nova Scotia Superintendent of Pensions and with the Canada Revenue Agency, in connection with our actuarial valuation of the Plan. This report will be filed with the Nova Scotia Superintendent of Pensions and with the Canada Revenue Agency. This report is not intended or suitable for any other purpose.

In accordance with pension benefits legislation, the next actuarial valuation of the Plan will be required as at a date not later than July 1, 2020, or as at the date of an earlier amendment to the Plan.

Terms of Engagement

In accordance with our terms of engagement with the Trustees, our actuarial valuation of the Plan is based on the following material terms:

- It has been prepared in accordance with applicable pension legislation and actuarial standards of practice in Canada.
- As instructed by the Trustees, the going concern discount rate reflects a margin for adverse deviations of 0.40% per year.

- We have reflected the Trustees decisions for determining the solvency funding requirements, summarized as follows:

  - The same plan wind-up scenario was hypothesized for both hypothetical wind-up and solvency valuations.

  - Certain excludable benefits were excluded from the solvency liabilities.

  - The solvency financial position was determined on a market value basis.

See the Valuation Results - Solvency section of the report for more information.

Events Since the Last Valuation at July 1, 2014

Pension Plan

There have been no special events since the last valuation date.

This valuation reflects the provisions of the Plan as at July 1, 2017. The Plan has been amended since the date of the previous valuation as follows:

- Effective September 30, 2014, the Plan was amended to change the base year to 2012 and to increase deferred pensions.

- Effective December 31, 2014 the Plan was amended to change the base year to 2013 and to increase deferred pensions.

- Effective June 1, 2015, the Plan was amended to comply with changes to the Nova Scotia *Pension Benefits Act* and *Regulations*.

- Effective July 1, 2015, the Plan was amended to allow for increases in deemed earnings to be granted by the Trustees in conjunction with base year upgrades and increases in deferred pensions.

- Effective December 31, 2015, the Plan was amended to change the base year to 2014 and to increase deferred pensions and deemed earnings.

- Effective December 31, 2016, the Plan was amended to change the base year to 2015 and to increase deferred pensions and deemed earnings.

- Effective December 31, 2017, the Plan was amended to change the base year to 2016 and to increase deferred pensions and deemed earnings.

As noted in the next subsection, the going concern results in this valuation reflect future base year upgrades indefinitely into the future with a 2-3 year lag and the solvency results reflect future base year upgrades up to and including a 2018 base year. The wind-up liabilities reflect the plan terms as at July 1, 2017 at which time the Plan had a 2015 base year.

We are not aware of any pending definitive or virtually definitive amendments coming into effect during the period covered by this report. The Plan provisions are summarized in Appendix F.

Assumptions

We have used the same going concern valuation assumptions and methods as were used for the previous valuation, except for the following:

	Current valuation	**Previous valuation**
Discount rate:	6.25% per year	7.00% per year
Inflation:	2.00% per year	2.20% per year
ITA limit / YMPE increases:	2.50% per year	2.70% per year
Pensionable earnings:	3.20% per year	3.40% per year
Post retirement pension increases	1.80% per year	2.20% per year
Mortality improvements:	Fully generational using MI-2017 improvement scale from 2014	Fully generational using CPM Improvement Scale B (CPM-B)

The Plan provides pension benefits on a career-average basis with base year upgrades granted by the Trustees in accordance with the Trust Agreement from time to time. For this valuation, we have assumed future base year upgrades indefinitely into the future with a 2-3 year lag and have approximated this by using projected 5-year final average earnings and a projected unit credit actuarial method. Each member's entitlement based on the projected 2018 base year is held as a minimum liability.

The hypothetical wind-up and solvency assumptions have been updated to reflect market conditions at the valuation date. The hypothetical wind-up liability reflects the current 2015 base year. The solvency liability reflects projected base year improvements to a 2018 base year (with 2017 and 2018 salaries estimated based on 2016 salary increased by 2.5% and 5.6% respectively).

A summary of the going concern, and hypothetical wind-up and solvency methods and assumptions are provided in Appendices C and D, respectively.

Regulatory Environment and Actuarial Standards

There have been a number of changes to the Act and regulations which impact the funding of the Plan.

A new *Pension Benefits Act* and *Regulations* came into force on June 1, 2015. There were several changes which impacted member benefits, such as immediate vesting and improvements in pre-retirement death benefits, as well as changes impacting the funding of the Plan, most notably, the inclusion in solvency liabilities of post-retirement pension increases for service on and after June 1, 2015. The financial impact of these changes has been reflected in this actuarial valuation.

At its meeting on June 9, 2015, the Actuarial Standards Board (ASB) decided to promulgate the use of the following mortality table with respect of the computation of pension commuted values ("CIA CV Standard"), effective October 1, 2015: *Mortality rates equal to the 2014 Canadian Pensioners Mortality Table (CPM2014) combined with mortality improvement scale CPM Improvement Scale B (CPM-B)*. The change affects the mortality assumption used to value the solvency and wind-up liabilities for benefits assumed to be settled through a lump sum transfer. It also affects the mortality assumption used to determine the commuted values payable upon termination for members assumed to elect a lump-sum transfer under the going-concern basis. The financial impact of the change in the CIA CV Standard has been reflected in this actuarial valuation.

Subsequent Events

After checking with representatives of the Nova Scotia Health Employees' Pension Plan, to the best of our knowledge there have been no events subsequent to the valuation date which, in our opinion, would have a material impact on the results of the valuation. Our valuation reflects the financial position of the Plan as of the valuation date and does not take into account any experience after the valuation date.

Impact of Case Law

This report has been prepared on the assumption that all claims on the Plan after the valuation date will be in respect of benefits payable to members of the Plan determined in accordance with the Plan terms and that all Plan assets are available to provide for these benefits. It is possible that court and regulatory decisions and changes in legislation could give rise to additional entitlements to benefits under the Plan and cause the results in this report to change. By way of example, we bring your attention to the following decisions:

- The Ontario Court of Appeal's 2003 decision in *Aegon Canada Inc. and Transamerica Life Canada versus ING Canada Inc.* restricted the use of original plan surplus where two or more pension plans were merged.
- The Supreme Court of Canada's 2004 decision in *Monsanto Canada Inc. versus Superintendent of Financial Services* upheld the requirement, with retroactive effect, to distribute surplus on partial plan wind-up under the *Pension Benefits Act (Ontario).*

Although this decision dealt with Ontario legislation, it is possible that it could have application to other provinces where the underlying language in the *Pension Benefits Act (Ontario)* is similar to language in the legislation of other provinces.

We are not in a position to assess the impact that such decisions or changes could have on the assumption that all plan assets on the valuation date are available to provide for benefits determined in accordance with the Plan terms. If such a claim arises subsequent to the date of this report, the consequences will be dealt with in a subsequent report. We are making no representation as to likelihood of such a claim.

3

Valuation Results – Going Concern

Financial Status

A going concern valuation compares the relationship between the value of Plan assets and the present value of expected future benefit cash flows in respect of accrued service, assuming the Plan will be maintained indefinitely.

The results of the current valuation, compared with those from the previous valuation, are summarized as follows:

	01.07.2017	**01.07.2014**
Assets		
Market value of assets	$7,716,288,000	$5,183,331,000
Going concern funding target		
• Active members	$3,049,995,000	$2,492,904,000
• Pensioners and survivors	$2,438,947,000	$1,695,856,000
• Deferred pensioners	$87,260,000	$59,291,000
Total	$5,576,202,000	$4,248,051,000
Funding excess (shortfall)	$2,140,086,000	$935,280,000
Funded ratio	138%	122%

The going concern funding target includes a provision for adverse deviations.

Reconciliation of Financial Status ($ in thousands)

Funding excess (shortfall) as at previous valuation		$935,280
Interest on funding excess (shortfall) at 7.00% per year		$210,478
Employers' special payments, with interest		$0
Expected funding excess (shortfall)		$1,145,758
Net experience gains (losses)		
• Net Investment return	$1,154,241	
• Increases in pensionable earnings & YMPE	$87,129	
• Retirement	($3,602)	
• Mortality	($3,568)	
• Termination	$5,223	
• Indexation	$36,026	
• Disability	$10,381	
• Contributions more than current service cost determined at previous valuation, with interest	$77,528	
Total experience gains (losses)		$1,363,358
Impact of changes in assumptions		($360,848)
Impact of upgrade to base year 2018 as a minimum liability		($52,124)
Net impact of other elements of gains and losses		$43,942
Funding excess (shortfall) as at current valuation		$2,140,086

Current Service Cost

The current service cost is an estimate of the present value of the additional expected future benefit cash flows in respect of pensionable service that will accrue after the valuation date, assuming the Plan will be maintained indefinitely.

The current service cost during the year following the valuation date compared with the corresponding value determined in the previous valuation, is as follows:

	12 months following 01.07.2017	**12 months following 01.07.2014**
Total current service cost	$279,726,000	$237,616,000
Estimated members' required contributions	($130,130,000)	($118,481,000)
Estimated current service cost (net of members' required contributions)	$149,596,000	$119,135,000
Total current service cost expressed as a percentage of members' pensionable earnings	17.59%	16.45%
Current service cost (net of members' required contributions) expressed as a percentage of members' pensionable earnings	9.41%	8.25%

The key factors that have caused a change in the total current service cost since the previous valuation are summarized in the following table:

Total current service cost as at previous valuation	16.45%
Demographic changes	(0.77%)
Changes in assumptions	1.91%
Total current service cost as at current valuation	17.59%

Discount Rate Sensitivity

The following table summarises the effect on the going concern funding target shown in this report of using a discount rate which is 1.00% lower than that used in the valuation:

Scenario	Valuation Basis	Reduce Discount Rate by 1%
Going concern funding target	$5,576,202,000	$6,534,279,000
Current service cost		
• Total current service cost	$279,726,000	$357,022,000
• Estimated members' required contributions	$130,130,000	$130,130,000
• Estimated current service cost (net of members' required contributions)	$149,596,000	$226,892,000

4

Valuation Results – Hypothetical Wind-up

Financial Position

When conducting a hypothetical wind-up valuation, we determine the relationship between the respective values of the Plan's assets and its liabilities assuming the Plan is wound up and settled on the valuation date, assuming benefits are settled in accordance with the Act and under circumstances producing the maximum wind-up liabilities on the valuation date.

The hypothetical wind-up financial position as of the valuation date, compared with that at the previous valuation, is as follows:

	01.07.2017	01.07.2014
Assets		
Market value of assets	$7,716,288,000	$5,183,331,000
Termination expense provision	($10,000,000)	($5,000,000)
Wind-up assets	$7,706,288,000	$5,178,331,000
Present value of accrued benefits for:		
• Active members	$5,066,739,000	$4,289,159,000
• Pensioners and survivors	$3,576,449,000	$2,860,289,000
• Deferred pensioners	$147,632,000	$119,739,000
Total wind-up liability	$8,790,820,000	$7,269,187,000
Wind-up excess (shortfall)	($1,084,532,000)	($2,090,856,000)
Wind-up ratio	88%	71%

5

Valuation Results – Solvency

Overview

The Act also requires the financial position of the Plan to be determined on a solvency basis.

The solvency liability in this valuation reflects projected base year improvements to a 2018 base year (with 2017 and 2018 salaries estimated based on 2016 salary increased by 2.5% and 5.6% respectively).

The financial position on a solvency basis is determined in a similar manner to the Hypothetical Wind-up Basis, except for the following:

Exceptions	**Reflected in valuation based on the terms of engagement**
The circumstance under which the Plan is assumed to be wound-up could differ for the solvency and hypothetical wind-up valuations.	The same circumstances were assumed for the solvency valuation as were assumed for the hypothetical wind-up.
Certain benefits can be excluded from the solvency financial position. These include: (a) any escalated adjustment (e.g. indexing), (b) additional benefits payable under Section 97 of the Act ("grow-in" benefits), and (c) prospective benefit increases.	The following benefits were excluded from the solvency liabilities shown in this valuation: ▪ Post-retirement indexing for service before June 1, 2015 ▪ Benefits payable under Section 97 of the Act ("grow-in" benefits), and
The solvency financial position can be determined by smoothing assets and the solvency discount rate over a period of up to 5 years.	Smoothing was not used.

Financial Position

The financial position on a solvency basis, compared with the corresponding figures from the previous valuation, is as follows:

	01.07.2017	01.07.2014
Assets		
Market value of assets	$7,716,288,000	$5,183,331,000
Termination expense provision	($10,000,000)	($5,000,000)
Net assets	$7,706,288,000	$5,178,331,000
Liabilities		
Total hypothetical wind-up liability	$8,790,820,000	$7,269,187,000
Value of excluded benefits	($1,657,748,000)	($2,138,988,000)
Liability on a solvency basis	$7,133,072,000	$5,130,199,000
Surplus (shortfall) on a market value basis	$573,216,000	$48,132,000
Solvency ratio	108%	101%

Solvency Incremental Cost to July 1, 2020

The solvency incremental cost is an estimate of the present value of the projected change in the solvency liability from the valuation date until the next scheduled valuation date, adjusted for the benefit payments expected to be made in that period.

The solvency incremental cost determined in this valuation is as follows:

	01.07.2017	01.07.2014
Number of years covered by report	3 years	3 years
Total solvency liability at the valuation date (A)	$7,133,072,000	$5,130,199,000
Present value of projected solvency liability at the next required valuation (including expected new entrants) plus benefit payments until the next required valuation (B)	$8,344,650,000	$5,888,990,000
Solvency incremental cost (B – A)	$1,211,578,000	$758,791,000

The incremental cost is not an appropriate measure of the contributions that would be required to maintain the financial position of the Plan on a solvency basis unchanged from the valuation date and the next required valuation date, if actual experience is exactly in accordance with the going concern valuation assumptions. This is because it does not reflect the fact that the expected return on plan assets (based on the going concern assumptions) is greater than the discount rate used to determine the solvency liability.

Discount Rate Sensitivity

The following table summarises the effect on the solvency liability shown in this report of using a discount rate which is 1.00% lower than that used in the valuation:

Scenario	Valuation Basis	Reduce Discount Rate by 1%
Total solvency liability	$7,133,102,000	$8,508,231,000

6

Minimum Funding Requirements

The Act prescribes the minimum contributions that the participating employers must make to the Plan. The minimum contributions in respect of a defined benefit component of a pension plan are comprised of going concern current service cost and special payments to fund any going concern or solvency shortfalls.

We note, however, that the employers' contribution requirements may be determined or affected by other obligations or agreements in force from time to time, including the Joint Trust Agreement and Plan amendment effective June 4, 2012.

There is a funding excess and no special payments are required for solvency purposes on the basis of the assumptions and methods described in this report. Under these circumstances the Act does not require the employers to contribute to the Plan until after the funding excess has been applied towards the employers' current service cost.

Once the funding excess has been so applied, employer contributions must resume. On the basis of the assumptions and methods described in this report, the rule for determining the minimum required employers' monthly contributions, as well as an estimate of the employers' contributions, from the valuation date until the next required valuation are as follows:

	Employers' Minimum Contribution Rule	**Estimated Minimum Employers' Contributions**	
Period beginning	**Monthly current service cost[3]**	**Monthly current service cost**	**Total employer minimum monthly contributions as per Plan documents**
01.07.2017	9.41%	$12,466,000	$12,700,000
01.07.2018	9.41%	$12,715,000	$12,954,000
01.07.2019	9.41%	$12,969,000	$13,213,000

The estimated contribution amounts above are based on projected members' pensionable earnings assuming a 2.0% annual increase in total pensionable earnings. Therefore, the actual employers' current service cost will be different from the above estimates and, as such, the contribution requirements should be monitored closely to ensure contributions are made in accordance with the Act.

The Joint Trust Agreement defines the minimum required total contributions from employers and employees and also defines an allocation of those contributions between employers and employees. Should the total contributions made to the plan change, both employees' and employers' contribution levels would change. The estimated minimum employer contributions

[3] Expressed as a percentage of members' pensionable earnings.

and estimated employee contributions in this report are based on the contribution rates currently in effect.

Other Considerations

Differences Between Valuation Bases

There is no provision in the minimum funding requirements to fund the difference between the hypothetical wind-up and solvency shortfalls, if any.

In addition, although minimum funding requirements do include a requirement to fund the going concern current service cost, there is no requirement to fund the expected growth in the hypothetical wind-up or solvency liability after the valuation date, which could be greater than the going concern current service cost.

Timing of Contributions

Funding contributions are due on a monthly basis. Contributions for current service cost must be made within 30 days following the month to which they apply. Special payment contributions must be made in the month to which they apply.

Retroactive Contributions

The participating employers must contribute the excess, if any, of the minimum contribution recommended in this report over contributions actually made in respect of the period following the valuation date. This contribution, along with an allowance for interest, is due no later than 60 days following the date this report is filed.

Payment of Benefits

The Act imposes certain restrictions on the payment of lump sums from the Plan when the transfer ratio revealed in an actuarial valuation is less than one. If the transfer ratio shown in this report is less than one, the plan administrator should ensure that the monthly special payments are sufficient to meet the requirements of the Act to allow for the full payment of benefits, and otherwise should take the prescribed actions.

Additional restrictions are imposed when:

- The transfer ratio revealed in the most recently filed actuarial valuation is less than one and the administrator knows or 'ought to know' that the transfer ratio of the Plan has declined by 10% or more since the date the last valuation was filed.

- The transfer ratio revealed in the most recently filed actuarial valuation is greater than or equal to one and the administrator knows or 'ought to know' that the transfer ratio of the Plan has declined to less than 0.9 since the date the last valuation was filed.

As such, the administrator should monitor the transfer ratio of the Plan and, if necessary, take the prescribed actions.

7

Maximum Eligible Contributions

The *Income Tax Act* (the "ITA") limits the amount of employer contributions that can be remitted to the defined benefit component of a registered pension plan. However, notwithstanding the limit imposed by the ITA, for plans which are not 'Designated' as defined in the ITA, in general, the minimum required contributions under the Act can be remitted.

In accordance with Section 147.2 of the ITA and *Income Tax Regulation* 8516, for a plan which is underfunded on either a going concern or on a hypothetical wind-up basis, the maximum permitted contributions are equal to the employers' current service cost plus the greater of the going concern funding shortfall and hypothetical wind-up shortfall.

For a plan which is fully funded on both going concern and hypothetical wind-up bases, the employers can remit a contribution equal to the employers' current service cost as long as the surplus in the plan does not exceed a prescribed threshold. Specifically, in accordance with Section 147.2 of the ITA, for a plan which is fully funded on both going concern and hypothetical wind-up bases, the plan may not retain its registered status if the employers make a contribution while the going concern funding excess exceeds 25% of the going concern funding target.

Maximum Contributions

The participating employers are permitted to fully fund the greater of the going concern and hypothetical wind-up shortfalls; $1,084,532,000, as well as make current service cost contributions. The portion of this contribution representing the payment of the hypothetical wind-up shortfall can be increased with interest at 2.73% per year from the valuation date to the date the payment is made, and must be reduced by the amount of any deficit funding made from the valuation date to the date the payment is made.

8

Actuarial Opinion

In my opinion, for the purposes of the valuations,

- The membership data on which the valuation is based are sufficient and reliable.
- The assumptions are appropriate.
- The methods employed in the valuation are appropriate.

This report has been prepared, and my opinions given, in accordance with accepted actuarial practice in Canada. It has also been prepared in accordance with the funding and solvency standards set by the Nova Scotia *Pension Benefits Act*.

Doug Brake

Douglas M. Brake
Fellow, Canadian Institute of Actuaries
Fellow, Society of Actuaries

19 December 2017

Date

APPENDIX A

Prescribed Disclosure

Definitions

The Act and regulations define a number of terms as follows:

Defined Term	Description	Result
Going concern excess (deficit)	Amount by which the going concern assets exceed (are below) the going concern liabilities	$2,140,086,000
Wind-up Liabilities	Liabilities determined as if the plan had been wound up on the valuation date	$8,790,820,000
Solvency Liabilities	Liabilities determined as if the plan had been wound up on the valuation date, but excluding liabilities for, (a) any escalated adjustment, and (b) additional benefits payable under Section 79 of the Act ("grow-in" benefits).	$7,133,072,000
Solvency Assets	Market value of the assets including accrued or receivable items minus the estimated expense of the winding-up of the plan	$7,706,288,000
Solvency excess (deficiency)	Amount by which the solvency asset amount exceeds (is below) the solvency liabilities	$573,216,000
Solvency Ratio	Ratio of the solvency assets to the solvency liabilities	108%
Transfer Ratio	Ratio of the solvency assets to the wind-up liabilities	88%

Timing of Next Required Valuation

In accordance with the Act, the next valuation of the Plan will be required at an effective date within three years of the current valuation date, no later than July 1, 2020.

Special Payments

As the Plan does not have an unfunded liability or a solvency shortfall, no special payments are required.

APPENDIX B

Plan Assets

The pension fund is held in trust by RBC Investor Services. In preparing this report, we have relied upon the financial statements prepared by the Nova Scotia Health Employees' Pension Plan for the period ending on July 1, 2017 without further audit. Customarily, this information would not be verified by a plan's actuary. We have reviewed the information for internal consistency and we have no reason to doubt its substantial accuracy.

Reconciliation of Market Value of Plan Assets

The pension fund transactions since the last valuation are summarized in the following table:

	01.07.2014 to 31.12.2014	01.01.2015 to 31.12.2015	01.01.2016 to 31.12.2016	01.01.2017 to 01.07.2017
Opening balance	$5,183,331,000	$5,700,537,000	$6,603,463,000	$7,140,654,000
PLUS				
Members' contributions	$57,177,000	$114,257,000	$114,387,000	$57,290,000
Members' buy-back contributions	$753,000	$20,926,000	$3,216,000	$600,000
Employers' contributions	$68,823,000	$133,477,000	$133,579,000	$66,830,000
Net transfers to/from other plans	($156,000)	($941,000)	($128,000)	($1,700,000)
Investment income and net capital gains (losses)	$476,075,000	$830,409,000	$505,528,000	$572,921,000
	$602,672,000	$1,098,128,000	$756,582,000	$695,941,000
LESS				
Pensions paid	$69,028,000	$155,223,000	$177,612,000	$91,640,000
Lump-sums paid	$10,174,000	$27,134,000	$28,936,000	$21,740,000
Expenses	$6,264,000	$12,845,000	$12,844,000	$6,927,000
	$85,466,000	$195,202,000	$219,392,000	$120,307,000
Closing balance	$5,700,537,000	$6,603,463,000	$7,140,654,000	$7,716,288,000

We have tested the pensions paid, the lump-sums paid and the contributions for consistency with the membership data for the Plan members who have received benefits or made contributions. The results of these tests were satisfactory.

Investment Policy

The plan administrator has adopted a statement of investment policy and procedures. This policy is intended to provide guidelines for the manager(s) as to the level of risk that is consistent with the Plan's investment objectives. A significant component of this investment policy is the asset mix.

The plan administrator is solely responsible for selecting the plan's investment policies, asset allocations and individual investments.

The target asset mix at the valuation date is provided for information purposes:

	Investment Policy
	Target
Equities	42.5%
Fixed Income	21.0%
Real Estate	13.5%
Infrastructure	10.0%
Hedge Funds	10.0%
Cash and cash equivalents	3.0%
	100.0%

In addition to the above, various equity-based and fixed income-based unfunded derivative exposures are also used to improve the expected risk adjusted returns. For complete details, please see the Investment Policy that is posted on NSHEPP's web-site.

While the above describes the target allocation as of the effective date of the actuarial valuation, the actual allocation varies from the above because of the time required to transition between various illiquid asset categories.

APPENDIX C

Methods and Assumptions – Going Concern

Valuation of Assets

For this valuation, we have continued to use the market value of the fund as the actuarial value of plan assets.

Going Concern Funding Target

Over time, the real cost to the employers of a pension plan is the excess of benefits and expenses over member contributions and investment earnings. The actuarial cost method allocates this cost to annual time periods.

For the purposes of this going concern valuation, we have used the projected unit credit actuarial cost method. Under this method, we determine the present value of benefit cash flows expected to be paid in respect of service accrued prior to the valuation date, based on projected final average earnings. This is referred to as the funding target. For each individual plan member, accumulated contributions with interest are established as a minimum actuarial liability.

The funding excess or funding shortfall, as the case may be, is the difference between the actuarial value of assets and the funding target. A funding excess on a market value basis indicates that the current market value of assets and expected investment earnings are expected to be sufficient to meet the cash flows in respect of benefits accrued to the valuation date as well as expected expenses – assuming the plan is maintained indefinitely. A funding shortfall on a market value basis indicates the opposite – that the current market value of the assets is not expected to be sufficient to meet the plan's cash flow requirements.

As required under the Act, a funding shortfall must be amortized over no more than 15 years through special payments. A funding excess may, from an actuarial standpoint, be applied immediately to reduce required employers' current service contributions unless precluded by the terms of the plan, legislation or other binding agreement.

The actuarial cost method used for the purposes of this valuation produces a reasonable matching of contributions with accruing benefits. Because benefits are recognized as they accrue, the actuarial cost method provides an effective funding target for a plan that is maintained indefinitely.

Current Service Cost

The current service cost is the present value of projected benefits to be paid under the plan with respect to service expected to accrue during the period until the next valuation.

The employers' current service cost is the total current service cost reduced by the members' required contributions.

The employers' current service cost has been expressed as a percentage of the members' pensionable earnings to provide an automatic adjustment in the event of fluctuations in membership and/or pensionable earnings.

Under the projected unit credit actuarial cost method, the current service cost for an individual member will increase each year as the member approaches retirement. However, the current service cost of the entire group, expressed as a percentage of the members' pensionable earnings, can be expected to remain stable as long as the average age of the group remains constant.

Actuarial Assumptions – Going Concern Basis

The present value of future benefit payment cash flows is based on economic and demographic assumptions. At each valuation we determine whether, in our opinion, the actuarial assumptions are still appropriate for the purposes of the valuation, and we revise them, if necessary. Emerging experience will result in gains or losses that will be revealed and considered in future actuarial valuations.

The table below shows the various assumptions used in the current valuation in comparison with those used in the previous valuation.

Assumption	**Current valuation**	**Previous valuation**
Discount rate:	6.25% per year	7.00% per year
Inflation:	2.00% per year	2.20% per year
ITA limit / YMPE increases:	2.50% per year	2.70% per year
Pensionable earnings increases:	3.20% per year	3.40% per year
Post retirement pension increases:	1.80% per year	2.20% per year
Interest on employee contributions	2.50% per year	2.50% per year
Retirement rates:	75% at earliest unreduced retirement date (or in one year if already eligible), remainder at age 65. Deferred members and members in receipt of LTD are assumed to retire at age 60.	75% at earliest unreduced retirement date (or in one year if already eligible), remainder at age 65. Deferred members and members in receipt of LTD are assumed to retire at age 60.
Termination rates:	None	None
Mortality rates:	100% of the rates of the 2014 Canadian Pensioners Mortality Table (CPM2014)	100% of the rates of the 2014 Canadian Pensioners Mortality Table (CPM2014)
Mortality improvements:	Fully generational using MI-2017 improvement scale from 2014	Fully generational using CPM Improvement Scale B (CPM-B)
Disability rates:	None	None
Eligible spouse at retirement:	90% of males and 70% of females	90% of males and 70% of females
Spousal age difference:	Male 3 years older	Male 3 years older
Dependent child	None assumed	None assumed
Base year for pension	Projected 5-year final average	Projected 5-year final average

Assumption	Current valuation	Previous valuation
calculations:	earnings	earnings

The assumptions are best-estimate with the exception that the discount rate includes a margin for adverse deviations, as shown below.

Rationale for Assumptions

A rationale for each of the assumptions used in the current valuation is provided below.

Discount Rate

We have discounted the expected benefit payment cash flows using the expected investment return on the actuarial value of the fund. Other bases for discounting the expected benefit payment cash flows may be appropriate, particularly for purposes other than those specifically identified in this valuation report.

The discount rate is comprised of the following:

- Estimated returns for each major asset class consistent with market conditions on the valuation date and the target asset mix specified in the Plan's investment policy
- Additional returns assumed to be achievable due to active equity management (net of related expenses).
- Implicit provision for non-investment expenses determined as the average rate of administrative expenses paid from the fund over the last 3 years
- A margin for adverse deviations, based on the proportion of plan assets invested in equities and the excess return expected on equities, over government bond yields.

The discount rate was developed as follows:

Assumed investment return, including allowance for active management and investment related expenses	6.74%
Implicit non-investment expense provision	(0.09%)
Margin for adverse deviation	(0.40%)
Net discount rate	6.25%

Inflation

The inflation assumption is based on the Bank of Canada's inflation target and market expectations of long-term inflation implied by the yields on nominal and real return bonds at the valuation date.

Income Tax Act Pension Limit and Year's Maximum Pensionable Earnings

The assumption is based on historical real economic growth and the underlying inflation assumption.

Pensionable Earnings

The assumption is based on general wage growth assumptions increased by our best estimate of future merit and promotional increases over general wage growth considering current economic and financial market conditions. The general wage growth component of this assumption is based on historical real economic growth and the underlying inflation assumption.

Post Retirement Pension Increases

The assumption is based on the Plan formula and inflation assumption above.

Retirement Rates

The assumption is based on plan experience, the plan provisions and our experience with similar plans and employee groups.

Termination Rates

Such an assumption would not have a material impact on the valuation.

Mortality Rates

The assumption for the mortality rates is based on the Canadian Pensioners' Mortality (CPM) study published by the Canadian Institute of Actuaries in February 2014.

After considering plan-specific characteristics, such as the type of employment, the industry experience, pension and employment income for the plan members, and data in the CPM study, it was determined to use the CPM mortality rates without adjustment.

There is broad consensus among actuaries and other longevity experts that mortality improvement will continue in the future, but the degree of future mortality improvement is uncertain. The Canadian Institute of Actuaries Task Force on Mortality Improvement released a report on September 20, 2017 which includes an analysis of the rate of mortality improvement for the Canadian population and provides for mortality improvement scale MI-2017. The MI-2017 scale is a reasonable outlook for future mortality improvement. We have used the MI-2017 improvement scale from 2014.

Based on the assumption used, the life expectancy of a member age 65 at the valuation date is 22.3 years for males and 24.6 years for females.

Disability Rates

Such an assumption would not have a material impact on the valuation.

Eligible Spouse

The assumption is based on an industry standard for non-retired members (actual status used for retirees).

Spousal Age Difference

The assumption is based on an industry standard showing males are typically 3 years older than their spouse.

Dependent Child

Such an assumption would not have a material impact on the valuation.

APPENDIX D

Methods and Assumptions – Hypothetical Wind-up and Solvency

Hypothetical Wind-up Basis

The Canadian Institute of Actuaries requires actuaries to report the financial position of a pension plan on the assumption that the plan is wound-up on the effective date of the valuation, with benefits determined on the assumption that the pension plan has neither a surplus nor a deficit. For the purposes of the hypothetical wind-up valuation, the plan wind-up is assumed to occur in circumstances that maximize the actuarial liability.

To determine the actuarial liability on the hypothetical wind-up basis, we have valued those benefits that would have been paid had the Plan been wound up on the valuation date, with all members fully vested in their accrued benefits.

The Standards of Practice of the Canadian Institute of Actuaries require that the scenario upon which the hypothetical wind-up valuation is based be postulated. However, there are no benefits under the plan contingent upon the circumstances of the plan wind-up or contingent upon other factors. Therefore, it was not necessary to postulate a scenario upon which the hypothetical wind-up valuation is made. No benefits payable on plan wind-up were excluded from our calculations. The plan wind-up is assumed to occur in circumstances that maximize the actuarial liability.

Upon plan wind-up, members are given options for the method of settling their benefit entitlements. The options vary by eligibility, but in general, involve either a lump sum transfer or an immediate or deferred pension.

The value of benefits assumed to be settled through a lump sum transfer is based on the assumptions described in Section 3500 – *Pension Commuted Values* of the Canadian Institute of Actuaries' Standards of Practice applicable for July 1, 2017.

Benefits provided as an immediate or deferred pension are assumed to be settled through the purchase of annuities based on an estimate of the cost of purchasing annuities.

However, there is limited data available to provide credible guidance on the cost of a purchase of indexed annuities in Canada. In accordance with the *Canadian Institute of Actuaries Educational Note: Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates Between December 31, 2016 and December 30, 2017 (the "Educational Note")*, we have assumed that an appropriate proxy for estimating the cost of such purchase is using the yield on the long-term Government of Canada Real Return bonds, reduced by 0.7%. For the non-indexed liabilities, we have estimated the cost of settlement through annuity purchase of annuities in accordance with the *Canadian Institute of Actuaries Educational Note: Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates Between December 31, 2016 and December 30, 2017.*

The Educational Note provides guidance on estimating the cost of annuity purchases assuming a typical group of annuitants. That is, no adjustments for sub- or super-standard mortality are considered. However, it is expected that insurers will consider plan experience and certain plan-specific characteristics when determining the mortality basis for a particular group. The Educational Note states that the actuary would be expected to make an adjustment to the regular annuity purchase assumptions where there is demonstrated substandard or super-standard mortality or where an insurer might be expected to assume so. In such cases, the actuary would be expected to make an adjustment to the mortality assumption in a manner consistent with the underlying annuity purchase basis. Given the uncertainty surrounding the actual mortality basis that would be typical of a group annuity purchase, it is reasonable to assume that there is a range of bases that can be expected not to be materially different from the actual mortality basis. Therefore, an adjustment to the regular annuity purchase assumptions would be warranted when the plan's assumed basis falls outside that range.

In this context, we have determined that no adjustment to the mortality rates used in the regular annuity purchase assumptions is required.

We have not included a margin for adverse deviation in the solvency and hypothetical wind-up valuations.

The assumptions are as follows:

Form of Benefit Settlement Elected by Member	
Lump sum	70% of active members under age 55 and 30% of active members over age 55 elect to receive their benefit entitlement in a lump sum
Annuity purchase	All remaining members are assumed to elect to receive their benefit entitlement in the form of a deferred or immediate pension. These benefits are assumed to be settled through the purchase of deferred or immediate annuities from a life insurance company.
Basis for Benefits Assumed to be Settled through a Lump Sum	
Mortality rates:	100% of the rates of the 2014 Canadian Pensioners Mortality Table (CPM2014) with fully generational improvements using CPM Scale B
Interest rate:	Pre-retirement (non-indexed): 2.3% per year for 10 years, 3.3% per year thereafter
	Post-retirement: 1.3% per year for 10 years, 1.8% per year thereafter
Basis for Benefits Assumed to be Settled through the Purchase of an Annuity	
Mortality rates:	100% of the rates of the 2014 Canadian Pensioners Mortality Table (CPM2014) with fully generational improvements using CPM Scale B
Adjustment to mortality rates:	No adjustment
Interest rate:	Pre-retirement (non-indexed): 2.97% per year
	Post-retirement: 0.99% per year
Retirement Age	
Maximum value:	Members are assumed to retire at the age which maximizes the value of their entitlement from the Plan based on the eligibility requirements which have been met at the valuation date

Grow-in:	The benefit entitlement and assumed retirement age of members whose age plus service equals at least 55 at the valuation date, reflect their entitlement to grow into early retirement subsidies
Other Assumptions	
Family composition:	90% of males and 70% of females with the male partner being three years older than the female partner
Termination expenses:	$10,000,000
Base Year:	2015

To determine the hypothetical wind-up position of the Plan, a provision has been made for estimated termination expenses payable from the Plan's assets in respect of actuarial and administration expenses that may reasonably be expected to be incurred in terminating the Plan and to be charged to the Plan.

Because the settlement of all benefits on wind-up is assumed to occur on the valuation date and is assumed to be uncontested, the provision for termination expenses does not include custodial, investment management, auditing, consulting, and legal expenses that would be incurred between the wind-up date and the settlement date or due to the terms of a wind-up being contested.

Expenses associated with the distribution of any surplus assets that might arise on an actual wind-up are also not included in the estimated termination expense provisions.

In determining the provision for termination expenses payable from the Plan's assets, we have assumed that the plan sponsor would not solvent on the wind-up date. We have also assumed, without analysis, that the Plan's terms as well as applicable legislation and court decisions would permit the relevant expenses to be paid from the Plan.

Actual fees incurred on an actual plan wind-up may differ materially from the estimates disclosed in this report.

Solvency Basis

In determining the financial position of the Plan on the solvency basis, we have excluded the value of escalated adjustments (post-retirement indexing) for service before June 1, 2015 and the value of benefits payable under Section 97 of the Act ("grow-in" benefits). This exclusion is allowed under Section 7 of the Regulations under the Act.

The solvency liability in this valuation reflects projected base year improvements to a 2018 base year (with 2017 and 2018 salaries estimated based on 2016 salary increased by 2.5% and 5.6% respectively).

The solvency position is determined in accordance with the requirements of the Act.

Incremental Cost

In order to determine the incremental cost, we estimate the solvency liabilities at the next valuation date. We have assumed that the cost of settling benefits by way of a lump sum or purchasing annuities remains consistent with the assumptions described above. Since the projected solvency liabilities will depend on the membership in the Plan at the next valuation date, we must make assumptions about how the Plan membership will evolve over the period until the next valuation.

We have assumed that the Plan membership will evolve in a manner consistent with the going concern assumptions as follows:

- Members terminate, retire, and die consistent with the termination, retirement, and mortality rates used for the going concern valuation.
- Pensionable earnings, the Income Tax Act pension limit, and the Year's Maximum Pensionable Earnings increase in accordance with the related going concern assumptions.
- Active members accrue pensionable service in accordance with the terms of the Plan.
- To accommodate for new entrants to the Plan, we have added to the projected liability an amount equal to the liability of new entrants that have joined the Plan since the previous valuation.
- Cost of living adjustments are consistent with the inflation assumption used for the going concern valuation.

APPENDIX E

Membership Data

Analysis of Membership Data

The actuarial valuation is based on membership data as at July 1, 2017 provided by the Nova Scotia Health Employees' Pension Plan. Specifically, we were provided with the December 31, 2016 year end data as well as information regarding new members, retirements, terminations and deaths for the six-month period January 1, 2017 to July 1, 2017. Pensionable earnings for active members at December 31, 2016 were assumed to increase by 2.5% for 2017 and members were assumed to work at the same full-time ratio as in 2016. Salaries for new plan members were estimated based on the average earnings of new plan members in the last two years. New plan members since January 1, 2017 were assumed to accrue full service. Contributions for 2017 were based on member's estimated earnings and the actual 2017 YMPE.

We have applied tests for internal consistency, as well as for consistency with the data used for the previous valuation. These tests were applied to membership reconciliation, basic information (date of birth, date of hire, date of membership, gender, etc.), pensionable earnings, credited service, contributions accumulated with interest and pensions to retirees and other members entitled to a deferred pension. Contributions, lump sum payments, and pensions to retirees were compared with corresponding amounts reported in financial statements. The results of these tests were satisfactory.

If the data supplied are not sufficient and reliable for its intended purpose, the results of our calculation may differ significantly from the results that would be obtained with such data. Although Mercer has reviewed the suitability of the data for its intended use in accordance with accepted actuarial practice in Canada, Mercer has not verified or audited any of the data or information provided.

Plan membership data are summarized below. For comparison, we have also summarized corresponding data from the previous valuation.

	01.07.2017	01.07.2014
Active Members		
Number	32,800	30,463
Total pensionable earnings *	$1,615,431,788	$1,466,709,523
Average pensionable earnings for the following year	$55,950	$54,034
Average years of pensionable service	8.1	8.2
Average age	43.9	44.5
Accumulated contributions with interest	$937,786,223	$842,848,502
Deferred Pensioners		
Number	1,302	908
Total annual lifetime pension	$9,177,249	$5,140,233
Total annual temporary pension	$2,476,187	$1,254,994
Average annual lifetime pension	$7,049	$5,661
Average age	49.1	49.4
Pensioners and Survivors		
Number	11,125	8,664
Total annual lifetime pension	$164,921,788	$118,965,729
Total annual temporary pension	$19,897,164	$16,003,998
Average annual lifetime pension	$14,824	$13,731
Average age	68.7	68.6

* Excludes members with no salary reported and members in receipt of LTD.

The membership movement for all categories of membership since the previous actuarial valuation is as follows:

	Actives	Deferred Pensioners	Pensioners and Survivors	Total
Total at 01.07.2014	30,463	908	8,664	40,035
Net adjustments	(66)	(2)	2	(66)
New entrants	8,285			8,285
Terminations:				
• Transfers/lump sums	(2,460)	(15)		(2,475)
• Deferred pensions	(569)	569		0
Deaths	(114)	(2)	(576)	(692)
Retirements				
• Monthly pension	(2,660)	(158)	2,818	0
• Small benefit	(80)			(80)
Pension ceased			(13)	(13)
Pension suspended	1		(1)	
Guarantee expired			(11)	(11)
New pensions – marriage breakdown		2	27	29
Survivors			215	215
Total at 01.07.2017	**32,800**	**1,302**	**11,125**	**45,227**

The distribution of the active members by age and continuous service as at July 1, 2017 is summarized as follows:

	Years of Continuous Service							
Age	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30 +**	**Total**
Under 20	9							9
	40,365							40,365
20 to 24	1,198						37	1,235
	50,397						42,921	50,173
25 to 29	2,489	30			1		944	3,464
	54,211	44,822			*		54,554	54,218
30 to 34	1,453	551	21	1			1,488	3,514
	55,293	58,095	52,779	*			59,868	57,660
35 to 39	973	979	306	20			1,084	3,362
	54,308	62,866	57,948	52,593			57,971	58,302
40 to 44	759	858	875	223	22		887	3,624
	53,151	60,344	61,986	54,682	49,494		54,141	57,301
45 to 49	683	759	778	431	346	20	737	3,754
	51,565	58,540	61,141	61,711	58,245	49,773	53,821	57,174
50 to 54	600	715	711	414	727	427	754	4,348
	50,268	54,566	56,804	59,346	64,855	60,832	49,520	56,255
55 to 59	386	585	654	338	469	504	615	3,551
	53,610	51,603	54,495	52,611	59,467	60,737	50,132	54,530
60 to 64	156	288	301	175	171	217	312	1,620
	50,583	52,136	51,588	54,886	55,212	58,970	50,072	53,024
65 to 69	26	77	56	45	52	62	55	373
	56,581	53,905	47,604	48,793	51,484	52,722	52,147	51,735
70 +	3	1	3	2	4	5	1	19
	62,226	*	45,218	*	43,190	55,465	*	49,882
Total	8,735	4,843	3,705	1,649	1,792	1,235	6,914	28,873
	53,213	57,714	58,030	57,102	60,608	59,858	54,876	55,950

Members in receipt of LTD and members with no earnings reported for 2017 are excluded. Earnings in cells with two or less members are excluded for confidentiality reasons.

The distribution of the inactive members by age as at the valuation date is summarized as follows:

	Deferred Pensioners		**Pensioners and Survivors ***	
Age	**Number**	**Average Pension**	**Number**	**Average Pension**
Under 30	13	2,781	1	*
30 – 34	81	4,548		
35 – 39	179	5,732	2	*
40 – 44	181	6,670	3	6,934
45 – 49	168	8,007	13	5,690
50 – 54	263	8,754	99	9,287
55 – 59	287	7,406	1,151	21,193
60 – 64	127	5,886	2,613	18,108
65 – 69	3	6,269	2,933	13,934
70 – 74			1,981	12,675
75 – 79			1,073	12,325
80 – 84			599	11,776
85 – 89			387	10,249
90 – 94			157	8,190
95 and over			48	6,405
Total	1,302	7,049	11,060	14,880

* Excludes dependent children, beneficiaries and bridge benefits.

APPENDIX F

Summary of Plan Provisions

Mercer has used and relied on the plan documents, including amendments and interpretations of plan provisions, supplied by the Nova Scotia Health Employees' Pension Plan Trustees. If any plan provisions supplied are not accurate and complete, the results of any calculation may differ significantly from the results that would be obtained with accurate and complete information. Moreover, plan documents may be susceptible to different interpretations, each of which could be reasonable, and the results of estimates under each of the different interpretations could vary.

This valuation is based on the plan provisions in effect on July 1, 2017. Since the previous valuation, the Plan has been amended as follows:

- Effective September 30, 2014, the Plan was amended to change the base year to 2012 and to increase deferred pensions.
- Effective December 31, 2014 the Plan was amended to change the base year to 2013 and to increase deferred pensions.
- Effective June 1, 2015, the Plan was amended to comply with changes to the Nova Scotia *Pension Benefits Act* and *Regulations*.
- Effective July 1, 2015, the Plan was amended to allow for increases in deemed earnings to be granted by the Trustees in conjunction with base year upgrades and increases in deferred pensions.
- Effective December 31, 2015, the Plan was amended to change the base year to 2014 and to increase deferred pensions and deemed earnings.
- Effective December 31, 2016, the Plan was amended to change the base year to 2015 and to increase deferred pensions and deemed earnings.
- Effective December 31, 2017, the Plan was amended to change the base year to 2016 and to increase deferred pensions and deemed earnings.

The following is a summary of the main provisions of the Plan in effect on July 1, 2017. This summary is not intended as a complete description of the Plan.

Background	The Plan became effective January 1, 1961.
Eligibility for membership	A full-time employee must join the plan on the first day of the month coincident with or next following the completion of three months of continuous service. A full-time employee may join the plan immediately upon hire. A part-time employee may join the plan after two years of continuous service provided that, in the two consecutive calendar years immediately prior to joining the plan, the employee has: • earned at least 35% of the YMPE or • worked at least 700 hours.
Employee Contributions	Members contribute 7.82% of earnings up to the YMPE and 10.18% of earnings in excess of the YMPE. Members not eligible to contribute to the CPP for reasons other than age would contribute at the full 10.18% rate.
Retirement Dates	Normal Retirement Date • The normal retirement date is the first day of the month coincident with or next following the member's 65th birthday. Optional Retirement Date • A member may retire on the first day of any month coincident with or next following: 1. the date on which the sum of the member's age and continuous service equals or exceeds 85, provided the member is at least 55 years of age; 2. the date on which the sum of the member's age and continuous service equals or exceeds 90, provided the member joined the plan prior to January 1, 1999; and 3. the date on which the member attains age 60 and has completed ten years of continuous service.
Retirement Dates	Early Retirement Date • If a member who would otherwise be entitled to a deferred pension may retire on the first day of any month coincident with the following: 1. age 55; 2. the date on which the sum of the member's age and continuous service equals or exceeds 80; and 3. the date on which the member attains age 50 and has completed ten years of continuous service. Postponed Retirement Date • An active member may postpone retirement beyond the normal retirement date, but not beyond December 1, of the year the member attains age 71.
Normal Retirement Pension	Service to December 31, 2015 • 1.4% of 2015 earnings* plus 0.6% of the excess of such earnings over $53,600* for each year of credited service. If the member does not contribute to CPP, benefits are based on 2% of 2015 earnings*. Service from January 1, 2016 • 1.4% of earnings in each year plus 0.6% of the excess of such earnings over the YMPE in the year for each year of credited service. If the member does not contribute to CPP, benefits are based on 2% of earnings.

	Bridging Supplement to December 31, 2015 • 0.6% of 2015 earnings* to a maximum of $53,600* for each year of credited service. Bridging Supplement from January 1, 2016 • 0.6% of earnings in each year to a maximum of the YMPE in the year for each year of credited service. Minimum Bridging Supplement from Age 60 • The bridging supplement payable after age 60 will not be less than $12.50 per month multiplied by the member's credited service to January 1, 1999, provided the member is at least age 50 and has completed ten years of continuous service at the date of retirement. * subject to three-year averaging limitation
Early Retirement Pension	If a member retires early, the member will be entitled to a pension that is calculated the same way as for a normal retirement. The basic pension payable, however, will be reduced by 1/2% for each month the member's age at retirement precedes the age on which the member's optional retirement date would have been reached (based on service to the actual retirement date) or the normal retirement age, if earlier.
Postponed Retirement Pension	A member may elect to postpone retirement. In that case, the member continues to contribute and accrue benefits under the plan.

Maximum Pension	The total annual pension payable from the Plan upon retirement, death or termination of employment cannot exceed the lesser of: • 2% of the average of the best three consecutive years of total compensation paid to the member by their employer, multiplied by total credited service ; and • $2,914.44 or such other maximum permitted under the Income Tax Act, multiplied by the member's total credited service.
Death Benefits	Pre-retirement: • If a member dies before the normal or optional retirement date and before any pension payments have begun, the member's spouse, or beneficiary if there is no spouse, will receive a lump sum settlement equal to the value of the benefits to which the member would have been entitled had employment terminated on the date of death. • If, however, at the date of death, the member had ten years of continuous service and leaves an eligible spouse or dependent children, in lieu of the lump sum payment, the spouse will receive an immediate pension equal to 66 2/3% of the member's accrued pension plus additional pension benefits of 10% of the member's accrued pension for each dependent child (maximum 3) payable until age 18, or 23 if in school. 20% of the member's accrued pension will be paid to each dependent child if both parents are deceased. Post retirement: • Unless an optional form of pension is elected, pension payments are guaranteed for five years. If the member leaves an eligible spouse, the spouse will receive the balance of any guaranteed payments and thereafter 66 2/3% of the pension

	received by the member plus additional pension payments of 10% of the pension received by the member for each dependent child (maximum 3) payable until the child attains age 18, or 23 if still in school.
Termination Benefits	Less than two years of membership: • A refund of the member's contributions with interest. At least two years of membership: • A deferred lifetime pension. The member may transfer the commuted value of the deferred pension into another retirement vehicle in accordance with the applicable federal and provincial legislation. Members who are eligible to receive an immediate pension, however, may not transfer the commuted value of their deferred pension, but must receive a pension (immediate or deferred) from the plan.
Post-Retirement Indexing	Pensions in payment are indexed each January 1 by the increase in the Consumer Price Index ("CPI") for Canada for the month ending September 30 of the year preceding the adjustment date over the CPI for the month ending September 30 of the prior year, subject to a maximum increase of 3%. If an individual's pension commenced in the year preceding the adjustment, a pro-rata portion of the increase is provided based on the number of months of pension payments received in the year. If the CPI decreases over the period, pensions are not reduced, however, the CPI for the September prior to the last increase is used in the calculation the following year.

APPENDIX G

Administrator Certification

With respect to the Report on the Actuarial Valuation for Funding Purposes as at July 1, 2017, of the Nova Scotia Health Employees' Pension Plan I hereby certify that, to the best of my knowledge and belief:

- The valuation reflects the terms of the Trustees' engagement with the actuary, particularly the requirement to include a margin of 0.40% in the discount rate used to perform the going concern valuation.
- The valuation reflects the Trustees' decisions in regards to determining the solvency funding requirements.
- A copy of the official plan documents and of all amendments made up to July 1, 2017 were provided to the actuary and are reflected appropriately in the summary of plan provisions contained herein.
- The asset information summarized in Appendix B is reflective of the Plan's assets.
- The membership data provided to the actuary included a complete and accurate description of every person who is entitled to benefits under the terms of the Plan for service up to July 1, 2017.
- All events subsequent to July 1, 2017 that may have an impact on the Plan have been communicated to the actuary.

December 19/2017
Date

Signed

Stefan Cowell
Name

MAKE TOMORROW, TODAY

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