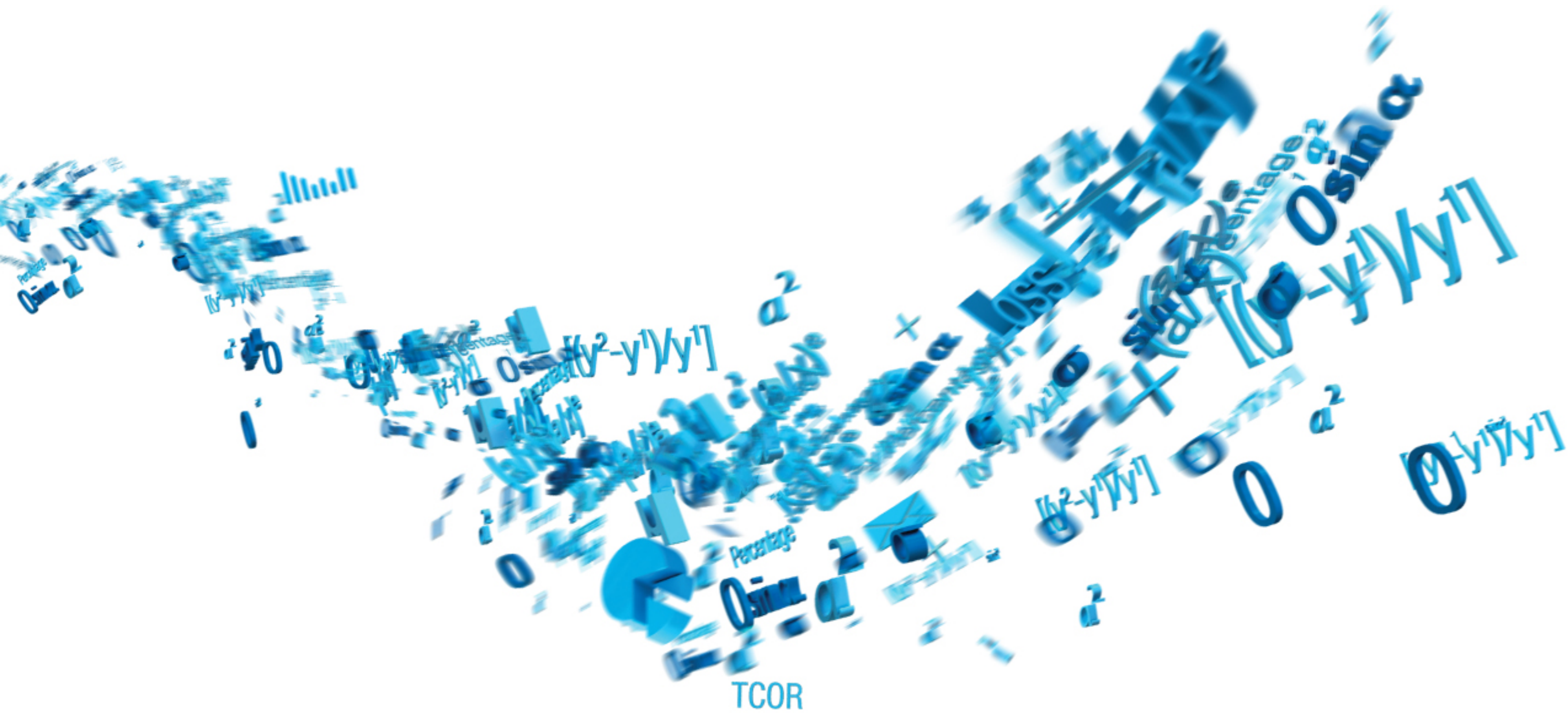

Actuarial Valuation as at December 31, 2015

Halifax Regional Municipality Pension Plan

Registration Number 238063

September 20, 2016

Table of Contents

Executive Summary

An actuarial valuation has been prepared for the Halifax Regional Municipality Pension Plan (the "Plan") as at December 31, 2015 for the primary purpose of establishing a funding recommendation for the Plan until the next actuarial valuation is performed. This section provides an overview of the important results and the key valuation assumptions which have had a bearing on these results. As this valuation indicates a ratio of solvency assets to solvency liabilities of less than 0.85, the next required valuation will be as at December 31, 2016 as prescribed by the Nova Scotia *Pension Benefits Act ("PBA")*.

Summary of Principal Results

	December 31, 2015		**December 31, 2014**	
	Going Concern	**Solvency**[1]	**Going Concern**	**Solvency**[2]
Assets	$ 1,515,696,000	$ 1,701,648,000	$ 1,401,480,000	$ 1,555,907,000
Liabilities	1,691,789,000	2,679,142,000	1,598,713,000	2,498,765,000
Surplus/(Deficit)	**$ (176,093,000)**	**$ (977,494,000)**	**$ (197,233,000)**	**$ (942,858,000)**
Funded / Transfer Ratio[3]	89.6%	60.0%	87.7%	64.2% prior to June 1, 2015; 58.3% after May 31, 2015

Contribution Requirements

The overall minimum contribution rate requirement recommended in this report is shown in the following table.

Current service cost	18.2%
Deficit amortization - established from 31-Dec-2009 valuation	0.9%
Deficit amortization - established from 31-Dec-2012 valuation	4.8%
Total	**23.9%**

[1] Effective June 1, 2015, "grow-in" benefits are included as prescribed under the PBA. The asset value shown under the Solvency column represents the market value of assets plus the present value of special payments due within the next five years, less estimated wind-up expenses.
[2] Prior to June 1, 2015, "grow-in" benefits are excluded as prescribed under the PBA. Solvency Liabilities shown reflect the post-May 31, 2015 requirement to include "grow-in" benefits.
[3] The Transfer Ratio equals the market value of assets less wind-up expenses over the liabilities. The asset value used excludes the present value of special payments due within the next five years. Refer to page 11 of the report for details on the calculation of the Transfer Ratio.

Key Assumptions

The principal assumptions to which the valuation results are most sensitive are outlined in the following table.

	December 31, 2015		December 31, 2014	
	Going Concern	**Solvency**	**Going Concern**	**Solvency**
Discount rate (per annum)	6.50%	Annuity purchases: 3.1% Transfers: 2.1% for 10 years, 3.7% thereafter	6.55%	Annuity purchases: 2.6% Transfers: 2.5% for 10 years, 3.8% thereafter
Inflation rate (per annum)	2.25%	n/a	2.25%	n/a
Annual Increase in Pensionable earnings	3.00%	n/a	3.00%	n/a
Mortality table	CPM 2014 Private (unadjusted) with mortality improvements in accordance with Scale B	CPM 2014 Combined (unadjusted) with mortality improvements in accordance with Scale B	CPM 2014 Private (unadjusted) with mortality improvements in accordance with Scale B	UP94 with generational improvements in accordance with Scale AA
Retirement rates	60% at earliest unreduced retirement age, remainder at normal retirement date	Earliest unreduced age	60% at earliest unreduced retirement age, remainder at normal retirement date	Earliest unreduced age

Section 1: Introduction

Purpose and Terms of Engagement

We have been engaged by Halifax Regional Municipality Pension Committee and hereafter referred to as “the Committee” to conduct an actuarial valuation of the Plan as at December 31, 2015 for the general purpose of determining the minimum funding contributions required by pension standards, based on the actuarial assumptions and methods summarized herein. More specifically, the purposes of the valuation are to:

- Determine the financial position of the Plan on a going concern basis as at December 31, 2015;
- Determine the financial position of the Plan on a solvency basis as prescribed by the Nova Scotia *Pension Benefits Act* (the "PBA"), as at December 31, 2015;
- Determine the funding requirements of the Plan as at December 31, 2015 with the understanding that such funding is to exclude amounts relating to any solvency deficiency as defined by the PBA; and
- Provide the necessary actuarial certification required under the PBA and the *Income Tax Act.*

The results of this report may not be appropriate for accounting purposes or any other purposes not listed above.

While we have been engaged by the Committee to conduct this actuarial valuation, we note that the users of our work may well extend to parties external to the Committee, notably the provincial and federal pension regulators and the plan members. Out of respect for the Committee's confidentiality, however, we shall not undertake to communicate the terms of our engagement or results of our work with such other users unless so directed by the Committee.

As this valuation indicates a ratio of solvency assets to solvency liabilities of less than 0.85, the next required valuation will be as at December 31, 2016 as prescribed by the PBA.

Information and Inputs

In order to prepare our valuation, we have relied upon the following information:

- Membership data compiled as at December 31, 2015;
- Asset data taken from the Plan’s audited financial statements; and
- A copy of the latest plan text and amendments up to and including Amendment 2014-04.

Furthermore, our actuarial assumptions and methods have been chosen to reflect our understanding of the Committee’s desired funding objectives with due respect to accepted actuarial practice and regulatory constraints.

Subsequent Events

As of the date of this report, we have not been made aware of any subsequent events which would have an effect on the results of this valuation. However, the following points should be noted in this regard:

- Actual experience deviating from expected after December 31, 2015 will result in gains or losses which will be reflected in the next actuarial valuation report.
- To the best of our knowledge, the results contained in this report are based on the regulatory and legal environment in effect at the date of this report.

Section 2: Going Concern Valuation Results

Going Concern Financial Position of the Plan

The going concern valuation provides an assessment of the Plan's financial position at the valuation date on the premise that the Plan continues on into the future indefinitely.

The selection of the applicable actuarial assumptions and methods reflect the Plan's funding objectives, as communicated by the Committee, actuarial standards of practice, and pension standards.

On the basis of the plan provisions, membership data, going concern assumptions and methods, and asset information described in the Appendices, the going concern financial position of the Plan as at December 31, 2015 is shown in the following table. The results as at December 31, 2014 are also shown for comparison purposes.

Going Concern Financial Position

	December 31, 2015	December 31, 2014
Assets		
Market value of assets	$ 1,610,186,000	$ 1,458,596,000
Actuarial asset smoothing amount	(94,490,000)	(57,116,000)
Total value of assets	**$ 1,515,696,000**	**$ 1,401,480,000**
Actuarial liabilities		
Active and disabled members	$ 792,569,000	$ 763,288,000
Inactive members and deferred pensioners	23,232,000	34,755,000
Pensioners and survivors	833,754,000	765,247,000
Defined contribution accounts	30,404,000	27,570,000
Transfer deficiency holdbacks[1]	11,830,000	7,853,000
Total actuarial liabilities	**$ 1,691,789,000**	**$ 1,598,713,000**
Surplus / (unfunded liability)	**$ (176,093,000)**	**$ (197,233,000)**
Going-concern funded ratio	**89.6%**	**87.7%**

[1] The December 31, 2009, December 31, 2012, December 31, 2013, and December 31, 2014 valuations respectively revealed a transfer ratio of 80.9%, 60.5%, 69.2% and 64.2% (prior to June 1, 2015, 58.3% after May 31, 2015). The amount shown on the balance sheet represents the total solvency transfer deficiency holdbacks as at December 31, 2014 and December 31, 2015 for all members who transferred their entitlement out of the Plan subsequent to the filing of the December 31, 2009, December 31, 2012, December 31, 2013, and December 31, 2014 valuations.

Change in Financial Position

During the period from December 31, 2014 to December 31, 2015, the going concern financial position of the Plan changed from an unfunded liability of $197,233,000 to an unfunded liability of $176,093,000. The major components of this change are summarized in the following table.

Reconciliation of the Going Concern Financial Position
For the Period from December 31, 2014 to December 31, 2015

Surplus/(Unfunded Liability) as at December 31, 2014	**$ (197,233,000)**
Expected interest on surplus (unfunded liability)	(12,919,000)
Total special payments made in inter-valuation period with interest	19,569,000
Expected Surplus/(Unfunded Liability) as at December 31, 2015	**$ (190,583,000)**
Change in liabilities due to experience gains/(losses)	
Gain/(loss) from investment earnings greater/lower than expected	24,713,000
Gain/(loss) due to retirement experience	(3,219,000)
Gain/(loss) due to salary increases lower/greater than expected	11,234,000
Gain/(loss) due to data changes	(12,362,000)
Gain/(loss) due to pensioner mortality experience	4,597,000
Net gain/(loss) due to other experience and miscellaneous items	(718,000)
Surplus/(Unfunded Liability) after experience gains/(losses) as at December 31, 2015	**$ (166,338,000)**
Change in liabilities due to change in assumptions	(9,755,000)
Surplus/(Unfunded Liability) as at December 31, 2015	**$ (176,093,000)**

Discussion of Changes in Assumptions

Effective December 31, 2015, the discount rate assumption changed from 6.55% per annum to 6.50% per annum. This change in assumption increased the going concern liabilities by $9,755,000 and the total normal cost by 0.14% of pensionable earnings.

Going Concern Valuation Sensitivity Results

In accordance with the Canadian Institute of Actuaries Standards of Practice specific to pension plans that became effective December 31, 2010, the table below presents the sensitivity of the going concern liabilities and the total normal cost of using a discount rate 1% lower than that used for the going concern valuation.

	Valuation Basis December 31, 2015	Based on Rate of 1% Lower	Effect	
			Net change	% change
Going concern liabilities	$ 1,691,789,000	$ 1,916,069,000	$224,280,000	13.3%
Normal cost as % of total pensionable earnings	18.2%	21.5%	3.3%	18.1%

Note that using a discount rate 1% higher than that assumed would result in a comparable reduction in the Plan's going concern liabilities and normal cost.

Section 3: Solvency Valuation Results

Solvency Financial Position of the Plan

The solvency valuation is an assessment of the Plan's financial position at the valuation date on the premise that certain obligations as prescribed by the *PBA* are settled on the valuation date for all members. Specifically, prior to June 1, 2015, the PBA permits the value of all escalated adjustments and "grow-in" benefits to be excluded from solvency liabilities. Effective June, 1, 2015, the PBA requires that all “grow-in” benefits to be included in the solvency liabilities. It should be noted that the PBA does not require the Plan to fund solvency deficits; however, it does require certain solvency related information to be disclosed in the valuation report.

On the basis of the plan provisions, membership data, solvency assumptions and methods and asset information described in the Appendices, the solvency financial position of the Plan as at December 31, 2015 is shown in the following table. The solvency financial position of the Plan as at December 31, 2014 (reflecting the post-May 31, 2015 requirement to include the value of “grow-in”) is shown for comparison purposes.

Solvency Financial Position

	December 31, 2015	December 31, 2014
Assets		
Market value of assets	$ 1,610,186,000	$ 1,458,596,000
Actuarial asset smoothing amount	-	-
Present value of special payments for next five years	93,462,000	99,311,000
Estimated wind up expenses	(2,000,000)	(2,000,000)
Total Assets	**$ 1,701,648,000**	**$ 1,555,907,000**
Solvency Liabilities		
Active and disabled members	$ 1,409,420,000	$ 1,316,726,000
Inactive members and deferred pensioners	41,558,000	59,678,000
Pensioners and survivors	1,185,930,000	1,086,938,000
Defined contribution accounts	30,404,000	27,570,000
Transfer deficiency holdbacks[1]	11,830,000	7,853,000
Total Liabilities	**$ 2,679,142,000**	**$ 2,498,765,000**
Solvency Surplus/(Deficiency)	**$ (977,494,000)**	**$ (942,858,000)**
Transfer Ratio	**60.0%**	**58.3%**

[1] The December 31, 2009, December 31, 2012, December 31, 2013, and December 31, 2014 valuations respectively revealed a transfer ratio of 80.9%, 60.5%, 69.2% and 64.2% (prior to June 1, 2015, 58.3% after May 31, 2015). The amount shown on the balance sheet represents the total solvency transfer deficiency holdbacks as at December 31, 2014 and December 31, 2015 for all members who transferred their entitlement out of the Plan subsequent to the filing of the December 31, 2009, December 31, 2012, December 31, 2013, and December 31, 2014 valuations.

Transfer Ratio

The Transfer Ratio is the ratio of the solvency assets (excluding the present value of special payments) to the solvency liabilities. If the Transfer Ratio is less than 1.0, certain conditions and restrictions, as prescribed by the PBA, must be applied to the transfer of the commuted value of benefits from the plan. Generally, the PBA requires that when the Transfer Ratio is less than 1, the Transfer Ratio must be applied to commuted values before they are transferred from the Plan with any balance of the commuted value being transferred within the ensuing five year period.

Solvency assets (excluding the present value of special payments)	$1,608,186,000
Solvency liabilities	$2,679,142,000
Ratio	60.0%

Since the ratio of the solvency assets to the solvency liabilities is less than 1.0 as at December 31, 2015 the above restrictions on transfers do apply.

Solvency Valuation Sensitivity Results

In accordance with the Canadian Institute of Actuaries Standards of Practice specific to pension plans that became effective December 31, 2010, the table below presents the sensitivity of the solvency liabilities to using a discount rate of 1% lower than that used for the solvency valuation.

	Valuation Basis	Based on Rate of	Effect	
	December 31,2015	**1% Lower**	**$**	**%**
Solvency liabilities	$ 2,679,142,000	$ 3,131,325,000	$ 452,183,000	16.9%

Note that using a discount rate 1% higher than that assumed would result in a comparable reduction in the solvency wind up liabilities.

Incremental Cost on a Solvency Basis

The incremental cost on a solvency basis represents the present value at December 31, 2015 of the expected aggregate change in the solvency liabilities between December 31, 2015 and the next calculation date, December 31, 2016. Appendix D gives more details on the calculation methodology and on assumptions.

Based on this methodology and on these assumptions, the incremental cost on a solvency basis, for the period from December 31, 2015 to December 31, 2016 is $123,833,000.

Section 4: Contribution Requirements

Contribution Requirements in Respect of the Normal Cost

The annual going concern cost of benefits in respect of service accruing after the valuation date is known as the normal cost. The dollar normal cost for benefits accruing in 2016 is estimated to be $62,074,000. When applied to the estimated 2016 pensionable earnings on which contributions are expected to be made of $341,065,000, the resulting normal cost contribution rate is 18.2%.

The normal cost contribution rate is expected to remain relatively level as a percentage of pensionable earnings provided the demographics of the Plan's active membership remain constant from year to year. The dollar normal cost amount is expected to increase each year at the assumed growth in pensionable earnings attributed to inflation and productivity or 3.00% per annum.

The normal cost rate at the previous valuation was 17.8%. An analysis of the change in total normal cost is as follows:

Total normal cost as at December 31, 2014	17.8%
Demographic changes	0.1%
Change in discount rate assumption	0.1%
Impact of higher contributions on 50% rule	0.1%
Data Adjustments	0.1%
Total normal cost as at December 31, 2015	18.2%

Contribution Requirements in Respect of Deficits

The amendments to the PBA regulations in 2012 and the Committee's subsequent revisions to the Plan's funding policy enable contributions to fund solvency deficits to be excluded from the funding recommendation. Consequently, the funding recommendation only incorporates deficit contributions to the extent that they are necessary to fund the Plan's going-concern deficit at December 31, 2015 in accordance with the minimum requirements of the PBA.

In order to satisfy the minimum requirements of the PBA, the going-concern deficit at December 31, 2015 will need to be amortized by special payments established from three amortization schedules as follows:

- continuation of the established going-concern deficit contribution schedule of 1.3% established at December 31, 2009 where such established schedule expires December 31, 2024;
- continuation of the established going-concern deficit contribution schedule of 4.8% established at December 31, 2012 where such established schedule expires December 31, 2027; and
- if necessary, any new going-concern deficit contribution schedule established at December 31, 2015 and ending December 31, 2030.

As shown in the following table, the existing amortization schedules are more than sufficient to fund the unfunded liability at December 31, 2015 and hence no additional amortization schedule is necessary at this time.

Present value of 1.3% of pensionable earnings from 1-Jan-2016 through 31-Dec-2024 (the 2009 amortization schedule)	$ 32,894,000
Present value of 4.8% of pensionable earnings from 1-Jan-2016 through 31-Dec-2027 (the 2012 amortization schedule)	154,473,000
Total	$ 187,367,000

Consequently, the 2009 amortization schedule (i.e. currently 1.3% of pensionable earnings) can be reduced to 0.9% of pensionable earnings effective January 1, 2016 and the resulting amounts shown in the above table will then equal the going-concern deficit at December 31, 2015 of $176,093,000.

Excess Surplus

Excess surplus is defined in Section 147.2(2)(d) of the Income Tax Act, as the portion of surplus (if any) that exceeds 25% of the going concern liabilities. In the event of an excess surplus, the Income Tax Act and terms of the Plan require that neither employer nor member contributions will be made until such excess is eliminated.

Since the Plan has an unfunded liability, there is no excess surplus and therefore it does not impact the development of the employer contribution requirements.

Summary of Contribution Rates Effective January 1, 2016

The following table summarizes the minimum contribution rate requirements as per the PBA effective January 1, 2015:

Current service cost	18.2%
Amortization schedule from 2009	0.9%
Amortization schedule from 2012	4.8%
Total	23.9%

The current aggregate contribution rate of 24.4% of pensionable earnings is therefore adequate to meet these minimum requirements commencing January 1, 2016.

The following table summarizes the current contribution rate schedules by division that will continue in 2016.

	Members	Employers
Current Plan Division		
Public Safety Occupations hired after 1-Apr-1998	12.56%	12.56%
Public Safety Occupations hired after 1-Jul-1994 under the former Halifax Plan	12.56%	12.56%
Other Public Safety Occupations who elected the "Rule of 75"	12.91%	12.21%
Other members	12.21%	12.21%
Dartmouth Plan Division		
Public Safety Occupations	11.72%	12.90%
Members contributing at a lower rate	10.42%	11.47%
Other members	11.42%	12.57%
Halifax Plan Division		
Public Safety Occupations hired after 1-Jul-1994	12.26%	12.26%
Other members	11.91%	11.91%
County Plan Division		
All members	11.71%	11.71%
Metro Plan Division		
All members	12.01% to YMPE, 12.91% above	12.01% to YMPE, 12.91% above

It should be noted that, subject to the Plan's terms, a participating employer could contribute more than the amounts described above until the time that the next funding recommendation is certified provided the aggregate contribution made by the participating employer does not exceed:

- the Plan's normal cost contribution rate of 18.2%; less
- member required contributions made by the participating employer's employees; plus
- the greater of the going-concern unfunded liability and the solvency deficiency that is attributed to the participating employer.

Such additional contributions have not been contemplated in the funding recommendation contained in this report as it is presumed that no such contributions will be made.

Section 5: Actuarial Certificate

Actuarial Opinion, Recommendations and Certification for the Halifax Municipality Pension Plan

Registration Number: 238063

This actuarial certification forms an integral part of the actuarial valuation report for the Plan as at December 31, 2015. I confirm that I have prepared an actuarial valuation of the Plan as at December 31, 2015 for the purposes outlined in the Introduction section to this report and consequently:

I hereby recommend that:

- In order to satisfy the normal cost requirements and the minimum funding requirements under the PBA, aggregate minimum contributions that should be made to the plan until the time the next valuation report is certified are as follows:

Current service cost	18.2%
Deficit amortization - established from 31-Dec-2009 valuation	0.9%
Deficit amortization - established from 31-Dec-2012 valuation	4.8%
Total	**23.9%**

  Contributions greater than this minimum amount would be acceptable provided the maximums described at the end of Section 4 are not exceeded.

- As this valuation indicates a ratio of solvency assets to solvency liabilities of less than 0.85, the next required valuation will be as at December 31, 2016 as prescribed by the PBA.

I hereby certify that, in my opinion:

- With respect to the purposes of determining the Plan's financial position on a going concern basis as at December 31, 2015:
  - The Plan has a going concern unfunded liability of $176,093,000, based on going concern assets of $1,515,696,000 less going concern liabilities of $1,691,789,000.
  - There is no excess surplus as defined by Section 147.2(2) of the *Income Tax Act* in the Plan.

- With respect to the purpose of determining the Plan's financial position on a solvency basis as at December 31, 2015 as prescribed by the PBA:
  - The Plan has a solvency deficiency of $977,494,000, determined as solvency assets, net of wind up expenses, of $1,701,648,000 which includes the present value of the next five years of minimum scheduled unfunded liability payments of $93,462,000, less solvency liabilities of $2,679,142,000.
  - The solvency liabilities include the value of all "grow-in" benefits, as prescribed by the PBA.
  - The transfer ratio is 60.0%.

- With respect to determining the funding requirements of the Plan:
  - The Plan's normal cost in the year following the valuation date and for each year thereafter until the next funding recommendation is certified is 18.2% of pensionable earnings. This amount is estimated to equal $62,074,000 in 2016 and $63,936,000 in 2017.
  - The special payments or deficit contributions required to amortize the going-concern unfunded liability at December 31, 2015 that meet the minimum PBA requirements is as follows:

Date Deficit Contribution Schedule Established	Date Deficit Contribution Schedule Ends	Deficit Contribution as % of Total Pensionable Earnings
31-Dec-2012	31-Dec-2027	4.8%
31-Dec-2009	31-Dec-2024	0.9%
Total		5.7%

- The contribution rate schedule in effect at January 1, 2016 and as summarized below is expected to be sufficient to satisfy the minimum funding requirements of the PBA.

	Members	Employers
Current Plan Division		
Public Safety Occupations hired after 1-Apr-1998	12.56%	12.56%
Public Safety Occupations hired after 1-Jul-1994 under the former Halifax Plan	12.56%	12.56%
Other Public Safety Occupations who elected the "Rule of 75"	12.91%	12.21%
Other members	12.21%	12.21%
Dartmouth Plan Division		
Public Safety Occupations	11.72%	12.90%
Members contributing at a lower rate	10.42%	11.47%
Other members	11.42%	12.57%
Halifax Plan Division		
Public Safety Occupations hired after 1-Jul-1994	12.26%	12.26%
Other members	11.91%	11.91%
County Plan Division		
All members	11.71%	11.71%
Metro Plan Division		
All members	12.01% to YMPE, 12.91% above	12.01% to YMPE, 12.91% above

- The aggregate deficit contributions for 2016 and 2017 are estimated to be $19,441,000 and $20,024,000 respectively.

- The participating employer contributions recommended in this report are eligible contributions under Section 147.2(2) of the *Income Tax Act.*

▪ For the purposes of the valuation:

- The data on which this valuation is based are sufficient and reliable;
- The assumptions used are appropriate; and
- The actuarial cost methods and the asset valuation methods used are appropriate.

- This report and its associated work have been prepared, and my opinion given, in accordance with accepted actuarial practice in Canada and in compliance with the requirements outlined in subparagraphs 147.2(2)(a)(iii) and (iv) of the *Income Tax Act*.

- Notwithstanding the above certifications, emerging experience differing from the assumptions will result in gains or losses that will be revealed in subsequent valuations.

James Koo
Fellow, Society of Actuaries
Fellow, Canadian Institute of Actuaries

September 20, 2016

Appendix A: Assets

Asset Data

The Plan assets are held in trust by Northern Trust under the Halifax Regional Municipality Master Trust. The Halifax Regional Municipality Pension Plan and the Halifax Regional Water Commission Employees' Pension Plan are the only two pension plans that are part of the Halifax Regional Municipality Master Trust. The asset information presented in this report is based on the audited financial statements of the pension fund for 2015 prepared by Deloitte LLP.

Tests of the sufficiency and reliability of the asset data were performed and the results were satisfactory. The tests included a review of actual cash flow with expected cash flow from the previous actuarial report to ensure reasonability.

Market Value of Assets

The following is a summary of the composition of the Plan's assets by asset type as at December 31, 2015 as reported by Halifax Regional Municipality Annual Report.

	December 31, 2015	
	$	**%**
Cash and equivalents	$ 6,441,000	0.4%
Fixed-income	389,665,000	24.2%
Canadian equities	130,425,000	8.1%
Global equities	476,615,000	29.6%
Minimum Targeted Return[1]	607,040,000	37.7%
Total Invested Assets	**$ 1,610,186,000**	**100.0%**

[1] The Minimum Targeted Return Portfolio investments are private investments in real estate, infrastructure, private equity, and private debt.

Target Asset Mix

The target asset mix of the Plan is contained in the Plan's Statement of Investment Policies and Procedures dated September 24, 2015 and is as follows:

	Minimum	Target	Maximum
Equities	30%	35%	60%
Fixed income	20%	25%	50%
Minimum Targeted Return	20%	40%	50%
		100%	

Reconciliation of Changes in Market Value of Assets

The table below reconciles changes in the market value of assets between December 31, 2014 and December 31, 2015.

	2015
Beginning of Plan Year	**$ 1,458,596,000**
Contributions during plan year	
Employees	37,589,000
Participating employers	39,076,000
Transfers from other pension plans	441,000
Total	77,106,000
Benefit Payments During Plan Year	
Refunds and transfers to other pension plans	(7,931,000)
Pension benefits paid	(71,397,000)
Total	(79,328,000)
Administrative expenses	(6,732,000)
Investment income	160,544,000
End of Plan Year	**$ 1,610,186,000**

Development of Actuarial Value of Assets

The asset value used to determine the Plan's financial position is based on a smoothing of market investment returns over a five year period. Specifically, the market returns earned by the Plan that are above / below the assumed discount rate assumption are amortized over five years in an effort to smooth the volatility in the market value. The following table illustrates the development of the actuarial value of assets at December 31, 2015.

Development of the Actuarial Value of Assets

Market value of assets at December 31, 2015			$	1,610,186,000
Less: Unrecognized investment return excess/(deficiency) as compared to the discount rate assumption in effect for each year	2015:	$58,346,648 × 80% =		46,677,000
	2014:	$37,031,677 × 60% =		22,219,000
	2013:	$53,336,863 × 40% =		21,335,000
	2012:	$21,295,438 × 20% =		4,259,000
				94,490,000
Actuarial value of assets at December 31, 2015			$	1,515,696,000

Appendix B: Membership Data

Source of Data

This funding valuation was based on member data provided by the various participating employers as of December 31, 2015. This data was originally submitted to Aon Hewitt in its capacity as third party administrator, reviewed and refined / updated as appropriate. Membership data for this valuation was then extracted by the third party administrator and forwarded to the actuary where further tests of sufficiency and reliability were performed and the results were satisfactory. The tests included:

- A reconciliation of membership status against the membership status at the last valuation. This test was performed to ensure that all members were accounted for. A summary of this reconciliation follows on the next page;
- An examination of birth, hire, and participation dates against the corresponding dates provided for the last valuation to ensure consistency of data;
- An examination of credited service against the corresponding amount provided for the last valuation to ensure that no member accrued more than one year of credited service from December 31, 2014;
- An examination of pensionable earnings against the corresponding amounts provided for the last valuation to identify any unusual increases or decreases;
- An examination of accrued benefits against the corresponding amounts provided for the last valuation to identify any unusual benefit accruals;
- An examination of inactive member benefit amounts against the corresponding amounts provided for the last valuation to ensure consistency of data.

Membership Reconciliation

The table below reconciles the number of members as of December 31, 2015 with the number of members as of December 31, 2014, and the changes due to experience in the period.

	Active	Inactive and Deferreds	Pensioners / Survivors	Total
Number at December 31, 2014	**5,670**	**530**	**3,537**	**9,737**
Adjustment	-	-	18	18
New entrants	479	88	50	617
New pensioner from marital splits	-	-	-	-
Reactivated	4	(4)	0	-
To inactive / deferred	(103)	103	-	-
Retirements	(195)	(47)	242	-
Terminations / deaths	(87)	(72)	(84)	(243)
Number at December 31, 2015	**5,768**	**598**	**3,763**	**10,129**

Membership Summary

Active Members

	December 31, 2015	December 31, 2014
Number	5,768	5,670
Average pensionable earnings rate	$ 59,140[1]	$ 56,689[2]
Average age	47.5 years	47.4 years
Average years of pensionable service	11.1 years	11.4 years
Proportion female	47.3%	47.3%
Accumulated member contributions	$ 333,952,000	$ 320,983,000

[1] The average pensionable earnings rate is based on the actual and deemed pensionable earnings for 2015, annualized where applicable, and then increased by the general salary increase assumption.

[2] The average pensionable earnings rate is based on the actual and deemed pensionable earnings for 2014, annualized where applicable, and then increased by the general salary increase assumption.

Inactive and Deferred Vested Members

	December 31, 2015	December 31, 2014
Number	598	530
Average age	48.1 years	49.0 years
Average annual pension[1]	$5,970	$8,586
Number with deferred annual pension amounts	421	416
Proportion female	55.4%	54.7%
Accumulated member contributions for members with no pension amounts	$2,280,000	$3,427,000

Pensioner and Survivor Members

	December 31, 2015	December 31, 2014
Number	3,763	3,537
Average age	70.0 years	70.0 years
Average annual pension	$ 19,800	$ 19,400
Proportion female	43.7%	48.2%

[1] Excludes members for whom no pension amount was available. Contributions with interest are held as a liability for these members.

Active/Disabled Membership Distribution

The following table provides a detailed summary of the active/disabled membership at the valuation date by years of credited service and by age group[1].

Age		< 5	5–10	10–15	15–20	20–25	25–30	>=30	Total
< 25	Count	45	1						46
	Average Earnings	$45,221	n/a						n/a
25–29	Count	201	31						232
	Average earnings	$51,367	$71,910						$54,112
30–34	Count	220	171	32					423
	Average earnings	$54,217	$71,061	$78,652					$62,875
35–39	Count	244	232	130	21				627
	Average earnings	$52,205	$67,213	$72,305	$81,793				$62,917
40–44	Count	253	243	175	125	21	3		820
	Average earnings	$48,835	$64,059	$68,039	$72,895	$69,074	62,124		$61,679
45–49	Count	262	263	163	171	136	88		1,083
	Average earnings	$49,205	$53,166	$64,939	$67,814	$80,887	$80,422		$61,988
50–54	Count	248	227	172	183	115	188	40	1,173
	Average earnings	$49,893	$50,609	$57,086	$59,945	$64,350	$79,164	$72,360	$59,529
55-59	Count	129	176	151	169	74	117	66	882
	Average earnings	$54,123	$48,025	$50,644	$49,367	$59,994	$67,482	$69,652	$54,826
60-64	Count	61	97	70	70	32	35	27	392
	Average earnings	$47,836	$51,261	$48,150	$46,164	$54,578	$52,863	$64,499	$50,588
>=65	Count	14	19	11	27	9	4	6	90
	Average earnings	$47,094	$56,707	$45,321	$49,471	$61,493	$68,318	$51,320	$52,285
Total	Count	1,677	1,460	904	766	387	435	139	5,768
	Average earnings	$50,808	n/a	$61,663	$60,451	$68,710	$73,943	$68,639	$59,140

[1] For confidentiality, salary was not provided for all cells.

Retired/Deferred Vested Membership Distribution

The following table provides a detailed summary of the retired/deferred vested membership at the valuation date by age group.

	Inactive and Deferred Members		Pensioners and Survivors	
Age	**Number**	**Average Annual Pension**[1]	**Number**	**Average Annual Pension**
<25	5	$ 135	2	$ 664
25-29	11	$ 2,033		
30-34	17	$ 2,149		
35-39	32	$ 4,607		
40-44	57	$ 6,076		
45-49	78	$ 6,839	7	$ 14,442
50-54	103	$ 7,042	83	$ 27,352
55-59	82	$ 6,323	377	$ 29,753
60-64	24	$ 6,151	707	$ 24,712
65-69	10	$ 3,258	874	$ 19,947
70-74	2	$ 1,213	681	$ 16,480
75-79			453	$ 15,103
80-84			325	$ 14,911
85-89			162	$ 12,204
90-94			69	$ 13,193
95+			23	$ 10,216
Total	421	$ 5,970	3,763	$ 19,805

[1] Excludes members for whom no pension amount was available. Contributions with interest are held as a liability for these members.

Appendix C: Going Concern Assumptions and Methods

Assumptions and Methods

A member's entitlements under a pension plan are generally funded during the period over which service is accrued by the member. The cost of each member's benefits is allocated in some fashion over the member's service. An actuarial valuation provides an assessment of the extent to which allocations relating to periods prior to a valuation date (often referred to as the actuarial liabilities) are covered by the plan's assets.

The going concern valuation provides an assessment of a pension plan on the premise that the plan continues on into the future indefinitely based on assumptions in respect of future events upon which a plan's benefits are contingent and methods that effectively determine the way in which a plan's costs will be allocated over the members' service. The true cost of a plan, however, will emerge only as experience develops, investment earnings are received, and benefit payments are made.

Margins for conservatism or provisions for adverse deviations have been built into the going concern discount rate assumption. This margin is aimed at reducing the potential adverse effect of the uncertainty inherent in the going concern assumptions. All other going concern assumptions and methods are considered to be best estimate.

This appendix summarizes the going concern assumptions and methods that have been used for the going concern valuation of the Plan at the valuation date. The going concern assumptions and methods have been chosen to reflect our understanding of the Plan's funding objectives with due respect to accepted actuarial practice and regulatory constraints. For purposes of this valuation, the going concern methods and assumptions were reviewed and changes as indicated were made.

Assumptions and Methods

The actuarial assumptions and methods used in the current and previous valuations are summarized below and described on the following pages.

	December 31, 2015	December 31, 2014
Economic Assumptions		
Discount rate	6.50% per annum, net of all expenses	6.55% per annum, net of all expenses
Inflation rate	2.25% per annum	Same
Increases in pensionable earnings	3.00% per annum	Same
Increases in year's maximum pensionable earnings ("YMPE")	3.00% per annum	Same
Increases in maximum pension limit	3.00% per annum	Same
Interest on member contributions	4.25% per annum	Same
Investment and non-investment expenses	Nil – discount rate has been reduced to reflect non-investment expenses and passively managed investment expenses. Additional expenses for active investment management are assumed to be offset by additional value add provided by such active management	Same
Increase in pensions	Nil	Nil
Margin for adverse deviation	0.33% per annum, taken into account in the discount rate assumption	0.20% per annum, taken into account in the discount rate assumption
Demographic Assumptions		
Mortality	CPM 2014 Private (unadjusted) with mortality improvements in accordance with CPM Improvement Scale B [1]	Same

[1] Pre-retirement mortality was applied

	December 31, 2015	December 31, 2014
Retirement	60% at earliest unreduced retirement age and remainder at normal retirement date	Same
Termination of employment	Variable by age (see below)	Same
Disability	Current service cost increased 0.25% of pensionable earnings to account for cost of the waiver of member contributions for disabled members	Same
Proportion married		
Non-retired proportion with spouse	85% and spouse assumed to be of opposite sex	Same
Non-retired spousal age differential	Males three years older	Same
Retired members	Actual marital status and ages are used, 5% of pensioners who were married at retirement assumed to be single at the valuation date	Same

Methods

Actuarial cost method	Projected accrued benefit	Same
Asset valuation method	Market value with actual nominal investment returns above / below the assumed discount rate smoothed over five years	Same

Description of Actuarial Assumptions and Methods

Economic Assumptions

Discount Rate

We have used a discount rate of 6.50% net of all expenses. This discount rate is equal to the best estimate long-term rate of investment return (net of all expenses) expected to be earned by the Plan's assets less a provision for adverse deviation equal to 0.33%.

The overall expected return (“best-estimate”) is 6.83% per year, which is based on an inflation rate of 2.25% per year, yielding a real rate of return on the pension fund assets of 4.58% per year before provision for adverse deviation. This overall expected return was developed using best-estimate returns for each major asset class in which the pension fund is invested. A Monte Carlo simulation is performed over 30 years where the portfolio returns are projected assuming annual rebalancing. The average of the 30-year geometric return is used to develop an overall best-estimate rate of return for the entire pension fund. Gains from rebalancing and diversification are implicit to this return. The expected return is based on passively managed public investments net of passive investment management fees; active management for public asset classes are expected to provide additional returns to offset the additional cost of active management. Non-investment expenses are expected to reduce the long-term gross rate of return by 0.15% per annum.

The previous valuation's discount rate assumption was 6.55% per annum net of all expenses.

Inflation Rate

The inflation rate is assumed to be 2.25% per year. This reflects our best estimate of future inflation considering current economic and financial market conditions.

Increases in Pensionable Earnings

We have assumed future salary increases will be 3.00% per annum. The assumption reflects an assumed rate of inflation of 2.25% per year plus an allowance of 0.75% per year for the effect of productivity growth. In addition to the base rate, we assume rates of increase as a result of individual employee seniority, merit and promotion based on a scale which varies by age as shown in the following table.

Employee Seniority, Merit and Promotional Scale	
Age	**Annual Increase**
Under 30	2.0%
30 to 39	1.5%
40 to 44	1.0%
45 to 49	0.5%
50+	0.0%

The previous valuation's salary increase assumption was consistent with the post-2015 salary increase assumption for all periods.

Increases in Year's Maximum Pensionable Earnings

As the benefits paid to a member under the prior Metropolitan Authority Employees' Pension Plan are dependent on the future Year's Maximum Pensionable Earnings ("YMPE"), it is necessary to make an assumption regarding the future increases in the YMPE.

The YMPE was assumed to increase up until the time the member retires, dies or terminates from active employment at 3.0% per year. This is comprised of an annual increase of 2.25% on account of inflation, plus 0.75% on account of productivity, which is consistent with historical real economic growth.

This is unchanged from the previous valuation.

Increases in the Maximum Pension Limit

Pensions are limited to the maximum limits under the *Income Tax Act*. The maximum lifetime annual pension per year of pensionable service payable under the *Income Tax Act* is $2,890.00 in 2016. It is assumed that the maximum limit will increase at 3.00% per year commencing in 2017. This is comprised of an annual increase of 2.25% on account of inflation, plus 0.75% on account of productivity, which is consistent with historical real economic growth. The rate of future increase in this limit is unchanged from the previous valuation.

Interest on Member Contributions

Interest is credited on member contributions with the rate credited by chartered banks on five-year personal fixed term deposits which we have assumed at a rate of 4.25% per year. The assumption reflects an assumed rate of future inflation plus 2.00% per year.

Expenses

Since the discount rate has been established net of all investment expenses, no explicit assumption is required for expenses.

Economic Margins for Adverse Deviations

Margins for conservatism or provisions for adverse deviation have been built into the going concern assumptions where appropriate in order to reflect the uncertainty inherent in the assumptions made. Ideally, the level of margin should balance the need for:

- contribution rate stability;
- financial security for existing Plan members; and
- the avoidance of excessive contribution rate levels that potentially result in intergenerational inequity among members and unnecessary financial strain on the contributors.

Based on discussions with the Pension Committee regarding the preferred level of margins, the margin for adverse deviations deemed to provide such a balance at this time is a 0.33% reduction in the discount rate assumption.

Demographic Assumptions

Mortality

Benefits paid from the Plan in respect of a particular member are contingent to a very large degree on the survival of the member and/or the member's spouse. For example:

- If an active member dies prior to retirement, pre-retirement death benefits are triggered;
- A pension is paid to a pensioner only while the pensioner is alive;
- Where a member has elected a joint and survivor form of benefit, a pension is paid to the pensioner's spouse in the event the pensioner predeceases the spouse.

Consequently, an assumption regarding the survival of members and, where applicable, spouses to each age into the future have been made.

For this valuation, gender distinct mortality rates have been assumed to be in accordance with the 2014 Canadian Pensioner Mortality Table (Private Sector) – unadjusted with generational mortality improvements in accordance with CPM Improvement Scale B (CPM-B).

Generational mortality rates depend on the year of birth of a member and vary by age. For example, the mortality rate at age 80 for a member age 70 at the valuation date (e.g. 35.80 expected deaths per 1,000 lives for males in the table below) will be higher than the mortality rate at age 80 for a member age 60 (e.g. 32.81 expected deaths per 1,000 lives for males in the table below) at the valuation date. The mortality rates decline due to projected mortality improvements over time.

Mortality rates per 1,000 lives at selected ages are as follows:

Mortality per 1,000 lives - Male

	Mortality per 1,000 lives at each future age				
Current age	**80**	**85**	**90**	**95**	**100**
60	32.81	63.09	120.99	224.93	330.69
70	35.80	67.55	126.95	232.72	340.78
80	42.86	74.16	133.43	240.78	351.17
90	n/a	n/a	143.32	247.52	361.54

Mortality per 1,000 lives - Female

	Mortality per 1,000 lives at each future age				
Current age	**80**	**85**	**90**	**95**	**100**
60	23.48	45.35	90.91	175.90	285.49
70	25.53	48.56	95.39	181.99	294.19
80	29.04	53.18	100.25	188.30	303.17
90	n/a	n/a	107.69	193.57	312.12

The previous valuation also used the 2014 Canadian Pensioner Mortality Table (Private Sector) – unadjusted with generational mortality improvements in accordance with CPM-B.

The mortality assumption is considered to be best estimate.

Retirement

A member's benefit entitlement under the Plan is dependent on when the member decides to commence, or is deemed to commence, to receive a pension from the Plan (referred to as "retirement from the Plan"). The terms of the Plan determine the pension that is payable to a member on retirement from the Plan and is dependent on whether the member retires, dies or terminates from active employment. Accordingly, an assumption with respect to when a member is expected to retire from the Plan has been made.

It has been assumed that 60% of active members will retire at the earliest unreduced retirement age. If the active member is eligible to retire immediately with an unreduced pension at the valuation date, then the active member is assumed to retire in the following year. The remainder is assumed to retire on their normal retirement date. The retirement assumption is unchanged from the previous valuation.

Termination

A member's benefit entitlement under the plan is impacted by whether the member terminates his/her employment prior to retirement for reasons other than death. In order to account for this impact in the calculation of the actuarial liability, an assumption regarding the probability that a member will terminate employment for reasons other than death has been made.

The sample rates in the following table are believed to be representative of historical plan experience and are considered to be best estimate. This table was used in the previous valuation and has been retained for this valuation:

Probability of Termination in the Year Following

Age	Annual Rate
25	20.0%
30	11.2%
35	6.3%
40	3.4%
45	1.8%
50	1.2%
55	0.7%
60	0.2%

Disability

If an active Plan member becomes disabled, credited service continues to accrue but generally employee contributions are waived. Since this benefit is substantially the same as the benefit that accrues to an active member, no disability assumption was used. However, the current service cost is increased by 0.25% of pensionable earnings to account for the cost of the waiver of member contributions for members who will become disabled in the year. This is unchanged from the previous valuation.

Proportion of Members with Spouses and Spousal Age Differential

The proportion of members who will have a spouse is based on broad population statistics. It is assumed that 85% of the non-retired plan members will have a spouse who is further assumed to be of the opposite sex. Furthermore, male partners are assumed to be three years older than female partners. Actual marital status at retirement was used for pensioners and 5% of pensioners who were married at retirement are assumed to be single at the valuation date. This is unchanged from the previous valuation.

Other

Actuarial Cost Method

An actuarial cost method is a technique used to allocate in a systematic and consistent manner the expected cost of a pension plan over the years of service during which plan members earn benefits under the Plan. By funding the cost of a pension plan in an orderly and rational manner, the security of benefits provided under the terms of the plan in respect of service that has already been rendered is significantly enhanced.

The projected accrued benefit actuarial cost method has been used for this valuation. Under this method, the actuarial present value of benefits in respect of service prior to the valuation date, but based on pensionable earnings projected to retirement, is compared with the actuarial asset value, revealing either a surplus or an unfunded actuarial liability.

With respect to service after the valuation date, the expected value of benefits for service in the year following the valuation date (i.e., the normal cost) is expressed as a percentage of the expected value of participating payroll for that year. The employer normal cost contributions are determined each year by applying this percentage to the actual participating payroll for the year.

When calculating the actuarial present value of benefits at the valuation date, the present value of all retirement, withdrawal and pre-retirement death benefits are included. For each member, the retirement, withdrawal and pre-retirement death benefits for a particular period of service are first projected each year into the future taking into account future vesting, early retirement entitlements and minimum pension/value entitlements. These projected benefits for each future year are then capitalized, multiplied by the probability of the member leaving the Plan in that year and discounted with interest and survivorship to the valuation date. The actuarial present value of benefits for the particular period of service is then determined by summing the present values of these projected benefits.

The pattern of future contributions necessary to pre-fund future benefit accruals for any one particular individual will increase gradually as a percentage of their pensionable earnings as the individual approaches retirement. For a stable population (i.e., one where the demographics of the group remain constant from year to year), the normal cost will remain relatively level as a percentage of payroll.

In the event of future adverse experience, contributions in addition to the normal cost calculated under the projected accrued benefit actuarial cost method may be required to ensure that the Plan assets are adequate to provide the benefits. Conversely, favourable experience may generate surplus which may serve to reduce future contribution requirements.

Asset Valuation Method

The actuarial value of assets (AVA) methodology used described in Appendix A, was used to moderate fluctuations in contribution rates. The method used tracks market value, and will converge to the market value if rates of return matched assumptions. A five-year period of averaging was chosen which is within the typical range of an economic cycle. There is no bias in the method, as an equal probability of the AVA being higher or lower than the market value of assets is expected.

Appendix D: Solvency Assumptions and Methods

Valuation Assumptions

	December 31, 2015	December 31, 2014
Economic Assumptions		
Discount Rate		
Transfer value basis		
Active, disabled, inactive and deferred members not retirement eligible	2.10% for 10 years; 3.70% thereafter	2.50% for 10 years; 3.80% thereafter
Annuity purchase basis		
Retirement eligible active, disabled, inactive and deferred members and all retired members, survivors and beneficiaries	3.10% per annum	2.60% per annum
Maximum pension limit increases	1.82% for 10 years; 2.88% thereafter	2.21% for 10 years; 3.18% thereafter
Demographic Assumptions		
Mortality rates	2014 Canadian Pensioner Combined Mortality Table with mortality improvements in accordance with CPM Improvement Scale B	1994 Uninsured Pensioner Mortality Table with fully generational projection scale AA
Withdrawal rates	Not Applicable	Same
Retirement age		
Active and disabled members	Age that produces the highest lump-sum value	Same
Deferred vested members	Age that produces the highest lump-sum value	Same
Retired members and beneficiaries	Not applicable	Same
Termination of employment	100% terminate on the valuation date	100% terminate on the valuation date with full vesting
Marital status		
Proportion of non-retired members with a spouse at retirement or pre-retirement death	85% and spouse assumed to be of opposite sex	Same
Non-retired spousal / member age differential	Males partner three years older than female partner	Same
Retired members	Actual marital status at retirement with 5% of pensioners who had a spouse at retirement assumed to be single at the valuation date	Same

	December 31, 2015	December 31, 2014
Other		
Wind up expenses	$2,000,000	No change
Actuarial cost method	Unit credit	No change
Asset valuation method	Market value	No change
Solvency Incremental Normal Cost		
Increases in pensionable earnings	3.00% per annum, plus increases due to seniority, merit, and promotion	No change
Increases in YMPE	3.00% per annum	No change
Increases in maximum pension limit	3.00% per annum	No change
Inflation Rate	2.25%	No change

Based on the Canadian Institute of Actuaries' Guidance and information such as pension legislation, Plan provisions and Plan experience, we have made the following assumptions regarding how the Plan's benefits would be settled on Plan wind up:

	Percent of Liability Assumed to be Settled By Purchase of Annuities	Percent of Liability Assumed to be Settled By Lump-Sum Transfer
Active members		
Not retirement eligible	0%	100%
Retirement eligible	100%	0%
Deferred vested members		
Not retirement eligible	0%	100%
Retirement eligible	100%	0%
Retired members and beneficiaries	100%	0%

Pensionable Earnings

To estimate active and disabled members' best average earnings, we have used actual historical member earnings.

Pre-retirement Mortality

We have made no allowance for pre-retirement mortality. The impact of including such an assumption would not have a material impact on the valuation, since the value of the death benefit is approximately equal to the value of the accrued pension.

Assumptions Not Needed

The following are not relevant to the solvency valuation:

- Increases in pensionable earnings;
- Termination of employment rates;
- Disability rates.

Estimated Wind Up Expenses

Plan wind up expenses would normally include such items as fees related to preparation of the actuarial wind up report, fees imposed by a pension supervisory authority, legal fees, administration, custodial and investment management expenses. We have assumed these fees would be $2,000,000.

Actuarial Cost Methods

Unit credit (accrued benefit) cost method as prescribed.

Asset Valuation Method Considerations

The market value of assets has been used to represent the Plan's asset value for solvency purposes.

Incremental Cost on a Solvency Basis

The incremental cost on a solvency basis represents the present value, at the calculation date (time 0), of the expected aggregate change in the solvency liabilities between time 0 and the next calculation date (time t), adjusted upwards for expected benefit payments between time 0 and time t.

An educational note was published in December 2010 by the Canadian Institute of Actuaries' Committee on Pension Plan Financial Reporting to provide guidance for actuaries on the calculation of this new information.

The calculation methodology can be summarized as follows:

- The present value at time 0 of expected benefit payments between time 0 and time t, discounted to time 0,

  plus

- A projected hypothetical wind up or solvency liabilities at time t, discounted to time 0, allowing for, if applicable to the pension plan being valued:
  - expected decrements and related changes in membership status between time 0 and time t,
  - accrual of service to time t,
  - expected changes in benefits to time t,
  - a projection of pensionable earnings to time t,

  minus

- The hypothetical wind up or solvency liabilities at time 0.

The projection calculations take into account the following assumptions and additional considerations:

- The assumptions for the expected benefit payments and decrement probabilities, service accruals, and projected changes in benefits and/or pensionable earnings would be consistent with the assumptions used in the pension plan's going concern valuation.
- The assumptions used to calculate the projected liability at time t are consistent with the assumptions for the solvency liabilities at time 0, assuming that interest rates remain at the levels applicable at time 0, that the select period is reset at time t for interest rate assumptions that are select and ultimate and that the Standards of Practice for the calculation of commuted values and the guidance for estimated annuity purchase costs in effect at time 0 remain in effect at time t.
- Active and inactive plan members as of time 0 are considered in calculating the incremental cost.

Appendix E: Summary of Current Plan Provisions

This funding valuation was based on plan design information provided by the Administrator as of December 31, 2015. The following is a summary of the main provisions of the Plan. Reference should be made to the official Plan documents for purposes of actual benefit determination and contribution requirements.

Effective Date (as a result of a merger of four pension plans "Prior Plans")	April 1, 1998 (amended and restated as at June 16, 2011) and as further amended by Amendments 2011-01, 2013-01, 2014-01, 2014-02, 2014-03 and 2014-04.
Jurisdiction of Registration	Nova Scotia
Prior Plans	*City of Halifax Superannuation Plan*; *Halifax County Municipality Full-time Retirement Pension Plan*; *City of Dartmouth Employees' Retirement Plan*; and *Metropolitan Authority Employees' Pension Plan* Active and LTD members as April 1, 1998 were provided the option to accrue service under the Halifax Regional Municipality Pension Plan (the Current Plan), as well as the option to convert their service in the Prior Plan to the Current Plan. Out of 5,768 active members in the Plan as at December 31, 2015, the number of active members still accruing service in the Prior Plans are as follows: • 6 members in the *City of Halifax Superannuation Plan*; • 3 members in the *Halifax County Municipality Full-time Retirement Pension Plan*; • 7 members in the *City of Dartmouth Employees' Retirement Pension Plan*; and • 0 members in the *Metropolitan Authority Employees' Pension Plan*
Eligibility for Membership	
Full-time employees	Full-time employees join the Plan on the date of full-time employment with a municipality/participating employer.

Part-time employees	Part-time employees may join the Plan on the first day of January or July coincident with or next following the completion of 12 months of continuous service, provided they have attained at least one of the following in the preceding 12 months: • Earnings of at least 25% of the YMPE from employment with the municipality/participating employer; or • 700 hours of employment with the municipality/participating employer. Part-time employees who do not meet this criteria may still be eligible to join the Plan if so provided by an applicable collective agreement.
Contributions – Defined Benefit	Members and the municipality/participating employer contribute in equal proportions in the amount required to pay the cost of providing benefits under the Plan's defined benefit provision to which members are entitled to as determined by the actuary.
Contributions – Defined Contribution	Members who elect to contribute to the Plan's defined contribution provision contribute on their defined contribution earnings based on the contribution rates defined in the Plan.
Earnings – Defined Benefit	Regular earnings in respect of a normal work schedule, excluding overtime or other forms of differential or premium pay or other allowances and entitlements (as determined in the context of the applicable collective agreement) except where such differential or premium pay is part of the Member’s regular compensation based on the Member’s regular work schedule.
Earnings – Defined Contribution	Overtime and other non-regular earnings as defined in the Plan.
Normal Retirement	
Eligibility	First of the month coincident with or first following attainment of age 65 (age 60 for employees in Public Safety Occupations).
Benefit	Annual pension payable in equal monthly instalments calculated as credited service multiplied by 2.0% of average annual earnings over the 3 highest consecutive calendar years of continuous service while a member of the Plan. In addition, member receives the value of the defined contribution account.

Early Retirement

From active service	
Eligibility	As early as 10 years prior to normal retirement date or on or after the Optional Retirement Date. A member can retire and receive an unreduced pension on his Optional Retirement Date. Optional Retirement Date is first day of the month coincident with or next following the earlier of: • The date on which the member's age plus continuous service equals 80 (75 for employees in Public Safety Occupations hired on or after July 1, 1994 who were members of the former Halifax Plan, employees in Public Safety Occupations who became members after April 1, 1998, or other members in Public Safety Occupations who have elected to convert to the Current Plan and have elected to enhance their unreduced early retirement provision to the Rule of 75); and • The date on which the member attains age 60.
Benefit	Normal retirement defined benefit accrued to early retirement date, reduced by 0.5% for each month that the early retirement date precedes the date the member would have been eligible for an unreduced pension assuming continued employment. In addition, member receives the value of the defined contribution account.
From deferred vested	
Eligibility	First of month following later of attainment of age 55 (age 50 for members in Public Safety Occupations).
Benefit	Accrued defined benefit earned to date. The accrued benefit is reduced by 0.5% per month that the pension commencement date precedes the member's: • age 60 if termination is before December 31, 2010; or • normal retirement date if termination is on or after December 31, 2010. In addition, member receives the value of the defined contribution account.

Postponed Retirement

Eligibility	Any time after normal retirement date and before December 31 of the year in which the member attains age 71.
Benefit	Normal retirement defined benefit accrued to postponed retirement date. In addition, member receives the value of the defined contribution account.

Termination of Employment

Eligibility:	Benefits vest immediately
Benefit	Accrued defined benefit earned to date. The accrued defined benefit is reduced 6% for each year that the pension commencement date precedes the member's age 60 if termination is before December 31, 2010, and is otherwise payable commencing on the normal retirement date if termination is on or after December 31, 2010. Deferred pensions can commence as early as first of month following later of attainment of age 55 (age 50 for members in Public Safety Occupations). In lieu of the monthly pension, the member may elect to transfer the lump-sum value of the deferred pension to an acceptable registered retirement vehicle in accordance with applicable federal and provincial legislation. Member is also entitled to a transfer of their total account under the defined contribution provision of the plan.

Preretirement Death

Before entitled to an immediate pension	
Benefit	Lump sum equal to the amount the member would have received had employment terminated on the date of death.
After entitled to an immediate pension	
Benefit	Spouse or common law partner is entitled to an immediate pension calculated as if the member had retired on the day before death and elected to receive his/her pension in the form of a joint and 66 2/3% survivor pension. If the commuted value of the member's pension exceeds the commuted value of the survivor's pension, the surviving spouse or common law partner will also receive the difference between the two values either as a lump sum payment, or as an actuarially equivalent pension. If there is no spouse or common law partner, the beneficiary will receive a lump sum equal to the amount the member would have received had employment terminated. The spouse, common law partner, or beneficiary is also entitled to a transfer of the member's total account under the defined contribution provision of the plan.

Disability

Eligibility	Qualification for benefits under municipality/participating employer sponsored long-term disability plan, the Canada Pension Plan or the Workers Compensation Board.
Benefit	Credited service continues to accrue. Member required contributions cease.
Maximum Benefit	The annual retirement benefit under the defined benefit provisions must not exceed the lesser of (1) and (2) below: (1) The defined benefit limit under the Income Tax Act (or two-thirds of such limit in the case of service purchased after June 7, 1990 that was not previously pensionable service under a registered pension plan prior to 1990) at the time of pension commencement multiplied by years of credited service; and (2) 2% of the average of the highest indexed compensation of the member for the best three consecutive years' earnings multiplied by credited service.

Minimum Employer Cost	On retirement, death, or termination, the required member contributions (excluding contributions made to purchase service) with interest cannot provide more than 50% of the commuted value of the benefit (excluding the portion of the benefit relating to purchased service). In the event the required member contributions with interest provide more than 50% of the benefit, the excess will be refunded to the member or beneficiary.
Normal Form of Payment	
Member without spouse at retirement	Life annuity with a guarantee that at least 120 monthly payments will be made, or if greater, a minimum return of the member's contributions with interest at retirement.
Member with spouse at retirement	Joint and 66 2/3% survivor annuity with a guarantee that in total an amount of at least the member's contributions plus interest at the time of retirement will be paid.
Increases to Pensions in Payment	Increases to pensions in pay may be granted from time to time as provided by the Committee. Such increases are subject to the aggregate percentage increase in any member's pension not exceeding the lesser of 6% per year and the aggregate percentage increase in the Consumer Price Index from the member's retirement date.

Appendix F: Administrator Certification

Certification of Plan Administrator

With respect to the Halifax Regional Municipality Pension Plan, forming part of the actuarial report as at December 31, 2015, I hereby certify that, to the best of my knowledge and belief the actuary has been:

- provided copies of all official plan documents, financial statements and amendments up to December 31, 2015; and
- notified of all events occurring subsequent to the valuation date that could have an impact on the results of the valuation.

Name (print): Title:

Signature: Date:

Certification of Third Party Administrator

With respect to the Halifax Regional Municipality Pension Plan, forming part of the actuarial report as at December 31, 2015, I hereby certify that, to the best of my knowledge and belief that the membership data provided to the actuary and as summarized in Appendix B is a complete and accurate description of all persons who are entitled to benefits under the terms of the plan in respect of service up to the valuation date.

Name (print): Title:

Signature: Date:

About Aon Hewitt

Aon Hewitt is the global leader in human capital consulting and outsourcing solutions. The company partners with organizations to solve their most complex benefits, talent and related financial challenges, and improve business performance. Aon Hewitt designs, implements, communicates and administers a wide range of human capital, retirement, investment management, health care, compensation and talent management strategies. With more than 30,000 professionals in 90 countries, Aon Hewitt makes the world a better place to work for clients and their employees.

For more information on Aon Hewitt, please visit aonhewitt.com/canada.

About Aon

Aon plc (NYSE:AON) is the leading global provider of risk management, insurance and reinsurance brokerage, and human resources solutions and outsourcing services. Through its more than 66,000 colleagues worldwide, Aon unites to empower results for clients in over 120 countries via innovative and effective risk and people solutions and through industry-leading global resources and technical expertise. Aon has been named repeatedly as the world's best broker, best insurance intermediary, best reinsurance intermediary, best captives manager, and best employee benefits consulting firm by multiple industry sources. Visit aon.com for more information on Aon and aon.com/manchesterunited to learn about Aon's global partnership with Manchester United.