

GASB Statement No. 74
Report for Fiscal Year 2018

Town of Andover

Lawrence B. Stone



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January 28, 2019

Donna Walsh
Finance Director
Town of Andover
36 Bartlet Street
Andover, MA 01810

Dear Ms. Walsh:

For the purpose of satisfying the requirements of the Government Accounting Standards Board (GASB) Statement No. 74, Stone Consulting, Inc. has prepared a set of illustrative tables and other Required Supplementary Information (RSI) based on the July 1, 2017 actuarial valuation of the Town of Andover Other Post-employment Benefits (OPEB) plan performed by Stone Consulting, Inc. The valuation and this report were prepared using generally accepted actuarial principles and practices and meet the parameters set by the Governmental Accounting Standards Board (GASB).

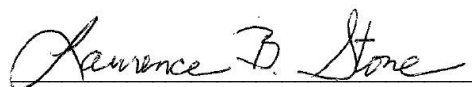
For GASB 74 the results are as of a valuation date of July 1, 2017 and a reporting date of June 30, 2018 (Fiscal 2018). To the best of our knowledge, this report is complete and accurate, and the assumptions used represent our best estimate of anticipated experience of the system.

We are pleased to present these exhibits. If the Town of Andover has any questions on the content of this report, we would be glad to respond. Please note that this report is meant to be used in its entirety. Use of excerpts of this report may result in a misleading or inaccurate understanding of the results.

Stone Consulting, Inc. is completely independent of the Town of Andover or the Town of Andover OPEB Trust, including any of their officers and key personnel. Neither we or anyone else closely associated with us has any relationship with the Town of Andover or the Town of Andover OPEB Trust which would impair our independence, other than this or related assignments.

The undersigned are consultants for Stone Consulting, Inc. and members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,
STONE CONSULTING, INC.



Lawrence B. Stone
Member, American Academy of Actuaries



Kevin K. Gabriel, FSA
Member, American Academy of Actuaries

SECTION I – ACTUARIAL RESULTS

GASB Statement No. 74 – Net OPEB Liability

The components of the Net OPEB Liability for the Town of Andover as of a reporting date of June 30, 2018 were as follows:

	FY 2018	FY 2017
Total OPEB Liability		
Service Cost	\$ 4,186,467	\$ 5,605,421
Interest	7,514,930	9,299,269
Changes in Benefit Terms	0	(42,080,306)
Differences between expected and actual experience	10,865,917	0
Changes of assumptions	1,599,726	(6,594,974)
Benefit payments	(4,923,643)	(4,647,800)
Net change in Total OPEB liability	\$ 19,243,396	\$ (38,418,390)
Total OPEB Liability – beginning (5.44%)	136,417,441	174,835,831
Total OPEB Liability – ending (5.36%) (a)	\$ 155,660,837	\$ 136,417,441
Plan Fiduciary Net Position		
Contributions – employer*	\$ 6,572,364	\$ 6,150,379
Net Investment Income	636,085	730,781
Benefit payments	(4,923,643)	(4,647,800)
Administrative expenses	0	0
Net change in Plan Fiduciary Net Position	\$ 2,284,806	\$ 2,233,360
Plan Fiduciary Net Position – beginning	7,668,276	5,434,916
Plan Fiduciary Net Position – ending (b)	\$ 9,953,081	\$ 7,668,276
Net OPEB Liability – ending (a) – (b)	\$ 145,707,756	\$ 128,749,165
Plan fiduciary net position as a percentage of total OPEB liability	6.4%	5.6%

*Employer contribution of \$4,923,643 of Pay-As-You-Go and a \$1,648,721 cash contribution.

Changes from Prior Report

The following is a discussion of the reasons for some of the changes from the prior report.

- 1) Assumption change: The assumption change of \$1,599,726 is due to the change in the discount rate from 5.44% to 5.36%. The discount rate change is not related to any change in Andover's funding policy but is due to the increase in the General Obligation Municipal Bond rate
- 2) Experience change: There is no experience analysis, since is the first OPEB valuation performed by Stone Consulting.

Distribution of the Member Population

Town of Andover OPEB Trust – Membership as of June 30, 2018

	2018
Retired, Disabled, Survivors and Beneficiaries receiving benefits	598
Inactive plan members entitled to but not yet receiving benefit payments*	26
Active plan members	1,357
Total	1,981

These numbers are based on the data supplied by the Town of Andover as of June 30, 2018. Note that these membership numbers count a retiree and a spouse as only one member, even if they have separate policies.

* The number of inactive plan members was not available from the MTRS as of June 30, 2018. The inactive count shown here represents inactives for the Town of Andover only. MTRS inactive data is unavailable, but we believe it is immaterial.

Development of Exhibits

DISCOUNT RATE

Total OPEB Liability as of the measurement date (June 30, 2018) is calculated using a discount rate assumption of 5.36%. To calculate this rate, Stone Consulting has conducted a cash flow study of the Trust assets and liabilities. Using a rate consistent with the Town of Andover's investment strategy (6.00%), we determine the length of time for which the assets would support OPEB benefit payments for current and projected new employees. For the Town of Andover, the depletion point comes after approximately 42 years. The present value of OPEB benefits is then calculated using a rate consistent with the Town of Andover's investment strategy (6.00%) before the depletion point and a rate based on 20-year Municipal General Obligation bonds as shown in the Bond Buyer 20 Bond Index (3.87%) after the depletion point. Finally, a single rate producing an equivalent present value of benefits is calculated. This is the 5.36% rate we have used for the Town of Andover. One of the objectives of the provisions introduced by GASB 74 is to examine how benefit payments and plan contributions and investment earnings interact on a cash flow basis. GASB 74 and 75 require that these amounts be calculated with Fair Value of Assets and using the Entry Age Normal cost method.

Projected contributions for each year are the sum of cash payments and the pay-as-you-go funding of the retirees. Consistent with the requirements of GASB Statement No. 74 and 75, we have first assigned the contribution to the cost of projected new entrants prior to allocating the remainder to cover existing actives and inactive employees.

In the future, if there are enough assets to cover the cost of new entrants for the entire period of our projection, we will use the long-term rate of return for that period (currently 6.00%). We will then "blend" the long-term rate with the General Obligation Municipal bond rate (currently 3.87%) using our cash flow analysis to ascertain for which period we will use the long-term rate of return and which period we will use the bond rate.

The long-term rate of return which was used to develop the discount rate of 5.36% includes the effect of inflation (not subtracted out as in the real rates of return). It is based on a combination of expected rates of return on the mix of current and expected investments over a long-term period. These expectations are based on current market conditions, historical experience and future expectations. It assumes a rebalancing of assets on an ongoing basis as well as a constant monitoring of asset allocation and manager performance.

GASB Statement No. 74 requires that a return rate for the measurement period be developed using the market value of assets at the beginning of the Fiscal Year, along with monthly cash flows. This has been done for the 2018 Fiscal year, and is shown below:

Fiscal Year	2018
Money-Weighted Rate of Return	7.21%

For detailed calculations of this amount, see the schedule on page 9.

Discount Sensitivity

The following presents Town of Andover’s Net OPEB Liability calculated at the valuation discount rate of 5.44%, as well as at discount rates one percent higher (6.36%) and one percent lower (4.36%).

Measurement Date	1% Decrease (4.36%)	Current Discount Rate (5.36%)	1% Increase (6.36%)
06/30/2018	\$ 169,542,117	\$ 145,707,756	\$ 126,439,324

Trend Sensitivity

For postretirement medical plans in particular, the calculated actuarial values are highly sensitive to the assumed rate of health care cost trend. This is due to the compounding effect of the annual trend rates assumed for medical costs, as opposed to pension valuations where benefit levels typically remain fixed.

The following table illustrates the effect on our valuation results of a 1% increase or decrease in the assumed rates of health care cost trend in each year.

Measurement Date	1% Decrease	Base Trend *	1% Increase
06/30/2018	\$ 122,672,703	\$ 145,707,756	\$ 175,036,517

* Base trend rates are found in Actuarial Assumptions and Methods, page 19.

Long-Term Expected Real Rate of Return

The long-term expected real rate of return reflects the expected rate of return on plan assets adjusted for the expected rate of inflation. Note that the discount rate includes the effect of inflation. The long-term real rate of return removes the effect of inflation on the return amounts. It is a long-term assumption and is meant to reflect a best estimate of future experience, based on the expected asset allocation. The allocation percentages are based on information provided by the Town of Andover and the Plan’s asset consultant, ICMA-RC. The real rates of return below are based on long-term real return estimates provided by ICMA-RC.

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Geometric)
U.S. Large Cap Equity	42.12%	3.52%
U.S. Aggregate Bonds	15.55%	0.78%
International Equity	11.04%	5.22%
U.S. Short Duration Government/Credit	10.50%	0.78%
60% US Large Cap Equity & 40% US Aggregate Bonds	7.00%	2.42%
U.S. High Yield Bonds	5.00%	2.15%
U.S. TIPS	3.40%	0.49%
Emerging Markets Equity	2.42%	6.70%
U.S. Mid Cap Equity	2.14%	4.99%
U.S. Small Cap Equity	0.83%	4.50%
Total		3.75%

Schedule of Changes in Town of Andover's Net OPEB Liability and Related Ratios – GASB 74

(Amounts in Thousands)

Fiscal Year *	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
TOTAL OPEB LIABILITY										
Service cost	4,186	5,605								
Interest	7,515	9,299								
Change of benefit terms	0	(42,080)								
Differences between expected and actual experience	10,866	-								
Change of assumptions	1,600	(6,595)								
Benefit payments, including refunds of employee contributions	(4,924)	(4,648)								
Net change in total OPEB liability	19,243	(38,418)								
Total OPEB liability - beginning	136,417	174,836								
Total OPEB liability - ending	155,661	136,417								
PLAN FIDUCIARY NET POSITION										
Contributions - employer	6,572	6,150								
Contributions - employee	0	0								
Net Investment Income	636	731								
Benefit payments, including refunds of employee contributions	(4,924)	(4,648)								
Administrative expense	0	0								
Other	0	0								
Net change in plan fiduciary net position	2,285	2,233								
Plan fiduciary net position - beginning	7,668	5,435								
Plan fiduciary net position - end	9,953	7,668								
Town of Andover Net OPEB Liability – ending	145,708	128,749								
Plan fiduciary net position as a percentage of the total OPEB liability	6.4%	5.6%								
Money-Weighted Rate of Return	7.21%	NA								

Schedule of Plan Contributions - GASB 74

Measurement Date of June 30,	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Actuarially Determined Contribution	\$9,968	\$9,438								
Contributions in relation to the Actuarially Determined Contribution	<u>(6,572)</u>	<u>(6,150)</u>								
Contribution deficiency / (excess)	\$3,396	\$3,283								

The Town of Andover's plan to fund OPEB is to contribute, on an annual basis, .06% of revenue increasing at 2.5% per year plus savings from OPEB reforms and the Actuarially Required Contributions for water and sewer. This plan became effective as of 7/1/16.

Fiscal Year 2019	Actuarially Determined Contribution
General Fund	\$10,034,601
Water	179,666
Sewer	<u>52,360</u>
Total	\$10,266,627

Funding Schedule

EAN Funding Schedule (closed amortization)

30 Years from 07/01/2018 at 6.00%

Fiscal Year	Normal Cost ¹	Amortization ²	Actuarially Determined Contribution	Year-End UAAL	Projected Annual Benefit Cost ³	Cash Contribution
2019	\$3,793,052	\$6,473,575	\$10,266,627	\$126,630,668	\$5,427,306	\$4,839,321
2020	\$3,906,844	\$6,667,782	\$10,574,626	\$127,160,659	\$5,875,704	\$4,698,922
2021	\$4,024,049	\$6,867,816	\$10,891,865	\$127,510,414	\$6,297,941	\$4,593,924
2022	\$4,144,771	\$7,073,850	\$11,218,621	\$127,662,758	\$7,260,980	\$3,957,641
2023	\$4,269,114	\$7,286,066	\$11,555,180	\$127,599,293	\$7,767,089	\$3,788,091
2024	\$4,397,187	\$7,504,648	\$11,901,835	\$127,300,324	\$8,394,361	\$3,507,474
2025	\$4,529,103	\$7,729,787	\$12,258,890	\$126,744,769	\$8,948,167	\$3,310,723
2026	\$4,664,976	\$7,961,681	\$12,626,657	\$125,910,074	\$9,477,040	\$3,149,617
2027	\$4,804,925	\$8,200,531	\$13,005,456	\$124,772,115	\$9,856,790	\$3,148,666
2028	\$4,949,073	\$8,446,547	\$13,395,620	\$123,305,102	\$10,424,722	\$2,970,898
2029	\$5,097,545	\$8,699,944	\$13,797,489	\$121,481,468	\$10,845,172	\$2,952,317
2030	\$5,250,471	\$8,960,942	\$14,211,413	\$119,271,757	\$11,332,138	\$2,879,275
2031	\$5,407,986	\$9,229,770	\$14,637,756	\$116,644,506	\$11,817,720	\$2,820,036
2032	\$5,570,225	\$9,506,663	\$15,076,888	\$113,566,114	\$12,233,395	\$2,843,493
2033	\$5,737,332	\$9,791,863	\$15,529,195	\$110,000,706	\$12,625,847	\$2,903,348
2034	\$5,909,452	\$10,085,619	\$15,995,071	\$105,909,992	\$12,943,187	\$3,051,884
2035	\$6,086,735	\$10,388,188	\$16,474,923	\$101,253,112	\$13,130,333	\$3,344,590
2036	\$6,269,337	\$10,699,833	\$16,969,171	\$95,986,476	\$13,451,767	\$3,517,404
2037	\$6,457,418	\$11,020,828	\$17,478,246	\$90,063,586	\$13,895,042	\$3,583,204
2038	\$6,651,140	\$11,351,453	\$18,002,593	\$83,434,861	\$14,000,136	\$4,002,457
2039	\$6,850,674	\$11,691,997	\$18,542,671	\$76,047,436	\$14,294,327	\$4,248,344
2040	\$7,056,195	\$12,042,757	\$19,098,951	\$67,844,960	\$14,548,426	\$4,550,525
2041	\$7,267,880	\$12,404,039	\$19,671,920	\$58,767,376	\$14,840,873	\$4,831,047
2042	\$7,485,917	\$12,776,160	\$20,262,077	\$48,750,689	\$14,989,114	\$5,272,963
2043	\$7,710,494	\$13,159,445	\$20,869,940	\$37,726,718	\$14,990,697	\$5,879,243
2044	\$7,941,809	\$13,554,229	\$21,496,038	\$25,622,839	\$14,950,685	\$6,545,353
2045	\$8,180,063	\$13,960,856	\$22,140,919	\$12,361,702	\$15,167,744	\$6,973,175
2046	\$8,425,465	\$14,379,681	\$22,805,146	(\$2,139,058)	\$15,229,061	\$7,576,085
2047	\$8,678,229	\$14,811,072	\$23,489,301	(\$17,967,137)	\$15,223,108	\$8,266,193
2048	\$8,938,576	\$0	\$8,938,576	(\$19,045,165)	\$15,143,995	\$0

¹ Assumes 3.00% annual increase in normal cost and a static group of actives.

² Assumes 3.00% annual increase in amortization payment.

³ The projected benefit cost, or Pay-As-You-Go amount, is for the current group of actives and retirees. It does not include any future hires. It is not directly comparable to the funding contribution but is included for illustrative purposes only. It does illustrate, in the short-term, the estimated amount of claims costs for retirees. However, the retiree amount is expected to grow as new employees retire or become disabled.

GASB Statement No. 74, Paragraph 34 b. (3) - Money-Weighted Rate of Return

NET INVESTMENT AMOUNTS					
	Beginning of month	Middle of Month	End of Month	Periods Invested**	Investment with Interest
Starting Value* (7/1/2017)	\$7,668,275.63			12	\$ 8,221,035.81
<u>Cash Flows:</u>					
July				11	0.00
August				10	0.00
September				9	0.00
October		1,648,721.00		8	1,732,045.33
November				7	0.00
December				6	0.00
January				5	0.00
February				4	0.00
March				3	0.00
April				2	0.00
May				1	0.00
June				0	<u>0.00</u>
Ending Value* (6/30/2018)	\$9,953,081.14			Sum:	\$ 9,953,081.14

* Value shown does not include any payables or receivables, except those related to investments.
 ** Middle of period cash flows are given an additional half period of interest, and beginning of period cash flows are given an additional full period.

Return Rate:	7.21%
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SECTION II - ACTUARIAL VALUATION DETAILS

Population Data

A. DISTRIBUTION BY AGE: RETIREES, BENEFICIARIES, AND SURVIVORS (Includes retirees with life only or no coverage)

Age	Total
0-19	0
20-24	1
25-29	1
30-34	0
35-39	3
40-44	4
45-49	7
50-54	17
55-59	35
60-64	134
65-69	294
70-74	273
75-79	183
80-84	131
85-89	93
90-94	24
95-99	7
100+	1
TOTAL	1,208

Includes retirees who are eligible for medical or with life coverage in addition to terminated vesteds, beneficiaries, and survivors with medical coverage.

B. ACTIVE PARTICIPANTS

OF PARTICIPANTS*

Current Plan	Mandatory Medicare Eligible	Pre-Mandatory Medicare Eligible	Total
No Medical/ Unknown	351	2	353
Indemnity	0	0	0
Managed Care	862	23	885
TOTAL	1,213	25	1,238

* "Pre-Mandatory Medicare eligible" means hired March 31, 1986 or before. "Mandatory Medicare eligible" means hired after March 31, 1986. Employees hired March 31, 1986 or before do not contribute to Medicare.

C. PLAN DEFINITION TABLE⁽¹⁾

Name of Plan	Type of Plan	Ind Rate	Retirees Enrolled	Fam Rate	Retirees Enrolled	EE Cont % ⁽²⁾
Blue Care Elect PPO	Commercial Managed Care	\$790.67	29	\$2,119.01	13	40.00%
Network Blue New England	Commercial Managed Care	\$650.45	106	\$1,753.48	40	40.00%
Medex	Medicare Indemnity	\$323.29	782	\$323.29	NA	35.00%
Medex Low Income	Medicare Indemnity	\$224.43	6	\$224.43	NA	35.00%
Life Insurance	Life Insurance	\$1.16	374	NA	NA	50.00%

(1) Rates at 07/01/2017. Only plans with retiree enrollment shown.

(2) Contribution rates for Commercial plans will increase to 45% on July 1, 2018. This increase has been reflected in trend rate increases.

C. DISTRIBUTION BY AGE AND SERVICE: ACTIVE PARTICIPANTS

Age Group	0-4	5-9	10-15	15-19	20-24	25-29	30-34	35-39	40+	Total
0-19	1	0	0	0	0	0	0	0	0	1
20-24	17	1	0	0	0	0	0	0	0	18
25-29	53	6	0	0	0	0	0	0	0	59
30-34	66	42	9	0	0	0	0	0	0	117
35-39	41	32	37	7	0	0	0	0	0	117
40-44	55	19	37	37	6	0	0	0	0	154
45-49	56	33	29	42	30	1	1	0	0	192
50-54	40	49	40	37	14	17	9	0	0	206
55-59	36	34	53	39	25	16	10	1	0	214
60-64	21	19	27	22	13	3	4	4	1	114
65-69	7	5	5	7	2	3	1	0	1	31
70-74	2	1	0	3	0	0	2	0	1	9
75-79	0	1	0	1	1	0	2	1	0	6
80-84	0	0	0	0	0	0	0	0	0	0
85-89	0	0	0	0	0	0	0	0	0	0
90-94	0	0	0	0	0	0	0	0	0	0
95-99	0	0	0	0	0	0	0	0	0	0
100+	0	0	0	0	0	0	0	0	0	0
TOTAL	395	242	237	195	91	40	29	6	3	1,238

SECTION III – APPENDICES

Actuarial Methods

Actuarial Cost Method

Costs are attributed between past and future service using the Entry Age Normal cost method. For attribution purposes, benefits are assumed to accrue over all employee service until decrement.

Asset Valuation Method

Market value of assets with payables and receivables.

Actuarial Assumptions

Valuation Date

July 1, 2017

Interest Rate / Discount Rate

5.36% per year net of investment expenses as of 06/30/2018. In the calculation of the discount rate, the 20-year Municipal General Obligation bonds as shown in the Bond Buyer 20 Bond Index (3.87%) was used. 5.44% per year as of 07/01/2017.

Salary Scale

- Groups 1, 2, and 4: 4.25%
- Teachers: 4.00%

Overall payroll increase rate, including new entrants: 3.00% per year and 2.75% CPI-U.

Mortality

- **Actives:** The RP-2014 Mortality Tables adjusted to 2006, sex-distinct, for Employees projected using generational mortality and scale MP-2016.
- **Retirees:** The RP-2014 Mortality Tables adjusted to 2006, sex-distinct, for Healthy Annuitants projected using generational mortality and scale MP-2016.
- **Disabled:** The RP-2014 Mortality Tables adjusted to 2006, sex-distinct, for Healthy Annuitants projected using generational mortality and scale MP-2016. Set forward 2 years.

No additional mortality projection is assumed other than as described above.

Actuarial Assumptions (Continued)

Eligibility for Vested Post-Retirement Medical Benefits upon Withdrawal

10 years of Service; assumed that individuals who withdraw prior to age 40 will elect a return of pension contributions and therefore be ineligible for retiree medical coverage.

Withdrawal Prior to Retirement, Non-Teachers

Based on years of service. Same for both pre- and post-April 1, 2012 (Tier 1 and Tier 2) hires.

Years of Service	Groups 1,2	Group 4
0	15.00%	1.50%
1	12.00%	1.50%
2	10.00%	1.50%
3	9.00%	1.50%
4	8.00%	1.50%
5	7.60%	1.50%
6	7.50%	1.50%
7	6.70%	1.50%
8	6.30%	1.50%
9	5.90%	1.50%
10	5.40%	1.50%
11	5.00%	0.00%
12	4.60%	0.00%
13	4.10%	0.00%
14	3.70%	0.00%
15	3.30%	0.00%
16	2.00%	0.00%
17	2.00%	0.00%
18	2.00%	0.00%
19	2.00%	0.00%
20	2.00%	0.00%
21	1.00%	0.00%
22	1.00%	0.00%
23	1.00%	0.00%
24	1.00%	0.00%
25	1.00%	0.00%
26	1.00%	0.00%
27	1.00%	0.00%
28	1.00%	0.00%
29	1.00%	0.00%
30+	0.00%	0.00%

Actuarial Assumptions (Continued)

Withdrawal Prior to Retirement, Teachers

Same for both pre and post-April 1, 2012 hires.

		Service		
Age		0	5	10
Male Teachers	25	12.00%	4.50%	1.00%
	35	11.00	5.00	1.50
	45	9.50	5.00	2.00
	55	7.50	4.50	2.50
Female Teachers	25	10.00%	9.00%	5.00%
	35	12.00	8.40	4.10
	45	8.90	4.70	2.40
	55	8.00	3.20	2.00

Disability Prior to Retirement

The rates shown at the following sample ages illustrate the assumption regarding the incidence of disability. Disability is assumed to be 55% ordinary and 45% accidental for Groups 1 and 2, 10% ordinary and 90% accidental for Group 4, and 55% ordinary and 45% accidental for Teachers.

Rate of Disability			
Age	Groups 1 and 2	Group 4	Teachers
20	0.01%	0.10%	0.004%
25	0.02%	0.20%	0.005%
30	0.03%	0.30%	0.006%
35	0.06%	0.30%	0.006%
40	0.10%	0.30%	0.010%
45	0.15%	1.00%	0.030%
50	0.19%	1.25%	0.050%
55	0.24%	1.20%	0.080%
60	0.28%	0.85%	0.100%

Medicare Eligibility

- **Employees:** 100% if hired March 31, 1986 or after; 85% if hired pre-March 31, 1986.
- **Spouses:** 100%

Actuarial Assumptions (Continued)

Rates of Retirement, Non-Teachers

Based on gender, group, and hire date.

Age	Hired Pre-April 2, 2012			Hired Post-April 1, 2012		
	Groups 1 and 2 Male	Groups 1 and 2 Female	Group 4	Groups 1 and 2 Male	Groups 1 and 2 Female	Group 4
50	1.00%	1.50%	2.00%	-	-	-
51	1.00%	1.50%	2.00%	-	-	-
52	1.00%	2.00%	2.00%	-	-	-
53	1.00%	2.50%	5.00%	-	-	-
54	2.00%	2.50%	7.50%	-	-	-
55	2.00%	5.50%	15.00%	-	-	25.00%
56	2.50%	6.50%	10.00%	-	-	15.00%
57	2.50%	6.50%	10.00%	-	-	20.00%
58	5.00%	6.50%	10.00%	-	-	10.00%
59	6.50%	6.50%	15.00%	-	-	15.00%
60	12.00%	5.00%	20.00%	30.00%	30.00%	20.00%
61	20.00%	13.00%	20.00%	20.00%	10.00%	20.00%
62	30.00%	15.00%	25.00%	15.00%	12.00%	25.00%
63	25.00%	12.50%	25.00%	25.00%	10.00%	25.00%
64	22.00%	18.00%	30.00%	20.00%	15.00%	30.00%
65	40.00%	15.00%	100.00%	25.00%	13.00%	100.00%
66	25.00%	20.00%	NA	20.00%	18.00%	NA
67	25.00%	20.00%	NA	50.00%	40.00%	NA
68	30.00%	25.00%	NA	30.00%	25.00%	NA
69	30.00%	20.00%	NA	30.00%	25.00%	NA
70	100.00%	100.00%	NA	100.00%	100.00%	NA

Actuarial Assumptions (Continued)

Rates of Retirement, Teachers

Based on gender, years of service, and hire date.

Age	Hired Pre-April 2, 2102						Hired Post-April 1, 2012					
	<20 years service		20-29 years service		>29 years service		<20 years service		20-29 years service		>29 years service	
	M	F	M	F	M	F	M	F	M	F	M	F
50	N/A	N/A	1%	1.5%	2%	2%	N/A	N/A	N/A	N/A	N/A	N/A
51	N/A	N/A	1	1.5	2	2	N/A	N/A	N/A	N/A	N/A	N/A
52	N/A	N/A	1	1.5	2	2	N/A	N/A	N/A	N/A	N/A	N/A
53	N/A	N/A	1	1.5	2	2	N/A	N/A	N/A	N/A	N/A	N/A
54	N/A	N/A	1	1.5	2	2	N/A	N/A	N/A	N/A	N/A	N/A
55	3%	2%	3	3	6	6	3%	0%	0%	0%	0%	0%
56	8	2	5	3	20	15	8	0	0	0	0	0
57	15	8	8	7	35	30	15	0	0	0	0	0
58	15	10	10	7	50	35	15	0	0	0	0	0
59	20	15	20	11	50	35	20	0	0	0	0	0
60	15	20	20	16	50	35	25	25	35	23	45	45
61	30	20	25	20	50	35	35	30	35	30	45	45
62	20	25	30	30	40	40	30	25	30	25	45	45
63	30	24	30	30	40	30	35	25	30	25	45	45
64	40	20	30	30	40	35	40	30	35	30	45	45
65	40	30	40	30	50	35	40	30	35	30	45	45
66	40	30	30	30	50	35	40	30	40	30	45	45
67	40	30	30	30	50	30	50	35	45	35	55	45
68	40	30	30	30	50	30	50	35	45	35	55	45
69	40	30	30	30	50	30	55	35	45	35	55	45
70	100	100	100	100	100	100	100	100	100	100	100	100

Actuarial Assumptions (Continued)

Plan Enrollment Rates

These are the rates which retirees select medical plans, given that they enroll in a medical plan. The selection patterns follow the table below.

Participant Behavior at Key Ages

Status	Age	Pre-65 Retirement	65+ Retirement
Active	Under 65	Commercial Managed Care: 100% Commercial Indemnity: 0%	Medicare Managed Care: 0% Medicare Indemnity: 99% Commercial Managed Care: <1%
Active	65+	NA	Medicare Managed Care: 0% Medicare Indemnity: 99% Commercial Managed Care: <1%
Retired	Under 65	Current Plan	Medicare Managed Care: 0% Medicare Indemnity: 99% Commercial Managed Care: <1% Or Actual Plan if already in Medicare
Retired	65+	NA	Current Plan

Sample Claim Costs

Age	Commercial Managed Care Individual	Commercial Managed Care Blended ⁽¹⁾	Commercial Indemnity Individual	Commercial Indemnity Blended ⁽¹⁾	Medicare Managed Care	Medicare Indemnity
55	\$8,191.76	\$14,674.99	NA	NA	NA	\$3,343.38
60	\$10,074.55	\$18,060.61	NA	NA	NA	\$3,343.38
65	\$12,632.43	\$16,760.15	NA	NA	NA	\$3,343.38
70	\$15,253.57	\$20,237.78	NA	NA	NA	\$3,698.31
75	\$18,243.95	\$24,205.44	NA	NA	NA	\$3,994.73
80	\$21,716.70	\$28,812.94	NA	NA	NA	\$4,208.71
85	\$21,716.70	\$28,812.94	NA	NA	NA	\$4,319.01

⁽¹⁾ Blended rates below 65 are 42.5% Family and 57.5% Individual. Blended rates 65 and higher are 17.5% Family and 82.5% Individual. Individual rates are used for all participants 81 and higher.

Actuarial Assumptions (Continued)

Trend Rates by Plan

Year	Commercial Indemnity	Commercial Managed Care	Medicare Managed Care	Medicare Indemnity
2017	-1.13%	9.50%	7.50%	4.02%
2018	8.00%	9.00%	7.00%	8.00%
2019	7.50%	8.50%	6.50%	7.50%
2020	7.00%	8.00%	6.00%	7.00%
2021	6.50%	7.50%	5.50%	6.50%
2022	6.00%	7.00%	5.00%	6.00%
2023	5.50%	6.50%	5.00%	6.00%
2024	5.00%	6.00%	5.00%	6.00%
2025	5.00%	6.00%	5.00%	6.00%
2026	5.00%	6.00%	5.00%	6.00%
2027	5.00%	6.00%	5.00%	5.75%
2028	5.00%	6.00%	5.00%	5.75%
2029	5.00%	5.75%	5.00%	5.75%
2030	5.00%	5.75%	5.00%	5.50%
2031	5.00%	5.75%	5.00%	5.50%
2032	5.00%	5.75%	5.00%	5.50%
2033	5.00%	5.75%	5.00%	5.25%
2034	5.00%	5.50%	5.00%	5.25%
2035	5.00%	5.50%	5.00%	5.00%
2036	5.00%	5.50%	5.00%	5.00%
2037	5.00%	5.50%	5.00%	5.00%
2038	5.00%	5.50%	5.00%	5.00%
2039	5.00%	5.25%	5.00%	5.00%
2040	5.00%	5.25%	5.00%	5.00%
2041	5.00%	5.25%	5.00%	5.00%
2042	5.00%	5.25%	5.00%	5.00%
2043	5.00%	5.25%	5.00%	5.00%
2044	5.00%	5.00%	5.00%	5.00%

Trend rates for the Town of Andover have been adjusted in year 1 to reflect the 7/1/2018 change in employee contribution to commercial plans from 40% to 45%.

Expenses

Administrative expenses are included in the per capita medical cost assumption.

Actuarial Assumptions (Continued)

Participation Rates

Current retirees and spouses are assumed to continue the same coverage they have as of the valuation date. No future election of coverage is assumed for those retirees and spouses who currently have not elected coverage.

Medical All Retirees: 80% of the active Town of Andover employees eligible for post-employment medical benefits are assumed to elect Medical Coverage immediately upon retirement.

Life All Retirees: 50% of active Town of Andover employees eligible for post-employment medical benefits are assumed to elect Life Insurance coverage immediately upon retirement.

For all Retirees: For the Town of Andover plans 55% of spouses are assumed to participate.

Participants with no or unknown current coverage (e.g. active employees who do not currently participate in Town of Andover's medical plans) are assumed to elect retiree coverage at the same rates as currently covered active employees. Medicare-eligible retirees currently under age 65 are assumed to elect a Medicare plan option at age 65.

Section 9 ½ of Chapter 32B

No current or future payments or receipts are assumed due to past service or future service with other Chapter 32 entities.

PPACA

OPEB liabilities as of June 30, 2018 include an estimate of the impact from the Patient Protection and Affordable Care Act (PPACA) as it is written as of the valuation date, including the so-called "Cadillac Tax" on high-cost health plans. The Cadillac Tax on plans whose richness exceeds set levels will begin in 2022 and the valuation reflects such implementation beginning in 2022. Prior to this time, the law may be amended or changes may be made in the benefit plan such that the law will not be applicable.

Principal Plan Provisions Recognized in Valuation

ELIGIBILITY FOR BENEFITS

Current retirees, beneficiaries and spouses of Town of Andover are eligible for medical benefits, as are current employees or spouses who retire with a benefit from the Town of Andover. Survivors of Town of Andover employees and retirees are also eligible for medical benefits.

MEDICAL BENEFITS

Various medical plans offered by Town of Andover to its own employees.

LIFE INSURANCE

Town of Andover retirees are eligible for a \$2,000 life insurance benefit offered by Town of Andover. Retirees pay 50% of the \$1.16 cost.

RETIREE CONTRIBUTIONS

Based on data provided by Town of Andover.

Glossary

- **Actuarial Accrued Liability:** The portion, as determined by a particular Actuarial Cost Method, of the present value of benefits which is not provided for by future Normal Costs.
- **Actuarial Assumptions:** Assumptions as to the occurrence of future events affecting Other Post-employment Benefits such as: mortality rates, disability rates, withdrawal rates, and retirement rates, the discount assumption, and the trend rates.
- **Actuarial Cost Method:** A procedure for determining the Actuarial Present Value of Total Projected benefits and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal and an Actuarial Accrued Liability.
- **Amortization Payment:** The portion of the OPEB contribution designed to pay interest and to amortize the Unfunded Actuarial Accrued Liability.
- **Actuarially Determined Contribution (ADC):** The employer's periodic contributions to a defined benefit OPEB plan, calculated in accordance with the Actuarial Standards of Practice.

■ **Town of Andover**
GASB Statement No. 74

- **Commercial Plans:** Plans designed to cover the medical expenses of those not otherwise covered by Medicare.
- **GASB:** The Governmental Accounting Standards Board is the organization that establishes financial reporting standards for state and local governments.
- **Investment return Assumptions (Discount Rate):** The rate used to adjust a series of future benefit payments to reflect the time value of money.
- **Healthcare Cost Trend Rate:** The rate of change in per capita health claims costs over time as a result of factors such as medical inflation, utilization of healthcare services, the intensity of the delivery of services, technological developments, and cost-shifting.
- **Medicare Plans:** Medical plans sold to those over 65 who are also covered by Medicare. These plans are supplemental to the Medicare plan, which is considered primary.
- **Normal Cost:** The portion of the Actuarial Present value of plan benefits that is allocated to a valuation year by the Actuarial Cost Method.
- **OPEB:** Other Post-Employment Benefits, other than pensions. This does not include plans such as severance plans or sick-time buyouts.
- **Pay-As-You-Go:** The amount of benefits (claims) paid out to plan participants during the year.
- **Per Capita Claims Cost:** The current average annual cost of providing postretirement health care benefits per individual.
- **Unfunded Actuarial Accrued Liability:** The portion of the Actuarial Accrued Liability that is not covered by plan assets. For a plan that is completely unfunded, this amount is equivalent to the Actuarial Accrued Liability.
- **Valuation Date:** The point from which all future plan experience is projected and as of which all present values are calculated.