



LITTLETON MUNICIPAL ELECTRIC LIGHT DEPARTMENT

OTHER POSTEMPLOYMENT BENEFITS PROGRAM

FINANCIAL REPORTING AND DISCLOSURES Governmental Accounting Standards Board Statements 74 and 75

**Disclosures as of
December 31, 2018**

KMS Actuaries, LLC
814 Elm Street, Suite 204
Manchester, NH 03101

August, 2019



August 14, 2019

Ms. Erica Rooks
Business Manager
Littleton Municipal Electric Light Department
39 Ayer Road
Littleton, MA 01460

Dear Erica:

We are pleased to present the enclosed report of the January 1, 2018 actuarial valuation of the retiree health care benefits for Littleton Municipal Electric Light Department. The valuation was prepared in accordance with, and for the purpose of financial reporting and disclosures as of December 31, 2018, under the following Government Accounting Standards Board (GASB) Statements:

- ◆ GASB Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans (GASB 74)
- ◆ GASB Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions (GASB 75)

The Principal Valuation Results, including assets, liabilities and the development of future contributions, are provided in Section 1. The Notes to the Financial Statements and the Required Supplementary Information are provided in Sections 2 and 3, respectively. Employer Reporting Amounts under GASB 75 are provided in Section 4. The Summary of Plan Provisions and Actuarial Assumptions and Methods are shown in Sections 5 and 6, respectively. Section 7 summarizes the demographic profile of active members and retired members, covered spouses and survivors. Finally, a Glossary of Terms is provided in Section 8.

Our calculations are based on member census data and other information provided by Littleton Municipal Electric Light Department as well as health plan rates provided by the Town of Littleton. Although we did not audit the data used in the valuation and disclosure calculations, we believe that the information is complete and reliable.

Liabilities presented in this report are based on a discount rate of 7.5%, a long-term investment return rate of 7.5% and a municipal bond rate of 4.1%. The long-term investment return rate is based on expected long-term investment return rates provided by Bartholomew & Company.

K M S A C T U A R I E S

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Ms. Erica Rooks

August 14, 2019

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This report was completed in accordance with generally accepted actuarial standards and procedures, and conforms to the Code of Professional Conduct of the American Academy of Actuaries. The actuarial assumptions other than those explicitly applicable to the postemployment benefit plans are consistent with those used by the Middlesex County Retirement System's actuaries for the Retirement System pension valuations.

Future actuarial valuation results may differ significantly from the current results presented in this report. Examples of potential sources of volatility include plan experience differing from that anticipated by the economic or demographic assumptions, the effect of new entrants, changes in economic or demographic assumptions, the effect of law changes and the delayed effect of smoothing techniques.

Our valuation follows generally accepted actuarial methods and we perform such tests as we consider necessary to assure the accuracy of the results. The amounts presented in this report have been appropriately determined according to the actuarial assumptions and methods stated herein.

This report is intended for the sole use of Littleton Municipal Electric Light Department and is intended to provide information to comply with the stated purpose of the report. It may not be appropriate for other purposes.

The expected claims, cost trend rates, and analysis of regulatory changes have been developed based on the expertise of the undersigned health and welfare actuary, Christopher E. Bean, ASA, MAAA. The undersigned credentialed actuaries are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinion contained herein. They are available to answer any questions with regard to this report.

Respectfully submitted,



Linda L. Bournival, FSA, EA

Member, American Academy of Actuaries

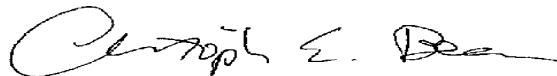
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K M S A C T U A R I E S

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EXECUTIVE SUMMARY

This report presents the results of the actuarial valuation of Littleton Municipal Electric Light Department's retiree health care benefits as of January 1, 2018. The valuation was prepared in accordance with, and for the purpose of financial reporting and disclosures as of December 31, 2018, under the following Government Accounting Standards Board (GASB) Statements:

- ◆ GASB Statement No. 74, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans (GASB 74)
- ◆ GASB Statement No. 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions (GASB 75)

The results as of the measurement date are based on a roll forward of the liabilities developed in the most recent actuarial valuation.

New Accounting Standards

In June 2015, the GASB approved two related Statements that significantly changed the way other postemployment benefits (OPEB) plans and governments account and report OPEB liabilities. Effective for plans with fiscal years beginning after June 15, 2016, GASB Statement No. 74 (GASB 74), *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, replaced the requirements of Statement No. 43 and effective for employers with fiscal years beginning after June 15, 2017, GASB Statement No. 75 (GASB 75), *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*, replaced the requirements of Statement No. 45.

GASB 74 requires OPEB plans to present a statement of fiduciary net position (OPEB plan assets) and a statement of changes in fiduciary net position. Further, the statement requires that notes to financial statements include descriptive information such as the types of benefits provided, the classes of plan members covered and the authority under which benefit terms are established or may be amended. Finally, GASB 74 requires OPEB plans to present in required supplementary information the sources of the changes in the net OPEB liability and information about the actuarially determined contributions compared with the actual contributions made to the plan and related ratios.

GASB 74 and GASB 75 require projected benefit payments be discounted to their actuarial present value using the single rate that reflects:

- (1) a long-term expected rate of return on OPEB plan investments *to the extent that the OPEB plan's assets are sufficient to pay benefits and OPEB plan assets are expected to be invested using a strategy to achieve that return and*
- (2) a tax-exempt, high-quality municipal bond rate *to the extent that the conditions for use of the long-term expected rate of return are not met.*

GASB 75 establishes standards for measuring and recognizing liabilities, deferred outflows of resources, deferred inflows of resources and OPEB expense by state and local governments.

EXECUTIVE SUMMARY

Littleton Municipal Electric Light Department Other Postemployment Benefits Program

The effective date for GASB 74 is for plan years beginning after June 15, 2016, which is the fiscal year ending December 31, 2017 for the Littleton Municipal Electric Light Department. The effective date for GASB 75 is for fiscal years beginning after June 15, 2017, which is the fiscal year ending December 31, 2018 for the Littleton Municipal Electric Light Department.

Summary of Results

A summary of principal results from the current and prior measurement dates follows:

Measurement Date	<u>December 31, 2018</u>	<u>December 31, 2017</u>	<u>Increase/ (Decrease)</u>
Valuation Date	January 1, 2018	January 1, 2016	
Membership Data			
Active Plan Members	26	25	4.0%
Inactive Plan Members	26	29	(10.3%)
Total Plan Members	52	54	(3.7%)
 Covered Payroll	 \$2,298,919	 \$2,238,651	 2.7%
 Valuation Results (GASB 74 and GASB 75)			
Discount rate	7.50%	7.50%	
Total OPEB Liability	\$4,044,793	\$4,010,312	0.9%
Fiduciary Net Position	\$2,181,527	\$2,253,322	(3.2%)
Net OPEB Liability	\$1,863,266	\$1,756,990	6.0%
Funded Ratio	53.9%	56.2%	(4.1%)
 Valuation Results (GASB 75)			
OPEB Expense	\$253,253	N/A	
Deferred Outflows	\$424,444	N/A	
Deferred Inflows	\$201,239	N/A	
 Valuation Results (GASB 45)			
Actuarial Accrued Liability	N/A	\$4,306,649	
Market Value of Assets	N/A	\$2,253,322	
Unfunded Actuarial Accrued Liability	N/A	\$2,053,327	
Funded Ratio	N/A	52.3%	
 Annual Required Contribution	N/A	\$279,074	
Net OPEB Obligation	N/A	(\$208,395)	

EXECUTIVE SUMMARY

Experience Gain and Loss

In developing the Total OPEB Liability, various assumptions are made regarding future premium rates, mortality, retirement, disability and turnover rates. A comparison of the results of the current and prior measurements is made to determine how closely actual experience relates to expected. For the current measurement period, the difference between expected and actual experience resulted in an actuarial gain of approximately \$238,000. The gain is due mostly to medical plan premiums lower than expected from the previous valuation.

Changes of Assumptions

The mortality tables, payroll growth rate and health cost trend rates were updated from the prior valuation. All other assumptions were the same as those used in the previous measurement. The Actuarial Assumptions and Methods used in the valuation are summarized in Section 6.

Changes of Benefit Terms

The Patient Protection and Affordable Care Act (PPACA) applies a 40% excise tax, commonly referred to as the "Cadillac Tax", to the cost of plan benefits in excess of statutory thresholds beginning in 2022. Previously, the tax was effective beginning in 2020. All other benefit terms are the same as those used in the prior measurement. A Summary of the Principal Plan Provisions is provided in Section 5.

Total OPEB Liability

The Total OPEB Liability as of the current measurement date, December 31, 2018, is \$4,044,793. The Total OPEB Liability as of the prior measurement date, December 31, 2017, was \$4,010,312. The development of the Total OPEB Liability for the current measurement date is shown in Section 1, Exhibit 1.2.

Fiduciary Net Position

The Fiduciary Net Position is equal to the market value of assets and as of the current measurement date, December 31, 2018, is \$2,181,527. The Fiduciary Net Position as of the prior measurement date, December 31, 2017, was \$2,253,322. The Fiduciary Net Position is shown in Section 1, Exhibit 1.1.

Employer Future Period Contributions

The Light Department is assumed to contribute \$50,000 annually.

Discount Rate

As of the December 31, 2018 measurement date, the OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 7.5%.

OPEB Expense

The OPEB Expense as of the current measurement date, December 31, 2018, is \$253,253. The development of the OPEB expense for the current measurement date is shown in Section 4, Exhibit 4.2.

SECTION 1 - PRINCIPAL VALUATION RESULTS

Exhibit 1.1 - OPEB Trust Assets

The Town of Littleton has established an irrevocable trust pursuant to Section 20 of Chapter 32B of the Massachusetts General Laws for the purpose of accumulating assets to prefund the OPEB liabilities. Plan assets segregated and restricted in an OPEB trust must be dedicated to providing plan benefits to retirees and beneficiaries in accordance with the terms of the plan and must be legally protected from creditors of the employer. Further, employer contributions to the trust must be irrevocable. Asset information for the current and prior fiscal years was provided by the Town and is presented below:

Fiscal Year Ended December 31	2018	2017
Trust Fund Composition at Fiscal Year-End		
Domestic Equity	\$750,143	\$783,705
Domestic Bond	424,828	426,779
International Equity	522,354	563,331
International Bond	106,991	226,684
Cash and Equivalents	11,304	201,898
Other	365,907	50,925
Total Market Value of Assets	<hr/> \$2,181,527	<hr/> \$2,253,322
Asset Activity		
Market value, beginning of year	\$2,253,322	\$1,767,767
Employer Premiums	320,182	289,069
OPEB Trust Contributions	50,000	250,000
Benefit Payments	(320,182)	(289,069)
Administrative Expenses	-	-
Investment Return	<hr/> (121,795)	<hr/> 235,555
Market value, end of year	<hr/> \$2,181,527	<hr/> \$2,253,322
Money-Weighted Rate of Return		
	-5.38%	12.89%
(Gain) / Loss on OPEB Plan Investments		
Projected earnings	\$169,605	\$141,958
Actual earnings	(121,795)	235,555
(Gain) / Loss on OPEB plan investments	<hr/> \$291,400	<hr/> (\$93,597)

SECTION 1 - PRINCIPAL VALUATION RESULTS

Exhibit 1.2 - Total OPEB Liability

The Total OPEB Liability, developed using the Entry Age Normal funding method, is the portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service. The total OPEB liability as of the December 31, 2018 measurement date was developed from an actuarial valuation as of January 1, 2018 and rolled forward to the OPEB plan's fiscal year-end.

The Service Cost is the portion of the actuarial present value of projected benefit payments that is attributed to a valuation year. Only active employees who have not reached the age at which the probability of retirement is 100% incur a service cost.

Actuarial gains and losses arise from the difference between estimates and actual experience, excluding amounts related to benefit changes and changes in assumptions or other inputs.

The development of the Total OPEB Liability from the beginning of the measurement period, December 31, 2017 to the end of the measurement period, December 31, 2018 is shown below:

<u>Measurement Date</u>	<u>December 31, 2018</u>
1. Total OPEB Liability, beginning of year:	
a. Actives	\$1,204,599
b. Retirees, Covered Spouses and Survivors	2,805,713
c. Total OPEB Liability at 7.5% (a. + b.)	\$4,010,312
2. Service Cost	\$72,190
3. Expected Benefit Payments	
a. Current retirees	(\$310,044)
b. Future retirees	(10,138)
c. Total (a. + b.)	(\$320,182)
4. Interest [7.5% x (1.c. + 2. + .5 x 3.c)]	\$294,181
5. Changes of benefit terms	\$0
6. Differences between expected and actual experience	(\$237,629)
7. Changes of assumptions or other inputs	\$225,921
8. Total OPEB Liability, end of year (1.c. + 2. + 3.c. + 4. + 5. + 6. + 7.)	
a. Actives	\$1,162,695
b. Retirees, Covered Spouses and Survivors	2,882,098
c. Total OPEB Liability at 7.5% (a. + b.)	\$4,044,793

SECTION 1 - PRINCIPAL VALUATION RESULTS

Exhibit 1.3 - Development of Actuarially Determined Employer Contributions

The Light Department is assumed to contribute \$50,000 annually.

The Actuarially Determined Employer Contribution (ADEC) equals the Normal Cost plus a provision for amortizing the Unfunded Actuarial Accrued Liability. We have assumed level dollar amortization over an amortization period of 30 years.

Fiscal Year Ending	December 31, 2018	December 31, 2019
Discount Rate	7.50%	7.50%
1. Normal Cost	\$72,190	\$73,224
2. Unfunded Actuarial Accrued Liability		
a. Actuarial Accrued Liability	\$4,010,312	\$4,044,793
b. Actuarial Value of Plan Assets	\$2,253,322	\$2,181,527
c. Unfunded Actuarial Accrued Liability	\$1,756,990	\$1,863,266
3. Amortization of Unfunded Actuarial Accrued Liability		
a. Unfunded Actuarial Accrued Liability	\$1,756,990	\$1,863,266
b. Amortization Period in years	24	23
c. Payroll Growth Rate	0.0%	0.0%
d. Amortization Factor	11.81	11.62
e. Amortization Amount (3.a. / 3.d.)	\$148,771	\$160,350
4. Interest on 1. and 3.e.	\$16,572	\$17,518
5. Actuarially Determined Employer Contribution (1. + 3.e. + 4.)	\$237,533	\$251,092
6. Actual Employer Contribution to OPEB Trust	\$50,000	TBD
7. Expected Benefit Payments	\$320,182	\$329,483
8. Total Contribution (6. + 7.)	\$370,182	

SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

Exhibit 2.1 - Plan Description

Plan administration:

The Littleton Municipal Electric Light Department administers the retiree health care benefits program - a single-employer defined benefit plan that is used to provide postemployment benefits other than pensions (OPEB) for all permanent full-time employees.

Plan membership:

At December 31, 2018, OPEB plan membership consisted of the following:

Inactive plan members or beneficiaries currently receiving benefit payments ¹	26
Inactive plan members entitled to but not yet receiving benefit payments	0
Active plan members	26
	<hr/> <hr/> <hr/> <hr/>
	52

¹Per paragraph 34a of GASB 74 and further clarified by Question 4.67 of the 2017-2 GASB 74 Implementation Guide, the total shown for inactive plan members or beneficiaries currently receiving benefit payments does not include covered spouses or other dependents.

Benefits provided:

The Department provides health care benefits for retirees and their dependents. Benefits are provided through the Town, and the full cost of benefits is shared between the Department and retirees.

Contributions:

The Light Department is assumed to contribute \$50,000 annually.

SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

Exhibit 2.2 - Net OPEB Liability

The components of the net OPEB liability at December 31, 2018, were as follows:

Total OPEB liability	\$ 4,044,793
Fiduciary net position	(2,181,527)
<u>Net OPEB liability</u>	<u>\$ 1,863,266</u>

Fiduciary net position as a percentage of the total OPEB liability	53.93%
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Actuarial assumptions:

The total OPEB liability was determined by an actuarial valuation as of January 1, 2018, rolled forward to the measurement date and using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.6 percent
Discount rate	7.5%, net of investment expenses, including inflation
Healthcare cost trend rate	8 percent for 2018, decreasing 0.5 percent per year to 5.5 percent, then grading down to an ultimate trend rate of 3.8 percent, utilizing the Society of Actuaries Getzen Medical Trend Model. The ultimate medical inflation rate is reached in 2075.
Pre-Retirement Mortality - General and Public Safety employees:	RP-2000 Employees Mortality Table, base year 2009, projected with generational mortality improvement using scale BB2D.
Post-Retirement Mortality - General and Public Safety employees:	RP-2000 Healthy Annuitant Mortality Table, base year 2009, projected with generational mortality improvement using scale BB2D.

SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

Exhibit 2.2 - Net OPEB Liability

The long-term expected rate of return on OPEB plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of OPEB plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the target asset allocation as of December 31, 2018 are summarized in the following table:

Asset Class	Target Allocation ¹	Long-Term Expected Real Rates of Return ¹
Domestic Equity	35%	6.11%
Domestic Bond	20%	3.82%
International Equity	20%	2.78%
International Bond	5%	3.94%
Cash and Equivalents	0%	0.00%
Other	20%	3.67%
Total	100%	

¹ provided by Bartholomew & Company.

Discount rate:

The discount rate used to measure the total OPEB liability was 7.5%. The projection of cash flows used to determine the discount rate assumed that contributions from the Department will be made in accordance with the plan's funding policy. Based on those assumptions, the OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability.

SECTION 2 - NOTES TO THE FINANCIAL STATEMENTS

Exhibit 2.2 - Net OPEB Liability

Sensitivity of the net OPEB liability to changes in the discount rate:

The following presents the net OPEB liability calculated using the current discount rate of 7.5 percent, as well as what the net OPEB liability would be if it were calculated using a discount rate 1-percentage point lower (6.5 percent) or 1-percentage point higher (8.5 percent) than the current rate:

	1% Decrease (6.5%)	Discount Rate (7.5%)	1% Increase (8.5%)
Net OPEB Liability	\$ 2,356,055	\$ 1,863,266	\$ 1,457,320

Sensitivity of the net OPEB liability to changes in the healthcare cost trend rates:

The following presents the net OPEB liability calculated using the current healthcare cost trend rates as well as what the net OPEB liability would be if it were calculated using healthcare cost trend rates that are 1-percentage point lower (7% year 1 decreasing to 2.8%) or 1-percentage point higher (9% year 1 decreasing to 4.8%) than the current healthcare cost trend rates:

	Healthcare Cost Trend		
	1% Decrease 7% Year 1 Decreasing to 2.8%	Rates 8% Year 1 Decreasing to 3.8%	1% Increase 9% Year 1 Decreasing to 4.8%
Net OPEB Liability	\$ 1,384,012	\$ 1,863,266	\$ 2,482,425

SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

Exhibit 3.1 - Changes in Net OPEB Liability and Related Ratios

Fiscal Year Ended December 31	2018	2017
Total OPEB Liability		
Service cost	\$ 72,190	\$ 69,247
Interest	294,181	289,872
Changes of benefit terms	-	-
Differences between expected and actual experience	(237,629)	-
Changes of assumptions	225,921	-
Benefit payments	(320,182)	(289,069)
Net change in total OPEB liability	\$ 34,481	\$ 70,050
Total OPEB liability—beginning	\$ 4,010,312	\$ 3,940,262
Total OPEB liability—ending (a)	\$ 4,044,793	\$ 4,010,312
Plan fiduciary net position		
Contributions—employer	\$ 370,182	\$ 539,069
Net investment income	(121,795)	235,555
Benefit payments	(320,182)	(289,069)
Administrative expenses	-	-
Other	-	-
Net change in plan fiduciary net position	\$ (71,795)	\$ 485,555
Plan fiduciary net position—beginning	\$ 2,253,322	\$ 1,767,767
Plan fiduciary net position—ending (b)	\$ 2,181,527	\$ 2,253,322
Net OPEB liability—ending (a) – (b)	\$ 1,863,266	\$ 1,756,990
Plan fiduciary net position as a percentage of the total OPEB liability	53.93%	56.19%
Covered payroll	\$ 2,298,919	\$ 2,238,651
Net OPEB liability as a percentage of covered payroll	81.05%	78.48%

SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

Exhibit 3.2 - Investment Returns

Fiscal Year Ended December 31	2018	2017
Annual money-weighted rate of return, net of investment expenses	-5.38%	12.89%

The money-weighted rate of return considers the changing amounts actually invested during a period and weights the amount of OPEB plan investments by the proportion of time they are available to earn a return during that period. The rate of return is then calculated by solving, through an iterative process, for the rate that equates the sum of the weighted external cash flows into and out of the OPEB plan investments to the ending fair value of OPEB plan investments.

SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

Exhibit 3.2 - Investment Returns

Calculation of Money-Weighted Rate of Return

	Plan Investments/ Net External Cash Flows (a)	Periods Invested (b)	Period Weight (c)=(b)÷12	(d)=(a) x (1+r _{mw}) ^(c)
Beginning value - January 1, 2018	\$ 2,253,322	12	1.00	\$ 2,131,986
Monthly net external cash flows:				
January	-	11	0.92	-
February	-	10	0.83	-
March	-	9	0.75	-
April	-	8	0.67	-
May	-	7	0.58	-
June	-	6	0.50	-
July	-	5	0.42	-
August	-	4	0.33	-
September	-	3	0.25	-
October	50,000	2	0.17	49,541
November	-	1	0.08	-
December	-	0	0.00	-
Ending value - December 31, 2018				\$ 2,181,527
			Money-weighted rate of return:	-5.38%

SECTION 3 - REQUIRED SUPPLEMENTARY INFORMATION

Exhibit 3.3 - Schedule of Employer Contributions

Fiscal Year Ended December 31	2018	2017
Actuarially determined contribution	\$ 237,533	\$ 279,074
Contributions in relation to the actuarially determined contribution	<u>370,182</u>	<u>539,069</u>
Contribution deficiency (excess)	<u>\$ (132,649)</u>	<u>\$ (259,995)</u>
Covered payroll	\$ 2,298,919	\$ 2,238,651
Contributions as a percentage of covered payroll	16.10%	24.08%
Discount rate	7.50%	7.50%

Notes to Schedule

Valuation date:

Actuarially determined contributions are determined as of January 1, one year prior to the end of the fiscal year in which contributions are reported.

Methods and assumptions used in calculations of actuarially determined contributions:

Actuarial cost method	Entry Age Normal
Amortization method	Level dollar amount over 24 years on a closed amortization period for partial pre-funding.
Amortization period	24 years
Asset valuation method	Market value
Inflation	2.6 percent
Healthcare cost trend rates	8 percent for 2018, decreasing 0.5 percent per year to 5.5 percent, then grading down to an ultimate trend rate of 3.8 percent, utilizing the Society of Actuaries Getzen Medical Trend Model. The ultimate medical inflation rate is reached in 2075.

SECTION 4 - EMPLOYER REPORTING AMOUNTS UNDER GASB 75

Exhibit 4.1 - Deferred Outflows and Deferred Inflows of Resources

Deferred Outflows of Resources and Deferred Inflows of Resources arising from differences between expected and actual experience are recognized in OPEB Expense over the average expected remaining service life of all active and inactive participants.

Year	Balances at December 31, 2018				
	Amounts Recognized		Deferred Outflows of Resources	Deferred Inflows of Resources	
	Experience Losses	Experience Gains			in OPEB Expense through December 31, 2018
Year	(a)	(b)	(c)	(a) - (c)	(b) - (c)
2018	\$ -	\$ 237,629	\$ (36,390)	\$ -	\$ 201,239
Total				\$ -	\$ 201,239

Deferred Outflows of Resources and Deferred Inflows of Resources arising from changes of assumptions are recognized in OPEB Expense over the average expected remaining service life of all active and inactive participants.

Year	Balances at December 31, 2018				
	Increases in the Total OPEB Liability		Decreases in the Total OPEB Liability		Amounts Recognized in OPEB Expense through December 31, 2018
	Experience Losses	Experience Gains	Experience Losses	Experience Gains	
Year	(a)	(b)	(c)	(d)	(a) - (c)
2018	\$ 225,921	\$ -	\$ -	\$ 34,597	\$ 191,324
Total					\$ 191,324

SECTION 4 - EMPLOYER REPORTING AMOUNTS UNDER GASB 75

Exhibit 4.1 - Deferred Outflows and Deferred Inflows of Resources

Deferred Outflows of Resources and Deferred Inflows of Resources arising from differences between projected and actual earnings on OPEB Plan investments are recognized in OPEB Expense over five years.

Year	Investment Earnings Less Than Projected	Investment Earnings Greater Than Projected	Amounts Recognized in OPEB Expense through December 31, 2018	Balances at December 31, 2018	
				(a) - (c)	(b) - (c)
2018	\$ 291,400	\$ -	\$ 58,280	\$ 233,120	\$ -
Total				\$ 233,120	\$ -
Net				\$ 233,120	\$ -

Amounts reported as Deferred Outflows of Resources and Deferred Inflows of Resources will be recognized in OPEB expense as follows:

Year ended December 31		
2019	\$	56,487
2020	\$	56,487
2021	\$	56,487
2022	\$	56,487
2023	\$	(1,793)
Thereafter		(950)

SECTION 4 - EMPLOYER REPORTING AMOUNTS UNDER GASB 75

Exhibit 4.2 - OPEB Expense

The OPEB Expense and deferred outflows and inflows of resources primarily result from changes in the components of the net OPEB liability (NOL). Most changes in the NOL are included in the OPEB Expense in the period of the change, including service cost, interest on total OPEB liability, changes in benefit terms and projected earnings on the OPEB plan's investments. Other changes in the net OPEB liability are included in OPEB Expense over the current and future periods. These include the effects on the total OPEB liability of changes of economic and demographic assumptions and differences between expected and actual experience. In addition, the effect on the net OPEB liability of differences between the projected earnings on OPEB plan investments and actual experience with regard to those earnings are included in OPEB expense over the current and future periods. The OPEB Expense for the reporting period ending December 31, 2018 is presented below:

Fiscal Year Ended December 31	2018
Measurement date	12/31/2018
1. Service cost	\$ 72,190
2. Interest on the total OPEB liability	
a. Total OPEB liability, beginning of year	4,010,312
b. Service cost, beginning of year	72,190
c. Benefit payments	<u>(320,182)</u>
d. Interest on total OPEB liability = 7.5% times (a. + b. + .5 times c.)	294,181
3. Differences between expected and actual experience	(36,390)
4. Changes of benefit terms	-
5. Changes of assumptions	34,597
6. Projected earnings on OPEB plan investments	
a. Plan fiduciary net position, beginning of year	2,253,322
b. Contributions - Employer	370,182
c. Benefit payments	(320,182)
d. Administrative expenses and other	<u>-</u>
e. Total projected earnings	(169,605)
7. Differences between projected and actual earnings on OPEB plan investments	58,280
8. OPEB plan administrative expenses	-
9. Other changes in fiduciary net position	-
10. Total OPEB Expense	\$ <u>253,253</u>

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Eligibility for Postemployment Benefits:	Employees of the Department and their dependents are eligible for postemployment medical and life insurance based on the eligibility requirements under the Middlesex County Retirement System.									
Retirement Eligibility:	General employees hired before April 2, 2012: retire after attaining age 55 with 10 or more years of service or any age with 20 or more years of service General employees hired after April 1, 2012: retire after attaining age 60 with 10 or more years of service Public Safety employees hired before April 2, 2012: retire after attaining age 55 or any age with 20 or more years of service Public Safety employees hired after April 1, 2012: retire after attaining age 55									
Ordinary Disability Eligibility:	Any member who is unable to perform his or her duties due to a non-occupational disability and has ten or more years of creditable service.									
Accidental Disability Eligibility:	Any member who is unable to perform his or her duties due to a job-related disability.									
Medical Premiums:	The total monthly premiums by plan are shown below:									
	<table><thead><tr><th><u>Non-Medicare Plans - June 1, 2019</u></th><th><u>Individual</u></th><th><u>Family</u></th></tr></thead><tbody><tr><td>HMO</td><td>\$744.16</td><td>\$1,951.72</td></tr><tr><td>PPO</td><td>\$904.08</td><td>\$2,371.13</td></tr></tbody></table>	<u>Non-Medicare Plans - June 1, 2019</u>	<u>Individual</u>	<u>Family</u>	HMO	\$744.16	\$1,951.72	PPO	\$904.08	\$2,371.13
<u>Non-Medicare Plans - June 1, 2019</u>	<u>Individual</u>	<u>Family</u>								
HMO	\$744.16	\$1,951.72								
PPO	\$904.08	\$2,371.13								
	<table><thead><tr><th><u>Medicare Plans - June 1, 2019</u></th><th></th></tr></thead><tbody><tr><td>Medex</td><td>\$317.63</td></tr></tbody></table>	<u>Medicare Plans - June 1, 2019</u>		Medex	\$317.63					
<u>Medicare Plans - June 1, 2019</u>										
Medex	\$317.63									
Participant Contributions:	Retired employees contribute 30% of the total medical premium.									
Continuation of Coverage to Spouse After Death of Retiree:	Surviving spouse may continue coverage for lifetime by paying the required medical premium rate of 30% of the total medical premium cost. For employees hired on or after July 1, 2010, the surviving spouse medical premium rate is 50%.									
Dental Coverage:	Dental coverage is not offered to retirees.									

SECTION 5 - SUMMARY OF PLAN PROVISIONS

Life Insurance Coverage: Retirees are eligible for a \$5,000 life insurance benefit. The total monthly cost is \$3.95. Retirees contribute \$1.19 towards the monthly premiums.

PPACA Excise Tax: The Patient Protection and Affordable Care Act (PPACA) applies a 40% excise tax, commonly referred to as the "Cadillac Tax", to the cost of plan benefits in excess of statutory thresholds beginning in 2022. The 2018 thresholds are assumed to be \$10,200 for individual and \$27,500 for family coverage, increasing by chained CPI plus one percentage point in 2019 and by chained CPI thereafter. The annual limits are increased by \$1,650 for individual and \$3,450 for family coverage for retirees not eligible for Medicare benefits.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Valuation Date:	January 1, 2018
Disclosure Date:	December 31, 2018
GASB 75 Reporting Date:	December 31, 2018
Long-Term Expected Rate of Return:	7.5%, compounded annually, net of fees. A long-term assumption based on capital market expectations by asset class, historical returns and professional judgment. A building block approach was used that considered the target asset allocation, expected returns by asset class and risk analysis to determine a long-term expected average annual rate of return.
Municipal Bond Rate:	4.1%, based on the Bond Buyer 20-Bond GO Index published on December 28, 2018.
Discount Rate (GASB):	7.5%, compounded annually, for the measurement as of December 31, 2018. 7.5%, compounded annually, for the measurement as of December 31, 2017. The single rate that reflects the long-term expected rate of return on OPEB plan investments to the extent that the OPEB plan's assets, which are expected to be invested using a strategy to achieve that return, are sufficient to pay benefits, and a tax-exempt, high-quality municipal bond rate to the extent that the conditions for use of the long-term expected rate of return are not met.
Discount Rate (ADEC):	7.5%, compounded annually, for development of the Actuarially Determined Contribution (ADEC) as of December 31, 2018.
Amortization Method:	Level dollar amount over 24 years on a closed amortization period for partial pre-funding.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Medical Trend Rates:

Year	Trend
1	8.00%
2	7.50%
3	7.00%
4	6.50%
5	6.00%
6	5.50%
Ultimate	3.80%

Trend rates after year 6 grade down to the ultimate rate utilizing the Society of Actuaries Getzen Medical Trend Model. The ultimate trend rate is reached in 2075.

Health care trend assumptions begin at current levels and grade down over a period of years to a lower level equal to some real rate plus inflation. The principal components of health trend are medical inflation, deductible erosion, cost shifting, utilization, technology and catastrophic claims. The overall effect of these components are expected to decline year by year.

Dental Trend Rates: Not applicable (no dental coverage).

Inflation: 2.6% per year, based on the 2017 Social Security Trustees Report.

Chained Consumer Price Index: 2.35% per year, based on assumed CPI of 2.6% and historical data trends of chained CPI approximately 0.25% lower than standard CPI.

Payroll Growth: 3.5% per year.

Participation Rates:
Medical - 85% of eligible retired employees will elect to participate.
Dental - Not offered to retired employees.
Life - 80% of eligible retirees will elect to participate.
Medicare - all retired employees are assumed to enroll in Medicare at age 65.

Dependent Status: Male spouses are assumed to be three years older and female spouses are assumed to be three years younger than the retired employee.

50% of employees are assumed to retire with a covered spouse.

For current retirees, the actual census information is used.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Medical Per Capita Costs: The following annual per capita costs are for the fiscal year beginning January 1, 2018 and are applicable to retirees, survivors and spouses. Annual costs for current and future retirees are based on the blended curve shown below, developed using the plan coverages elected by current retirees and survivors and premium rates currently in effect. Future years' costs are based on the first year cost adjusted with trend.

Age	Male	Female
Under 20	\$3,752	\$4,405
20-24	2,957	4,690
25-29	3,077	6,919
30-34	3,865	8,742
35-39	4,848	9,005
40-44	6,041	9,223
45-49	7,624	10,123
50-54	10,048	11,909
55-59	13,057	13,770
60-64	16,757	16,389
65-69	2,873	2,798
70-74	3,443	3,301
75-79	4,066	3,830
80-84	4,674	4,392
85-89	5,206	4,910
90-94	5,668	5,240
95+	6,024	5,067

Retiree Contributions: Annual per capita participant contributions for the fiscal year beginning January 1, 2018 are as follows:

Plan	Contribution
Non-Medicare	\$ 3,132
Medicare	1,027

PPACA Excise Tax: For purposes of estimating the Patient Protection and Affordable Care Act (PPACA) excise tax, per capita plan costs are developed for individual and family coverage for both Medicare and non-Medicare members. These plan costs are compared to the thresholds stipulated in the PPACA. Beginning in 2022, a 40% excise tax is applied on the excess of the plan costs over the thresholds. The thresholds increase annually by chained CPI.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Cost Method: Entry Age Normal. The costs of each employee's postemployment benefits are allocated as a level basis over the earnings of the employee between the employee's date of hire and the assumed exit ages.

Employee Data: Employee and retiree data were submitted by the Department. We made reasonable adjustments for missing or invalid data.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Post-Retirement Mortality: Post-retirement mortality rates for General and Public Safety employees are based on the RP-2000 Healthy Annuitant Mortality Table, base year 2009, projected with generational mortality improvement using scale BB2D.

Pre-Retirement Mortality: Pre-retirement mortality rates for General and Public Safety employees are based on the RP-2000 Employees Mortality Table, base year 2009, projected with generational mortality improvement using scale BB2D.

Turnover Rates: Turnover rates for General and Public Safety employees are as follows:

General Employees		Public Safety	
Service	Rate	Service	Rate
0	15.00%	0	1.50%
1	12.00%	1	1.50%
2	10.00%	2	1.50%
3	9.00%	3	1.50%
4	8.00%	4	1.50%
5	7.60%	5	1.50%
10	5.40%	10	1.50%
15	3.30%	15	0.00%
20	2.00%	20	0.00%
25	1.00%	25	0.00%
30	0.00%	30	0.00%

Disability Rates: Disability rates for General and Public Safety employees are as follows:

General Employees		Public Safety	
Age	Rate	Age	Rate
25	0.02%	25	0.20%
30	0.03%	30	0.30%
35	0.06%	35	0.30%
40	0.10%	40	0.30%
45	0.15%	45	1.00%
50	0.19%	50	1.25%
55	0.24%	55	1.20%
60	0.28%	60	0.85%

55% of the General employee disabilities are job-related.

90% of the Public Safety employee disabilities are job-related.

SECTION 6 - ACTUARIAL ASSUMPTIONS AND METHODS

Retirement Rates: Retirement rates for General and Public Safety employees are as follows:

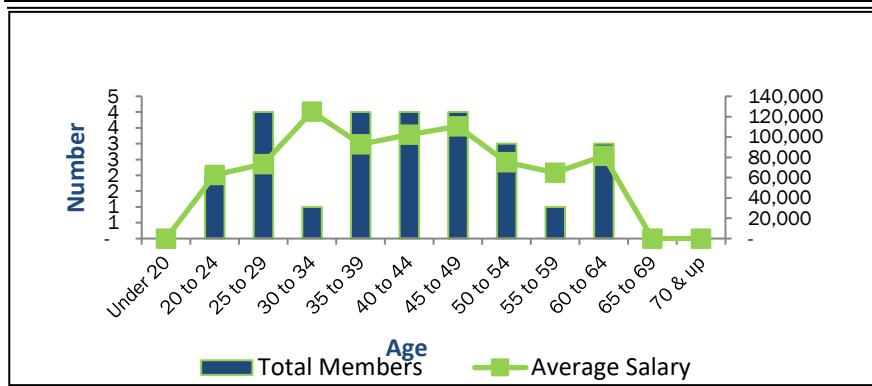
<u>Age</u>	<u>General Employees</u>		<u>Public Safety</u>
	Male	Female	All
45	0.00%	0.00%	1.00%
50	0.00%	0.00%	2.00%
55	2.00%	5.50%	15.00%
60	12.00%	5.00%	20.00%
62	30.00%	15.00%	25.00%
65	40.00%	15.00%	100.00%
69	50.00%	20.00%	
70	100.00%	100.00%	

SECTION 7 - PLAN MEMBER INFORMATION

TABLE 7.1 - ACTIVE MEMBERS BY AGE and YEARS OF SERVICE AS OF JANUARY 1, 2018

Age	Years of Service										Total	Total Salary	Average Salary
	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up				
Under 20	-	-	-	-	-	-	-	-	-	-	-	-	-
20 to 24	2	-	-	-	-	-	-	-	-	2	124,993	62,496	
25 to 29	3	1	-	-	-	-	-	-	-	4	293,489	73,372	
30 to 34	1	-	-	-	-	-	-	-	-	1	124,968	124,968	
35 to 39	2	1	-	1	-	-	-	-	-	4	371,267	92,817	
40 to 44	1	3	-	-	-	-	-	-	-	4	408,940	102,235	
45 to 49	1	-	-	1	-	2	-	-	-	4	441,397	110,349	
50 to 54	2	-	-	-	-	-	1	-	-	3	225,154	75,051	
55 to 59	-	1	-	-	-	-	-	-	-	1	64,763	64,763	
60 to 64	-	1	-	-	-	-	2	-	-	3	243,949	81,316	
65 to 69	-	-	-	-	-	-	-	-	-	-	-	-	-
70 & up	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	12	7	-	2	-	2	3	-	-	26	2,298,919	88,420	
Total Salary	812,365	642,729	-	287,833	-	246,030	309,963	-	-	-	-	-	-
Average Salary	67,697	91,818	-	143,916	-	123,015	103,321	-	-	-	-	-	-

Average Age: 42.1 Average Service: 10.2



SECTION 7 - PLAN MEMBER INFORMATION

TABLE 7.2 - RETIRED MEMBERS, COVERED SPOUSES and SURVIVORS AS OF JANUARY 1, 2018

Age	Non-Medicare Plans		Medicare Plans		Total
	HMO	PPO	Medex		
Under 40	0	0	0		0
40 to 44	0	0	0		0
45 to 49	0	0	0		0
50 to 54	0	0	0		0
55 to 59	3	0	0		3
60 to 64	5	1	2		8
65 to 69	0	0	3		3
70 to 74	0	0	2		2
75 to 79	0	0	6		6
80 to 84	0	0	3		3
85 to 89	0	0	1		1
90+	0	0	0		0
Total	8	1	17		26
Covered Spouses	8	1	10		19
Average Age: 70.1					

SECTION 8 - GLOSSARY OF TERMS

Actuarial Assumptions – Assumptions as to the occurrence of future events affecting OPEB costs, such as mortality, withdrawal, disability and retirement; changes in compensation and OPEB benefits; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; characteristics of future entrants for Open Group Actuarial Cost Methods; and other relevant items.

Actuarial Cost Method (or Funding Method) – A procedure for allocating the Actuarial Present Value of projected benefit payments to the current year (Service Cost) and the past (Total OPEB Liability).

Actuarial Gain or Loss (or Experience Gain or Loss) – A measure of the difference between actual experience and that expected based upon the set of Actuarial Assumptions during the period between the valuation date and the most recent immediately preceding valuation date.

Actuarial Present Value of Projected Benefit Payments – The dollar value on the valuation date of all benefits expected to be paid to current members based upon the Actuarial Assumptions and the terms of the Plan.

Actuarially Determined Contribution – A target or recommended contribution to a defined benefit OPEB plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

Actuarial Valuation Date – The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer's reporting date.

Deferred Inflow of Resources – Acquisition of resources by a governmental entity that is applicable to future reporting periods. Under GASB 75, deferred inflows of resources are made up of experience gains, assumption changes reducing the Total OPEB Liability and investment gains that are recognized in future reporting periods.

Deferred Outflow of Resources – Consumption of resources by a governmental entity that is applicable to future reporting periods. Under GASB 75, deferred outflows of resources are made up of experience losses, assumption changes increasing the Total OPEB Liability and investment losses that are recognized in future reporting periods.

Entry Age Normal Actuarial Cost Method – A method under which the actuarial present value of the projected benefits of each individual in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age.

Explicit Subsidy – The difference between (a) the blended rates based on combined active and retired member experience and (b) actual cash contributions made by the employer.

Fiduciary Net Position – The fair market value of assets as of the measurement date.

Funded Ratio – The Actuarial Value of Assets expressed as a percentage of the Actuarial Accrued Liability.

SECTION 8 - GLOSSARY OF TERMS

GASB – Governmental Accounting Standards Board.

Health Cost Trend Rate – The rate of change in per capita health claims cost over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.

Implicit Subsidy – In an experience-rated healthcare plan that includes both active employees and retirees with blended premium rates for all plan members, the difference between (a) the age-adjusted premiums approximating claim costs for retirees in the group and (b) the blended rates based on combined active and retired member experience.

Measurement Date – The date as of which the Total OPEB Liability and Fiduciary Net Position are measured.

Net OPEB Liability – The liability of the employer for benefits provided through an OPEB plan. It is calculated as the Total OPEB Liability less the Fiduciary Net Position.

OPEB – Other Postemployment Benefits including medical, dental, vision, hearing and life insurance benefits.

Pay-As-You-Go – A method of financing an OPEB plan under which the contributions to the plan are generally made at about the same time and in about the same amount as benefit payments and expenses becoming due.

Present Value of Future Benefits – The actuarial present value of the cost to finance benefits payable in the future, discounted to reflect the expected effects of the time value of money and the probabilities of payment.

Reporting Date – The last day of the Plan or employer's fiscal year.

Service Cost – The portion of the actuarial present value of projected benefit amounts that is attributed to a valuation year.

Substantive Plan – The terms of an OPEB plan as understood by the employer and plan members.

Total OPEB Liability – The portion of the actuarial present value of projected benefit amounts that is attributed to past periods of employee service.

Unfunded Actuarial Accrued Liability – The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.

APPENDIX A - CALCULATION OF SINGLE DISCOUNT RATE

Under GASB 74, a series of projections and calculations are used to determine the discount rate for the purpose of the measurement of the Total OPEB Liability. The discount rate is the single rate that reflects (1) the long-term expected rate of return on OPEB plan investments that are expected to be used to finance the payment of benefits, to the extent that the OPEB plan's fiduciary net position is projected to be sufficient to make projected benefit payments and OPEB plan assets are expected to be invested using a strategy to achieve that return, and (2) a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher, to the extent that the conditions for use of the long-term expected rate of return are not met.

Projected cash flows into and out of the OPEB plan are assumed to be contributions to the OPEB plan, benefit payments, OPEB plan administrative expenses and OPEB plan investment earnings. These projected cash flows are used to project the OPEB plan's fiduciary net position at the beginning of each period. The OPEB plan's projected fiduciary net position at the beginning of each period is compared to the amount of benefit payments projected to occur in that period.

It is assumed that the OPEB plan's fiduciary net position is expected to always be invested using a strategy to achieve the long-term expected rate of return on OPEB plan investments.

The benefit payments that are projected to occur in a period are discounted using the long-term expected rate of return on OPEB plan investments if the amount of the OPEB plan's beginning fiduciary net position is projected to be sufficient to make the benefit payments in that period. In periods in which benefit payments are projected to be greater than the amount of the OPEB plan's fiduciary net position, they are discounted using a municipal bond rate as required by GASB 74.

For purposes of this valuation, the long-term expected rate of return on OPEB plan investments is 7.5%; the municipal bond rate is 4.1%, based on the Bond Buyer 20-Bond GO Index published on December 28, 2018. The OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investments was applied to all periods of projected benefit payments to determine the total OPEB liability. Projected benefit payments are discounted to their actuarial present value using a single discount rate of 7.5%.

APPENDIX B - SCHEDULE OF DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES

Year	Differences between Expected and Actual Experience		Recognition Period (Years)										
	2018	2019		2020	2021	2022	2023	2024	2025	2026	2027		
2018	\$ (237,629)	6.53	(36,390)	(36,390)	(36,390)	(36,390)	(36,390)	(19,289)	-	-	-		
Net Increase (Decrease) in OPEB Expense			(36,390)	(36,390)	(36,390)	(36,390)	(36,390)	(19,289)	-	-	-		
Year	Changes of Assumptions		Recognition Period (Years)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	2018	\$ 225,921	6.53	34,597	34,597	34,597	34,597	34,597	34,597	18,339	-	-	
Net Increase (Decrease) in OPEB Expense			34,597	34,597	34,597	34,597	34,597	34,597	18,339	-	-		
Year	Differences between Projected and Actual Earnings on OPEB Plan Investments		Recognition Period (Years)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	2018	\$ 291,400	5	58,280	58,280	58,280	58,280	58,280	-	-	-	-	
Net Increase (Decrease) in OPEB Expense			58,280	58,280	58,280	58,280	58,280	-	-	-	-		

Littleton Municipal Electric Light Department Postemployment Benefits Other Than Pensions
 Financial Reporting and Disclosures Under GASB 74 and GASB 75 as of December 31, 2018