

GASB Statements No. 67 and 68
Report for Fiscal Year 2018

Lawrence Retirement System

Lawrence B. Stone



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Lawrence Retirement System
GASB Statements No. 67 and 68

June 12, 2018

Lawrence Retirement Board
354 Merrimack Street
Suite 302
Lawrence, MA 01843

Dear Members of the Board:

For the purpose of satisfying the requirements of the Government Accounting Standards Board (GASB) Statement No. 67 for Calendar 2017 and Statement No. 68 for Fiscal 2018, Stone Consulting, Inc. has prepared a set of illustrative tables and other Required Supplementary Information (RSI) based on the January 1, 2018 actuarial valuation of the Lawrence Retirement System 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).

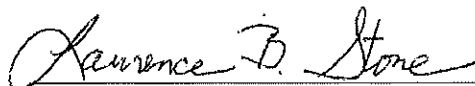
For GASB 67 the results are as of a valuation date of January 1, 2018 and a reporting date of December 31, 2017. For GASB 68 the results are as of a valuation date of January 1, 2018, a measurement date of December 31, 2017 and a reporting date of June 30, 2018. To the best of our knowledge, this report is complete and accurate, and the assumptions used represent our best estimate of anticipated experience of the system. The methods, assumptions, and plan provisions used to prepare these exhibits are consistent with those used in the funding valuation, and are outlined in the January 1, 2018 funding valuation report unless otherwise stated in this report.

Stone Consulting, Inc. is completely independent of the City of Lawrence and the Lawrence Retirement Board. This includes any of its officers and key personnel. Neither we or anyone else closely associated with us has any relationship with the City of Lawrence and the Lawrence Retirement Board that would impair our independence, other than this or related assignments.

We are pleased to present these exhibits. If the Lawrence Retirement Board has any questions on the 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.

The undersigned is a consultant for Stone Consulting, Inc. and a member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,
STONE CONSULTING, INC.
Actuaries for the Plan



Lawrence B. Stone, M.A.A.A.

GASB Statements No. 67 and 68 – Net Pension Liability

The components of the Net Pension Liability of the Lawrence Retirement System as of December 31, 2017 were as follows:

Total Pension Liability (TPL)	\$ 441,726,747
Plan Fiduciary Net Position (FNP)	<u>227,442,528</u>
System's Net Pension Liability (NPL)	\$ 214,284,219
Plan FNP as a percentage of the TPL	51.5%
Covered Payroll	\$ 77,421,566
Plan NPL as a percentage of Covered Payroll	276.8%

NOTE: Totals in this report may not sum due to rounding

Changes to the Net Pension Liability [GASB 68, Paragraph 44]

	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
Balances at beginning of Measurement Period (01/01/2017)	\$ 418,089,045	\$ 195,465,910	\$ 222,623,135
Changes for the Year:			
Service Cost	9,108,701		9,108,701
Interest	32,023,014		32,023,014
Change in benefit terms	0		0
Differences between expected and actual experience	1,144,844		1,144,844
Change in assumptions	9,356,284		9,356,284
Contributions - employer		20,605,965	(20,605,965)
Contributions - employee		6,781,214	(6,781,214)
Net investment income		33,087,834	(33,087,834)
Benefit payments, including refunds of employee contributions	(27,995,140)	(27,995,140)	0
Administrative expense		(503,255)	503,255
Other changes		0	0
Net Changes	<u>23,637,702</u>	<u>31,976,618</u>	<u>(8,338,916)</u>
Balances at end of Measurement Period (12/31/2017)	\$ 441,726,747	\$ 227,442,528	\$ 214,284,219

Update procedures were used to roll the Service Cost backward to the beginning of the measurement period (1/1/2017), at a rate of 4.25%. [GASB Statement No. 68, Paragraph 45 a.]

Projection of the Net Pension Liability

TOTAL PENSION LIABILITY (TPL)

The TPL at the beginning of the measurement period is equal to the TPL from the end of the prior measurement period. The TPL at the end of the measurement period is equal to the Actuarial Accrued Liability from the 1/1/2018 funding valuation, with an adjustment as described in the following paragraph. The TPL is projected from the beginning to the end of the measurement period by subtracting benefit payments, adding service cost, and giving interest to the TPL, service cost, and benefit payments. Any resulting difference between the projected and actual TPL at the end of the period is divided as follows: differences arising from changes in plan provisions and assumptions are calculated directly as of the measurement date, and the remainder is allocated to experience gains/losses.

The TPL shown differs from the amount in the funding report as it includes a liability of \$10,285,036 related to net 3(8)(c) payments. This is calculated by assuming that every dollar of 3(8)(c) net benefit generates the same amount of liability as a dollar of the total retirement benefit. The service cost also differs from the funding report; the funding valuation is calculated on a beginning-of-year basis and thus the normal cost in the funding valuation refers to the 2018 calendar year. The measurement period in this report is calendar year 2017, so the service cost is based on results from the 2016 valuation, rolled forward from the funding valuation using a 4.25% salary increase factor.

Changes due to expected and actual gains on pension plan assets will be recognized over a five-year period [GASB Statement No. 68, Paragraph 33b], and liabilities arising from experience or changes in assumptions will be spread over the lifetime of the current employees [GASB Statement No. 68, Paragraph 33a].

PLAN FIDUCIARY NET POSITION (FNP)

GASB Statement No. 68, Paragraph 20 requires that Market Value of Assets be used for the Fiduciary Net Position. Net investment income is the portion of the change in assets during the measurement period not attributed to employee/employer contributions, benefits payments, administrative expense, or other changes.

The projected Net Pension Liability (NPL) for the end of the year is the portion of the TPL not covered by the FNP. This amount is presented as a percentage of covered employee payroll. The NPL ratio for Lawrence is 276.8% of covered payroll. In this report, covered payroll is reported as described in GASB Statement No. 82. It is a projected pensionable payroll for the measurement period.

Distribution of the Member Population

As of January 1, 2018, the following employees were covered by the benefits terms:

Inactive employees or beneficiaries currently receiving benefits	911
Inactive employees entitled to a return of contributions	530
Active employees	<u>1,580</u>
TOTAL	3,021

Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions [GASB 68, Paragraph 44 h.]

	Deferred Outflows Of Resources	Deferred Inflows Of Resources
Differences between expected and actual experience	\$ 957,165	\$ (8,218,913)
Changes of assumptions	7,822,467	0
Net difference between projected and actual earnings on pension plan investments	0	(8,682,280)
Total	\$ 8,779,632	\$ (16,901,192)

Year Ending December 31, *	Recognition
2018	\$ (704,345)
2019	(809,000)
2020	(3,413,466)
2021	(3,578,799)
2022	211,900
2023	172,150

*The years are based on measurement date. For GASB 68, the year ending December 31, 2018 is Fiscal 2019.

Development of Exhibits

DISCOUNT RATE

Projections were made using a discount rate assumption of 7.50%, which is consistent with the assumption used in the 2018 valuation. One of the objectives of the provisions introduced by GASB 68 is to examine how benefit payments and plan contributions and investment earnings interact on a cash flow basis. GASB requires that these amounts be calculated with Market Value of Assets and using the Entry Age Normal cost method.

Projected contributions for each year are the sum of the projected normal cost, the amortization of the unfunded liability, administrative expense, and other benefit costs such as 3(8)(c) payments. The amortization bases and periods are consistent with those seen in the valuation report. Administrative expenses are increased by 4.25% per year.

The long-term rate of return which was used to develop the discount rate of 7.50% 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. 67, Paragraph 30 b. 4 requires that a return rate for the measurement period be developed using the market value of assets at the beginning of the measurement period, along with monthly cash flows. This has been done for the 2017 calendar year, and is shown on the following page and on page 11.

Calendar Year	2017
Money-Weighted Rate of Return	17.06%

Discount Sensitivity [GASB 68, Paragraph 42 g.]

The following presents Lawrence’s Net Pension Liability calculated at the valuation discount rate of 7.50%, as well as at discount rates one percent higher (8.50%) and one percent lower (6.50%).

Fiscal Year	1% Decrease (6.50%)	Current Discount Rate (7.50%)	1% Increase (8.50%)
2018	\$ 263,310,174	\$ 214,284,219	\$ 172,887,764

Long-Term Expected Real Rate of Return

The long-term expected real rate of return reflects the expected rate of return on plan assets minus 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 Lawrence Retirement System and NEPC. The real rates of return below are based on the most recent 30-year return estimates provided by NEPC through the Pension Reserve Investment Trust, adjusted using a 3.00% inflation assumption.

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Geometric Average)
US Equity	17.5%	4.47%
International Equities	15.5%	4.66%
Emerging Equities	6.0%	6.12%
Core Bonds	5.0%	0.73%
20+ Year Treasury STRIPS	2.0%	0.49%
TIPS	5.0%	0.73%
Value-Added Fixed Income	10.0%	3.50%
Private Equity	12.0%	6.31%
Real Estate	10.0%	3.59%
Timberland	4.0%	3.16%
Portfolio Completion (PCS)	13.0%	3.44%

**Schedule of Changes in Lawrence's
Net Pension Liability and Related Ratios**

(Amounts in Thousands)

	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
TOTAL PENSION LIABILITY										
Service cost	9,109	8,737	8,829	8,469						
Interest	32,023	31,842	30,713	29,607						
Change of benefit terms	-	-	-	-						
Differences between expected and actual experience	1,145	(11,574)	-	-						
Change of assumptions	9,356	-	-	-						
Benefit payments, including refunds of employee contributions	(27,995)	(26,093)	(23,677)	(24,653)						
Net change in total pension liability	23,638	2,913	15,865	13,424						
Total pension liability - beginning	418,089	415,176	399,310	385,887						
Total pension liability - ending	441,727	418,089	415,176	399,310						
PLAN FIDUCIARY NET POSITION										
Contributions - employer	20,606	19,329	18,509	17,323						
Contributions - employee	6,781	6,851	6,706	6,951						
Net investment income	33,088	13,190	1,014	12,433						
Benefit payments, including refunds of employee contributions	(27,995)	(26,093)	(23,677)	(24,653)						
Administrative expense	(503)	(473)	(470)	(455)						
Other	-	-	-	-						
Net change in plan fiduciary net position	31,977	12,806	2,082	11,599						
Plan fiduciary net position - beginning	195,466	182,660	180,579	168,979						
Plan fiduciary net position - end	227,443	195,466	182,660	180,579						
Lawrence net pension liability - ending	214,284	222,623	232,515	218,732						
Plan fiduciary net position as a percentage of the total pension liability	51.5%	46.8%	44.0%	45.2%						
Covered-employee payroll	77,422	73,742	74,625	71,253						
Lawrence's net pension liability as a percentage of covered employee payroll	276.8%	301.9%	311.6%	307.0%						

* Information not available for years prior to 2015

Note: sums may not total due to rounding

Schedule of Plan Contributions

(Amounts in Thousands)

Fiscal Year	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Actuarially determined contribution*	\$ 20,684	\$ 19,320	\$ 18,515	\$ 17,121						
Contributions in relation to the actuarially determined contribution	<u>(20,606)</u>	<u>(19,329)</u>	<u>(18,509)</u>	<u>(17,033)</u>						
Contribution deficiency / (excess)**	78	(9)	6	88						
Covered-employee payroll	\$ 79,315	\$ 75,582	\$ 74,625	\$ 72,939						
Contributions as a percentage of covered-employee payroll	26.0%	25.6%	24.8%	23.4%						

* Adjusted to include one-time MVRTA payment of \$647,679 in Fiscal 2018 related to members who received additional service through a CRAB decision

** Includes Federal Grants

* Information not available for years prior to 2015

Components of Lawrence’s Pension Expense for the Fiscal Year Ended June 30, 2018 [GASB 68, Paragraph 33]

NOTE*	Description	Fiscal 2018
A	Service Cost	\$ 9,108,701
A, B	Interest on the Total Pension Liability	32,023,014
C	Differences between Expected and Actual Experience	(1,489,650)
D	Changes of Assumptions	1,533,817
D	Changes to Benefit Provisions	0
A	Employee Contributions	(6,781,214)
E	Projected Earnings on Pension Plan Investments	(14,973,001)
F	Differences between Projected and Actual Earnings on Plan Investments	(748,512)
A	Pension Plan Administrative Expense	503,255
A	Other Changes in Fiduciary Net Position	0
	Total Pension Expense	\$ 19,176,410

* Notes shown on following page. Amounts are based on the following dates:

- Valuation date: January 1, 2018;
- Measurement date: December 31, 2017;
- Reporting date: June 30, 2018

CHANGES IN METHODS, ASSUMPTIONS, AND PLAN PROVISIONS

The assumptions and methods used to generate these exhibits are consistent with those used in the January 1, 2018 actuarial valuation of the Lawrence Retirement System performed by Stone Consulting, Inc. unless otherwise noted. The 2018 valuation included two changes in assumptions: the mortality table was changed to the RP-2014 table adjusted to 2006 and projected generationally with MP-2016 (previously RP-2000 table projected from 2000 with generational mortality, scale BB); and the discount rate was lowered from 7.75% to 7.50%. The net effect of these changes increased the TPL by \$9,356,284 and is shown on page 9.

RESULTS BY EMPLOYER

Exhibits are provided beginning on page 12 which provide individual results for the various employers that make up the Lawrence Retirement System. Pension expense, as well as any deferred inflows and outflows of resources, and any excess contribution resulting from Federal Grants, have been allocated to the various employers in the same manner as the FY2018 appropriation. However, per GASB 68, the change in proportionality from FY2017 to FY2018 if the individual employers’ NPL and deferred inflows and outflows need to be allocated to the individual employers. This is calculated on page 14. These amounts are then recognized over the average working lifetime, which is 6.1 years.

NOTES

- A. See the RSI schedule of changes to the net pension liability, on page 1.
- B. Events that impact the total pension liability are assumed to happen evenly throughout the period. In addition, the amount of interest on the total pension liability is calculated using an interest rate equal to the discount rate that was used to determine the service cost. The amount is determined as follows:

Description	Amount for Period (a)	Portion of Period (b)	Interest Rate* (c)	Interest on the Total Pension Liability (a) x (b) x (c)
Beginning total pension liability	\$ 418,089,045	100%	7.75%	\$ 32,401,901
Service Cost	9,108,701	100%	7.75%	705,924
Benefit payments	(27,995,140)	50%	7.75%	(1,084,812)
Total interest on the net pension liability				\$ 32,023,014

- C. Differences between expected and actual experience recognized in the current period in accordance with paragraph 33a of Statement 68. For the detailed calculation of this amount, see the schedules on page 9.
- D. Assumption and plan provision changes recognized in pension expense in the current period in accordance with paragraph 33a of Statement 68. For detailed calculation of these amounts, see the schedule on page 9.
- E. Changes in the amounts invested are assumed to occur evenly throughout the period. In addition, the amount of projected earnings on pension plan investments is calculated using the assumed rate of return on pension plan investments as of the beginning of the period. The amount is determined as follows:

Description	Amount for Period (a)	Portion of Period (b)	Projected Rate of Return* (c)	Projected Earnings (a) x (b) x (c)
Beginning plan fiduciary net position	\$ 195,465,910	100%	7.75%	\$ 15,148,608
Employer contributions (August 1)	20,605,965	41.7%	7.75%	665,933
Employee contributions	6,781,214	50%	7.75%	262,772
Benefit payments, including refunds of employee contributions	(27,995,140)	50%	7.75%	(1,084,812)
Administrative expense and other	(503,255)	50%	7.75%	(19,501)
Total projected earnings				\$ 14,973,001

- F. Differences between projected and actual earnings recognized in the current period in accordance with paragraph 33b of Statement 68. For detailed calculation of this amount, see the schedule on page 9.

* While results calculated for a 1/1/2018 valuation date were based on a 7.50% discount rate, the discount rate in effect prior to that date (i.e. for the entire measurement period) was 7.75%.

Increase / (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience

Year	Differences between actual and expected experience	Recognition period (years)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
2015	\$ -	6.9	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2016	\$ -	6.9	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2017	\$ (1,573,571)	6.9	\$ -	\$ -	\$ (1,677,329)	\$ (1,677,329)	\$ (1,677,329)	\$ (1,677,329)	\$ (1,677,329)	\$ (1,677,329)	\$ (1,509,596)	\$ -
2018	\$ 1,144,844	6.1	\$ -	\$ -	\$ -	\$ 187,679	\$ 187,679	\$ 187,679	\$ 187,679	\$ 187,679	\$ 187,679	\$ 18,768
Net increase (decrease) in pension expense			\$ -	\$ -	\$ (1,677,329)	\$ (1,489,650)	\$ (1,489,650)	\$ (1,489,650)	\$ (1,489,650)	\$ (1,489,650)	\$ (1,321,917)	\$ 18,768

Increase / (Decrease) in Pension Expense Arising from the Recognition of the Effects of Changes of Assumptions

Year	Change of assumptions	Recognition period (years)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
2015	\$ -	6.9	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2016	\$ -	6.9	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2017	\$ -	6.9	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2018	\$ 9,356,284	6.1	\$ -	\$ -	\$ -	\$ 1,533,817	\$ 1,533,817	\$ 1,533,817	\$ 1,533,817	\$ 1,533,817	\$ 1,533,817	\$ 153,382
Net increase (decrease) in pension expense			\$ -	\$ -	\$ -	\$ 1,533,817	\$ 1,533,817	\$ 1,533,817	\$ 1,533,817	\$ 1,533,817	\$ 1,533,817	\$ 153,382

Increase / (Decrease) in Pension Expense Arising from the Recognition of Differences between Expected and Actual Earnings on Pension Plan Investments

Year	Differences between projected and actual earnings on pension plan investments	Recognition period (years)	2015	2016	2017	2018	2019	2020	2021	2022
2015	\$ 523,278	5	\$ 104,656	\$ 104,656	\$ 104,656	\$ 104,656	\$ 104,656	\$ -	\$ -	\$ -
2016	\$ 13,022,328	5	\$ -	\$ 2,604,466	\$ 2,604,466	\$ 2,604,466	\$ 2,604,466	\$ 2,604,466	\$ -	\$ -
2017	\$ 826,668	5	\$ -	\$ -	\$ 165,334	\$ 165,334	\$ 165,334	\$ 165,334	\$ 165,334	\$ -
2018	\$ (18,114,834)	5	\$ -	\$ -	\$ -	\$ (3,622,967)	\$ (3,622,967)	\$ (3,622,967)	\$ (3,622,967)	\$ (3,622,967)
Net increase (decrease) in pension expense			\$ 104,656	\$ 2,709,121	\$ 2,874,455	\$ (748,512)	\$ (748,512)	\$ (853,168)	\$ (3,457,633)	\$ (3,622,967)

Deferred Outflows and Deferred Inflows of Resources Arising from Differences between Expected and Actual Experience

Year	Experience Losses (a)	Experience Gains (b)	Amounts Recognized in Pension Expense through June 30, 2018 (c)	BALANCES AT JUNE 30, 2018	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2015	\$ -	\$ -	\$ -	\$ -	\$ -
2016	\$ -	\$ -	\$ -	\$ -	\$ -
2017	\$ -	\$ (11,573,571)	\$ (3,354,658)	\$ -	\$ (8,218,913)
2018	\$ 1,144,844	\$ -	\$ 187,679	\$ 957,165	\$ -
TOTAL				\$ 957,165	\$ (8,218,913)

Deferred Outflows and Deferred Inflows of Resources Arising from Changes of Assumptions

Year	Increases in the Total Pension Liability (a)	Decreases in the Total Pension Liability (b)	Amounts Recognized in Pension Expense through June 30, 2018 (c)	BALANCES AT JUNE 30, 2018	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2015	\$ -	\$ -	\$ -	\$ -	\$ -
2016	\$ -	\$ -	\$ -	\$ -	\$ -
2017	\$ -	\$ -	\$ -	\$ -	\$ -
2018	\$ 9,356,284	\$ -	\$ 1,533,817	\$ 7,822,467	\$ -
TOTAL				\$ 7,822,467	\$ -

**Deferred Outflows and Deferred Inflows of Resources
Arising from Differences between Expected and Actual Earnings on Pension Plan Investments**

Year	Investment Earnings Less than Projected (a)	Investment Earnings More than Projected (b)	Amounts Recognized in Pension Expense through June 30, 2018 (c)	BALANCES AT JUNE 30, 2018	
				Deferred Outflows of Resources (a) - (c)	Deferred Inflows of Resources (b) - (c)
2015	\$ 523,278	\$ -	\$ 418,622	\$ 104,656	\$ -
2016	\$ 13,022,328	\$ -	\$ 7,813,397	\$ 5,208,931	\$ -
2017	\$ 826,668	\$ -	\$ 330,667	\$ 496,001	\$ -
2018	\$ -	\$ (18,114,834)	\$ (3,622,967)	\$ -	\$ (14,491,867)
TOTAL				\$ 5,809,587	\$ (14,491,867)
			NET TOTAL		\$ (8,682,280)

**GASB Statement No. 67, Paragraph 30 b. (4)
Money-Weighted Rate of Return, 2017**

NET INVESTMENT AMOUNTS						
	Beginning of month	Middle of Month	End of Month	Periods Invested**	Investment with Interest	
Starting Value* (12/31/2016)	\$ 196,420,666.85			12	\$	229,931,318.20
<u>Cash Flows:</u>						
January	64,865.96	273,544.26	-2,031,407.41	11		(1,952,916.87)
February	345,910.08	17,052.10	-2,105,665.00	10		(1,981,816.28)
March	313,342.72	50,357.92	-2,234,685.72	9		(2,100,580.04)
April	265,733.77	52,125.60	-2,699,161.36	8		(2,640,694.77)
May	359,576.10	292,747.41	-2,226,151.53	7		(1,717,974.33)
June	280,808.95	267,249.91	-2,059,309.00	6		(1,629,172.00)
July	941,715.05	218,600.07	15,326,700.39	5		17,620,252.54
August	1,047,869.92	156,593.83	-2,132,001.92	4		(961,862.92)
September	269,554.93	14,027.29	-1,915,983.77	3		(1,694,168.00)
October	232,322.40	267,808.46	-2,241,944.82	2		(1,783,186.66)
November	291,797.14	367,748.42	-2,229,300.94	1		(1,584,136.94)
December	572,538.81	259,076.70	-1,954,887.14	0		(1,114,000.45)
Ending Value* (12/31/2017)	\$228,391,059.48			Sum:	\$	228,391,059.48

* 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:	17.06%
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Results by Employer

Employer	Covered Payroll*	Proportionate Share of NPL**	Proportionate share of NPL as a percentage of covered payroll*	Proportionate share of NPL Discount Sensitivity	
				1% Increase (8.50%)	1% Decrease (6.50%)
City of Lawrence	\$ 70,509,618	\$ 193,980,472	275.1%	\$ 156,578,775	\$ 238,275,423
Greater Lawrence Regional Vocational Tech	\$ 3,360,530	\$ 10,040,042	298.8%	\$ 8,094,408	\$ 12,344,261
Lawrence Housing Authority	\$ 3,308,277	\$ 9,540,920	288.4%	\$ 7,636,683	\$ 11,796,114
M. V. R. T. A.	\$ 243,141	\$ 722,785	297.3%	\$ 577,897	\$ 894,376
TOTAL	\$ 77,421,566	\$ 214,284,219	276.8%	\$ 172,887,764	\$ 263,310,174

Employer	Actuarially determined contribution FY2018	Contributions made FY 2018	Contribution deficiency (excess)	Contributions as a percentage of covered payroll***
City of Lawrence	\$ 18,148,664	\$ (18,077,804)	\$ 70,860	25.0%
Greater Lawrence Regional Vocational Tech	\$ 937,939	\$ (934,253)	\$ 3,686	27.1%
Lawrence Housing Authority	\$ 883,278	\$ (879,670)	\$ 3,608	26.1%
M. V. R. T. A.	\$ 714,512	\$ (714,238)	\$ 274	288.3%
TOTAL	\$ 20,684,393	\$ (20,605,965)	\$ 78,428	26.0%

Employer	Proportion	Proportionate Share of Pension Expense	Proportion changes and differences between employer contributions and proportionate share recognized as expense	Total Pension Expense
City of Lawrence	90.35%	\$ 17,359,417	\$ (248,359)	\$ 17,111,058
Greater Lawrence Regional Vocational Tech	4.70%	\$ 898,489	\$ 209,550	\$ 1,108,039
Lawrence Housing Authority	4.60%	\$ 853,822	\$ (71,082)	\$ 782,741
M. V. R. T. A.	0.35%	\$ 64,682	\$ 109,890	\$ 174,575
TOTAL	100.00%	\$ 19,176,410		

* Covered Payroll is the projected amount for the 2017 calendar year based on employee data as of December 31, 2017

** ERI liability used in the proportionate share of NPL is \$7,398,744 for City, \$334,075 for GLRVT, and \$41,463 for Housing.

*** Here the Covered Payroll figure is projected for Fiscal Year 2018, based on employee data as of December 31, 2017

Deferred Outflows of Resources by Employer*

Employer	Differences between expected and actual experience	Changes of assumptions	Net difference between projected and actual earnings on pension plan investments	Changes in proportion and differences between employer contributions and proportionate share of contributions	Employer contributions subsequent to the measurement date	Total Deferred Outflows of Resources
City of Lawrence	\$ 866,472	\$ 7,081,276	\$ -	\$ 82,904	\$ -	\$ 8,030,652
Greater Lawrence Regional Vocational Tech	\$ 44,847	\$ 366,513	\$ -	\$ 1,216,508	\$ -	\$ 1,627,868
Lawrence Housing Authority	\$ 42,617	\$ 348,292	\$ -	\$ 47,374	\$ -	\$ 438,283
M. V. R. T. A.	\$ 3,229	\$ 26,385	\$ -	\$ 539,893	\$ -	\$ 569,507
TOTAL	\$ 957,165	\$ 7,822,467	\$ -	\$ 1,886,678	\$ -	\$ 10,666,310

Deferred Inflows of Resources by Employer*

Employer	Differences between expected and actual experience	Changes of assumptions	Net difference between projected and actual earnings on pension plan investments	Changes in proportion and differences between employer contributions and proportionate share of contributions	Employer contributions subsequent to the measurement date	Total Deferred Inflows of Resources
City of Lawrence	\$ 7,440,159	\$ -	\$ 7,859,621	\$ 1,344,776	N/A	\$ 16,644,555
Greater Lawrence Regional Vocational Tech	\$ 385,088	\$ -	\$ 406,798	\$ 130,277	N/A	\$ 922,163
Lawrence Housing Authority	\$ 365,944	\$ -	\$ 386,575	\$ 411,625	N/A	\$ 1,164,144
M. V. R. T. A.	\$ 27,723	\$ -	\$ 29,285	\$ -	N/A	\$ 57,008
TOTAL	\$ 8,218,913	\$ -	\$ 8,682,280	\$ 1,886,678	N/A	\$ 18,787,871

Recognition of Deferred Outflows and Deferred Inflows

Employer	AMOUNT TO BE RECOGNIZED FOR THE YEAR ENDING DECEMBER 31,				
	2018	2019	2020	2021	2022 Thereafter
City of Lawrence	\$ (885,966)	\$ (980,705)	\$ (3,338,394)	\$ (3,490,187)	\$ (62,661)
Greater Lawrence Regional Vocational Tech	\$ 176,549	\$ 171,645	\$ 49,616	\$ 45,210	\$ 241,603
Lawrence Housing Authority	\$ (102,442)	\$ (107,102)	\$ (223,065)	\$ (231,641)	\$ (67,374)
M. V. R. T. A.	\$ 107,514	\$ 107,161	\$ 98,377	\$ 97,819	\$ 100,331
TOTAL	\$ (704,345)	\$ (809,000)	\$ (3,413,466)	\$ (3,578,799)	\$ 211,900
					\$ 172,150

* Deferred Outflows and Inflows due to experience, assumptions, and investment return are allocated to each employer according to their proportion of the NPL

Effects of Changes in Proportion on Employers' Proportionate Share of NPL, and Deferred Inflows and Deferred Outflows of Resources

Employer	Proportion Change			FY2018 Contribution		
	Prior Proportionate Share of Prior NPL net of Deferrals	Share of Prior NPL based on Current Proportion of NPL	Difference (A)	Proportionate Share of Contribution based on Share of NPL	Amount Paid	Difference (B)
City of Lawrence	\$ 202,772,450	\$ 202,626,605	\$ (145,845)	\$ 18,653,519	\$ 18,077,804	\$ (575,715)
Greater Lawrence Regional Vocational Tech	\$ 9,662,351	\$ 10,487,548	\$ 825,197	\$ 965,469	\$ 934,253	\$ (31,216)
Lawrence Housing Authority	\$ 10,044,439	\$ 9,966,180	\$ (78,259)	\$ 917,472	\$ 879,670	\$ (37,802)
M. V. R. T. A.	\$ 1,356,095	\$ 755,001	\$ (601,094)	\$ 69,504	\$ 714,238	\$ 644,733
TOTAL	\$ 223,835,334	\$ 223,835,334	\$ (9,896,242)	\$ 20,605,965	\$ 20,605,965	\$ -

Employer	Total Proportion Change (A) + (B)	Recognized as Pension Expense*	Deferred for later recognition
City of Lawrence	\$ (721,560)	\$ (118,288)	\$ (603,271)
Greater Lawrence Regional Vocational Tech	\$ 793,981	\$ 130,161	\$ 663,820
Lawrence Housing Authority	\$ (116,061)	\$ (19,026)	\$ (97,034)
M. V. R. T. A.	\$ 43,639	\$ 7,154	\$ 36,485
TOTAL	\$ -	\$ -	\$ -

* Based on an average remaining service life of 6.1 years.